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The Efficacy of Response to Intervention on Academic Outcomes at the Secondary School Level
in a New England School District

by

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DISSERTATION

Submitted to the University of New Hampshire in Partial Fulfilment of
the requirements for the degree of

Doctor of Philosophy

in

Education

May, 2022

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DEDICATION

This dissertation is dedicated to my family who have been there to support me through the doctoral program. Each of you have given me support in so many ways by listening, encouraging, or simply nodding your head as I explain my work. Without your support this accomplishment would have been far more challenging. To my grandmother Edyth Richardson a lifelong professor at the University of New Hampshire who has served as my spirit guide and role model. And finally, to all my incredible students who demonstrated perseverance during COVID and kept me motivated to complete this journey.

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LIST OF ABBREVIATIONS

CBM	Curriculum Based Management
CLD	Culturally and Linguistically Diverse
DIBELS	Diagnostic Indicators of Basic Early
DRA	Developmental Reading Assessment
EAHC	Education for All Handicapped Children Act
IDEA	Individuals with Disability Education Act
PALS	Peer Assisted Learning Strategies
PSA	Problem Solving Approach
RTI	Response to Intervention
SLD	Specific Learning Disability
STP	Standards Based Protocol
USOE	United States Office of Education

ABSTRACT

The Efficacy of Response to Intervention on Academic Outcomes at the Secondary School Level in a New England School District

By

Kimberly Sanborn McGlinchey

University of New Hampshire, April, 2022

Educational policies and practices have had a long-standing emphasis of conducting incoming literacy screenings to determine who is at risk for school failure. Response to intervention (RTI) is an intervention program designed to deliver educational resources to students who fall below what is deemed an acceptable level of proficiency as viewed through the early screening process. The goal of the program is to provide early mitigation in order to catch students up to their peers, and to limit misidentification into special education. Studies have evaluated the success of the program in grades K-3 and shown mixed success. However, there was no evidence found with respect to the long-term academic outcomes for students who participated in the program. The overarching question in this study asks: what impact does Response to Intervention (RTI) have on the academic placement of students at the secondary level? Specifically, does RTI promote academic mobility or produce no or little effect on a student's academic placement at the secondary level? The study used a retrospective-longitudinal design to investigate the relationship between RTI participation in the primary grades and academic outcomes at the secondary level using the indicators of English track level placement, average track level placement, and weighted GPA. This quantitative study used

multiple regression analysis, logistic regression, and chi-square hypothesis testing to compare the student outcomes from three schools in the same district, two of which used RTI and one that did not. The results showed that RTI students had no significant difference in English track level placement, average track level placement, and weighted GPA compared to the non-RTI students; students in RTI who were from low SES families and in special education were more likely to be in lower-level tracks; and low-SES students were over placed in both groups, but more significantly in the non-RTI group. The study also addressed the overlap between race, poverty, and special education disproportion as viewed through the conceptual framework of eugenics, cultural capital, and deficit perspectives. The outcomes of this study provide necessary research as to the effectiveness of RTI in relationship to student academic outcomes at the secondary level; the association between early intervention and long-term academic success; and a glimpse at how lower-resourced communities may be affected by intervention. Recommendations are to conduct a larger and more comprehensive study at the national level; include cultural course work in teacher education programs that lead to culturally sustaining pedagogies; and conduct a comprehensive qualitative analysis of student perspectives.

Chapter 1: Introduction

Response to Intervention is best known as a multi-tiered reading intervention program that utilizes an intensive approach to monitoring student literacy achievement starting in first grade. The program has been described as a “progressive” and “scientifically” based process for assessing learning disabilities early with the hope of avoiding learning gaps later (Bender & Shores, 2007; Fuchs & Fuchs, 2006; Fuchs, Fuchs, & Compton, 2010; Valero-Kerrick, 2015). The traditional framework includes: 1) the use of at least three tiers of increasingly intense reading instruction; 2) administration of universal screenings¹; 3) data driven placement of students in increasingly intense reading instruction environments or tiers; and 4) use of progress monitoring to determine which tier would best serve a student (Bender & Shores, 2007; Brown & Doolittle, 2008; Chandler, 2014; Gartland & Stronsnider, 2020; Gettinger & Stoiber, 2012; Goodman & Webb, 2006; Hall-Mills, 2019; King & Coughlin, 2016; Preston, Wood, & Stecker, 2016; Stahl, 2016; Valero-Kerrick, 2015). This prescribed method of RTI emphasizes frequent assessments that use a scientific, data-driven basis to identify students who need more intense intervention strategies to remedy problems early to prevent misplacement into special education programs. However, it has been argued that the “scientific basis” and traditional assessment methods used for tier tracking are deeply rooted in a socio-historical belief in a particular type of knowledge being the standard for all academic representations. In turn, this fundamental position may separate students by culture, race, and socioeconomic differences early. This may lead to a disproportionate number of students from under-resourced populations headed for special education, learning disability (LD) labels, and lower academically tracked classrooms

¹ Jenkins, Hudson and Johnson (2007) define universal screenings as a first step in assessment focused on target skills that are highly predictive of reading outcomes and are a principal means of identifying those students at-risk for failure.

(Alim, et al., 2017; Artiles, Kozleski, Trent, Osher, & Ortiz, 2010; Baker, 2002; Brown & Doolittle, 2008; Chandler, 2014; Hartlep & Ellis, 2012; Hite & McGahey, 2015; Klinger & Edwards, 2006; Orosco & Klingner, 2010; Shell, Johnson, & Getch, 2019).

Brief History of RTI

The history of response to intervention and its use in the K-12 school system began with a goal of remedying disproportionality² within special education programs (Fuchs & Fuchs, 2006). An early article by Lloyd Dunn (1968) addresses the disproportionate representation of students in special education from “low status” backgrounds. In this foundational article Dunn reports “60-80% of the pupils taught in special education are children from low status backgrounds” (Dunn L. M., 1968, p. 6). This article is considered to be the launch pad for what continues to be the critical analysis of special education policies that have led to a disproportionate number of students from low income, non-White racial backgrounds, and English language learners being placed into special education programs. Dunn rationalized strong policy change by stating “a large portion of segregation and its view is obsolete and unjustifiable” and called for better policies that make special education placement more acceptable, with this pronouncement major reforms began to unfurl.

During the 1970s the classification process for special education was again noted to be complicated with numerous misplacements of students. Fuchs and Fuchs (2006) explain that due to the model, special education had led to a “widespread view that learning disabled is whatever parents and teachers want it to be” (p. 96). The placement model at that time utilized what is commonly known as the aptitude-achievement discrepancy (AAD) method of diagnosis,

² Disproportionality as defined by Artiles et. al. (2010) refers to the “extent to which membership in a given group affects the probability of being placed in a specific category” (Artiles, Kozleski, Trent, Osher, & Ortiz, 2010, p. 280; Cohrssen, Niklas, Logan, & Tayler, 2016).

or the “wait to fail model,” whereby student’s IQs were matched with their reading ability: if a student’s IQ was high, yet reading was low, they were eligible for services. On the other hand, if the scores were both low, they were not eligible. This created two problems: 1) there was over-placement and under-placement; and 2) identification was slowed and commonly not completed until third grade (Chandler, 2014; Fuchs & Fuchs, 2006; Garcia & Ortiz, 2008; Goodman & Webb, 2006; Hite & McGahey, 2015; Institute of Educational Sciences, 2020; Johnston, 2011; King & Coughlin, 2016; Preston, Wood, & Stecker, 2016; Willis, 2019). In addition, the program was maintained at the state level, which complicated the placement numbers per state (Bender & Cara, 2007; Hudson & McKenzie, 2016; Johnston, 2011).

Motivated to solve this problem, the Individuals with Disability in Education Act (IDEA) and the No Child Left Behind Act of 2002 initiated guidelines in literacy that utilized “scientifically based” instruction with highly qualified instructors. In 2004 the reauthorization of the IDEA took the program a step further by removing the policy of discrepancy for classification of learning disabled; permitting the utilization of assessment data to track a student’s response to scientific, researched based interventions; and increasing funding to classrooms³.

Now, nearly 20 years after RTI’s inclusion in federal policy, the question remains as to whether it is having the intended impact of assessing student literacy competency early on, providing interventions that support academic success, and properly identifying learning

³ A state must adopt, consistent with 34 CFR 300.309, criteria for determining whether a child has a specific learning disability as defined in 34 CFR 300.8(c)(10). In addition, the criteria adopted by the State: must not require the use of a severe discrepancy between intellectual ability and achievement for determining whether a child has a specific learning disability, as defined in 34 CFR 300.8(c)(10); must permit the use of a process based on the child’s response to scientific, research-based intervention; and may permit the use of other alternative research-based procedures for determining whether a child has a specific learning disability, as defined in 34 CFR 300.8(c)(10).

disabilities to prevent disproportion thus providing upward mobility for students who may have had other more deleterious outcomes without RTI. Or do similar patterns of misplacement and over-representation exist, leading to the longer-term outcomes of lower-leveled learning environments for students from under-resourced-backgrounds throughout their educational journey. Moreover, the question remains, what are the long-term outcomes for students placed into intervention tiers, again probing whether the program functions to promote upward mobility and access to higher level learning environments at the secondary level.

Dissertation Focus

This dissertation specifically focuses on the long-term outcomes of students who participated in a form of RTI in elementary school grades 1-3. It analyzes their academic outcomes as measured by their secondary track level placement and weighted GPA. These factors are compared to similar students from the same district who did not participate in RTI because their elementary school did not provide an RTI program. This study seeks to shed light on whether RTI has an impact on a student's academic mobility as measured by the academic indicators of track level placement and weighted GPA. Furthermore, it looks at the demographic variables of gender, race, and socioeconomic status as indicated by free and reduced lunch status, seeking to uncover if RTI is able to overcome over-representation of under-resourced communities in the program and in special education. In this way this study focuses on not just academic outcomes, but also explores how membership in a lower-resourced community affects the probability of being placed into RTI.

In addition, a small set of exploratory post hoc interviews with three RTI students were conducted in order to capture student perspective on their track level placement, why or how they chose the track they did, and in what ways the students' memories, perceptions, and core

beliefs about their educational standing connect to the intervention program and their current perceptions of their track level placement the results of this post hoc investigation are presented in Appendix B.

The outcomes of students who are placed into RTI are fundamental to understanding the program's function regardless of policy intent. Numerous studies have documented student progress at each tier and within each grade, but no studies in the search explored secondary school or college outcomes (Gersten, Newman-Gonchar, Haymond, & Dimino, 2017; Hite & McGahey, 2015; Wanzek, et al., 2016; Balu, et al., 2015; Otaiba, et al., 2014; Mellard, Frey, & Woods, 2012). Understanding these long-term outcomes is essential to a comprehensive assessment of the program and whether it helps students succeed instead of merely labeling and categorizing students early, which ultimately separates those from lower-resourced backgrounds into social and economic "tracks." The importance of this cannot be overlooked. The equity ramifications "include academic achievement gaps, higher high school dropout, discipline inequities, closer association with juvenile justice system, reduced access to college, limited participation in the job market, and civic engagement" (Bouton, McConnell, Barquero, Gilbert, & Compton, 2018, p. 327).

The Question of Functionalism

Functionalism is a term introduced by Collins (1971) to explain the role of schools in capitalist America. The term was used to explain that although schools speak of equality, they actually separate students into different groups with different economic outcomes in the marketplace. Collins goes on to argue that the methods to separate students are part of the assessment process. He clarifies that social reproduction theory affects a student's educational attainment because specific attributes of intelligences are "screened" through a cultural lens

within the assessments of literacy during the early years and lead to labels and separation from peer groups. Referred to as the “functionality of stratification” or functionalism, it is the idea that the cultural markers within a test do not assess skills or ability, but simply measure the ability to take a specific type of test. The tests are based on a specific cultural dominance, asserting that education yields skills and stages of development, symbols, and rituals that dominate through the legitimization of grades (Collins, 1971). Built in cultural biases built lead to a disproportionate number of students from lower-resourced communities being over-represented in intervention programs, special education, and lower tracked-classrooms (Artiles A. J., 2011; A. J., 2015; Artiles A. J., 2019; Artiles, Kozleski, Trent, Osher, & Ortiz, 2010; Artiles & Trent, 1994; Artiles; Bender & Shores, 2007; Goodman & Webb, 2006; Hartlep & Ellis, 2012; Schifter, Grindal, Schwartz, & Hehir, 2019; Skiba, Artiles, Kozleski, Losen, & G., 2015; Tileston, 2011). Sullivan, Artiles, and Hernandez-Saca (2015) contend that over-representation is a complex multidimensional problem. Underlying the educational system are factors, beliefs, and values that separate students early on due to sociocultural, socioeconomic, and sociohistorical influences that create disproportionality and social stratification. Presented in this dissertation as the chalkboard ceiling affect, these underlying beliefs keep certain groups in certain tracks starting in the primary grades that ultimately lead to economic differences in family income, thus creating social reproduction in the grander scheme. Explained in detail in the conceptual frameworks section of this dissertation, social reproduction and social stratification are key elements of understanding how groups of students are separated and labeled within the education process leading to social stratification in the greater society.

This study seeks to add to the knowledge base of the impact of RTI on this complex system and to identify its influence on student academic outcomes in the long run. In addition,

this study takes advantage of a unique study site where students at three elementary schools enter the same high school. Each school has a unique way of providing intervention. Two of the schools provide a problem-based methodology for RTI, and the other does not utilize a specific form of RTI (see Appendix A for comparison of the schools' intervention programs). In addition, the high school tracks students from an applied level through honors and AP levels which will be used to assess whether the student received upwardly mobile benefits from the earlier RTI programs.

In this introductory chapter, I provide general background information on the complexities of analyzing RTI's impact and RTI's historical connection to special education placement for culturally and linguistically diverse (CLD) youth⁴. This general background is used to set the stage for the research problem addressed in this study. To conclude the introduction, I provide the objective and problem statement; practical and theoretical significance; specific questions this study will address, and an outline of the dissertation chapters.

Response to Intervention What we Know and Don't Know

Numerous studies have been conducted over the past 20 years to determine the impact of RTI on a student's reading achievement. The studies have had mixed results, which has led to a question about how the program is actually working in context (Balu, et al., 2015; Fuchs & Fuchs, 2017; Gersten, Jayanthi, & Dimino, 2017; Gilbert, et al., 2013; King & Coughlin, 2016). As stated by Fuchs and Fuchs (2017), "So nearly two decades after RTI efforts began, we have no authoritative guidance about whether this complex, challenging, and, many would say, necessary

⁴ Defined by Liz Cramer (2015) a group of students encompassing of color, English language learners, and students living in poverty.

school reform is an effective means of improving students' academic outcomes" (p. 260). A national assessment of RTI has proven to be complicated in that the: 1) the original federal regulation left it up to the states as to how the program would be rolled out, therefore creating a range of different programs; 2) identifying how teachers and staff are implementing the program, what professional development they have, and how the data are being used; and 3) defining whether the standard or problem-solving protocols are having different impacts on reading outcomes. These key factors are referred to in the literature review as implementation fidelity. The implementation fidelity of RTI has been and continues to be one of the most discussed aspects of RTI's success or failure in the research (Alahmari, 2019; Engels, 2015; Hudson & McKenzie, 2016; Otaiba, et al., 2019; Ruffini, Miskell, Lindsay, McInerney, & Waite, 2016).

An additional concern is that the majority of studies on RTI use a quasi-experimental or controlled design featuring trained tutors or researchers in controlled environments, making researchers question the actual effect in a given classroom with teachers and staff who are not similarly trained (Balu, et al., 2015; Klinger & Edwards, 2006). Klinger and Edwards (2006) explain "there is a significant difference between laboratory or controlled studies and the world of practice" (p. 41). Moreover, there are questions about RTI's having the desired impact on students with low socioeconomic status, non-White populations, culturally and linguistically diverse youth (CLD), and English language learners (ELL) (Artiles A. J., 2015; Baker, 2002; Klinger & Edwards, 2006; Willis, 2019).

The Role of RTI with Students from Diverse Backgrounds

The promise of RTI from its earliest conception was to intervene to stop the overrepresentation of African Americans, low-income students, and English language learners in special education. However, the debate over whether it is functioning as such remains (Artiles,

Kozleski, Trent, Osher, & Ortiz, 2010; Finch, 2012). Finch (2012) concludes that “despite some recent high quality studies insufficient research currently exists to support full implementation with CLD youth” (p. 285). Reasons for RTI’s lack of success with CLD and low-income students rest on cultural misrepresentations and misunderstandings. RTI does not take into account mitigating factors that students face in school, including sociolinguistic and cultural diversity (Raben, Brogan, Dunham, & Bloomdahl, 2019). Furthermore, teachers’ limited exposure outside of the dominant culture and the non-neutral culture of the classroom add to misunderstandings (Orosco & Klingner, 2010; Rogoff, Dahl, & Callanan, 2018). These explanations support the notion that strategies such as RTI, screenings, and pre-referral cannot address the interconnected forces of disproportion (Sullivan, Artiles, & Hernandez-Saca, 2015). The discussion of what works and with whom has shifted to a focus on culturally responsive literacy instruction, knowledge of ELL, the incorporation of community practices that have not been valued by the schools, and abandoning the expectation that children must acculturate into the school’s culture (Klinger & Edwards, 2006).

Assessing how CLD and lower income students are placed into RTI and their outcomes is essential to understanding how the policy is functioning. As McQuat (2007) asks, is the program “serving the student or the school?” If it is serving the student, then academic mobility and access to opportunity should result. However, if it is serving the school, many students would be placed RTI tiers due to cultural misunderstandings, which ultimately may lead them into completely different outcomes than their non-diverse peers. This study will add to understanding the function of RTI by providing a look at where the students landed in secondary school, and the representation of students from lower-resourced communities that make up this student sample.

This dissertation expands upon and adds information to the complex topic of RTI's functionality in schools. Recognizing that the program has been implemented with varying methodologies with varying successes and that over-representation is an ongoing debate, long-term outcomes of students must be part of the discussion and problem solving.

Objective and Problem Statement

The purpose of this retrospective longitudinal study is to examine the long-term academic outcomes of students who were enrolled in Response to Intervention (RTI) during their elementary school years. Past RTI research in general focused on students' literacy scores and their improvements or lack of improvement in grades 1-3, but no studies were found which evaluated the long-term outcomes of students as related to secondary school success. This study will thus expand the research on Response to Intervention in relation to the outcomes of students later in their school lives. The study will connect early intervention programs to the end point of high school placement, seeking to understand the relationship between the two, as well as disproportional placement of under-resourced communities into the program.

Practical and Theoretical Significance

This dissertation expands upon the understanding of how a child's participation in the early intervention program of Response to Intervention influences their ultimate academic outcomes at the secondary level. The study used a retrospective longitudinal design to analyze data collected from students in their sophomore and freshman years of high school. These students had been placed into intervention in grades 1-3 in three different elementary schools within the same school district. The data will answer the question as to what impact Response to Intervention (RTI) has on the academic placement of students at the secondary level? Specifically does RTI serve to promote academic mobility or produce no or little effect on a student's academic placement at the

secondary level? This first aspect of the study sought to identify differences between students who were placed in RTI as compared to students from the same district who were not enrolled in RTI but had comparable scores in first grade that would have placed them in a RTI program if the school utilized one. The academic placement of students in English track level, average track level, and weighted GPA was used as an indicator of academic mobility. Secondly, it compares the track placement of RTI students with the general high school student body population track level placement in order to determine if RTI students have a higher probability of being in a lower tracked classroom than the general student population. Thirdly, the data analysis addresses the probability that a student from an under-resourced community-as indicated by gender, race, free and reduced lunch status, and special education placement-are represented in the RTI sample as compared to their representation in the non-RTI sample and elementary school's entire student body population.

Research Questions

Overarching Research Question: What impact does Response to Intervention (RTI) have on the academic placement of students at the secondary level? Specifically, does RTI promote academic mobility or produce no or little effect on a student's academic placement at the secondary level?

- **Research Question #1:** In what ways does the high school academic placement in English track level, average track level placement, and weighted GPA differ for students who were placed in RTI as compared to students from the same district who were not enrolled in RTI but had comparable benchmark literacy scores in grades 1-3 that would have placed them into a program if the school utilized one?

- **Research Question #2:** What is the impact of RTI participation on the probability that a student enters into a higher-level track at the secondary level? How, if at all, does the effect of RTI change when controlling for gender, race, free and reduced lunch status, and special education placement?
- **Research Question #3:** What is the probability that a student from an under-resourced community as indicated by race, free and reduced lunch status, and special education are represented in the sample of students?

The hypothesis for this study is that in an attempt to improve literacy through the highly structured intervention program of RTI, schools ultimately create an invisible pathway into lower academic experiences for students from differing racial and socioeconomic class backgrounds, leading to a negative effect on a student's academic trajectory, ultimately affecting their upward mobility into higher level classes at the secondary level.

The hypothesis is centered on two constructs: 1) students from under-resourced communities are more susceptible to being "marked" as learning disabled or in need of intervention due to cultural and socioeconomic differences, which ultimately leads to a disproportionate number of students from lower-resourced communities continuing into lower-level tracks in high school regardless of intervention; and 2) the reasons for this continued pattern are because of a perceived deficit within the child due to a long-standing sociohistorical and sociocultural context of what is deemed as important types of knowledge within society, curriculum, and school.

The analysis focused on whether the policy of RTI had the potential to provide upward mobility for this sample of students, or if RTI has little impact on upward mobility, therefore perhaps functioning as a continued method of stratification and social reproduction via a type of tracking that begins in the early years and leads to lower leveled classes at the secondary level.

Research on student literacy outcomes in the early years has shown mixed and non-conclusive results, while the lack of research on the long-term outcomes for students who have participated in RTI leaves us wondering if the program and policy leads to any substantial changes for students, specifically students from under-resourced communities. The study will utilize the three conceptual frameworks: eugenics as related to tracking and school policy; cultural capital and its ability to influence educators' perceptions; and deficit pedagogies that exist in our curricula and assessment analysis. The results will help us understand if RTI is able to assist students from under-resourced communities or if the program is ineffective in altering the system: thus, creating a chalkboard ceiling.

Dissertation Overview

In this chapter, I have provided the general background on Response to Intervention Policy; briefly reviewed the relevant literature focused on the impacts of RTI; and explained how the theory of functionalism in American schools is an essential theoretical component to the outcomes of students from lower-resourced communities, including their long-term economic success. In addition, the chalkboard ceiling effect is defined as a framework of the three sociocultural and sociohistorical conceptual frameworks of eugenics, social and cultural capital, and deficit perspectives that leads to a systemic barrier for students from under-resourced communities. I outlined the problem and rationale for examining the long-term effects of intervention, the purpose and significance of understanding these effects, and presented my research questions.

In Chapter 2, I review the relevant literature on Response to Intervention and the conceptual frameworks that are theorized to be at work behind the scenes to contribute to limited upward mobility. The review is divided into three integral parts: 1) overview of Response to

Intervention history, methods used, empirical findings, and critiques; 2) the relevant national data on the disproportional outcomes for students from under-resourced communities; 3) the theoretical trilogy, which includes the conceptual frameworks of (a) eugenics, tracking, and the sociohistorical context of disproportionality; (b) cultural capital and the sociocultural influence it has on disproportionate outcomes within the American educational system; and (c) deficit perspectives as related to culturally relevant and sustaining pedagogies. Chapter 2 concludes with a review of the current works of scholars invested in new age ways of approaching cultural diversity in the classroom.

In Chapter 3, I present the setting, datasets, sample, and methodology employed in this study. I provide a detailed blueprint of the data collection process, study site, and student sample.

In Chapter 4, I address the three research questions through a thorough statistical analysis of all variables.

In Chapter 5, I conclude the study with a discussion on the findings and how they relate to the research and conceptual frameworks. Each of the quantitative findings are presented and discussed in relationship to the literature review and past findings. In addition, post hoc interviews of three RTI students are presented as an exploratory investigation and integrated into the discussion as part of the conceptual frameworks. This was done as an additional interest and for reflection on how the students reflected upon their experiences. In addition, the implications, limitations, and recommendations for further study and policy are discussed.

Chapter 2: Literature Review

The purpose of this study is to understand the outcomes of students at the secondary level who were placed into Response to Intervention (RTI) in elementary school and ability to have an academic benefit. The complexity and uncertainty of the intervention program has led many scholars to wonder if RTI is having the positive impact it was intended to have on literacy improvement; recognizing true learning disabilities as compared to cultural differences; and addressing the problems of disproportional representation. Moreover, it has been theorized that the issue of over-identification of students from under-resourced communities is connect to systemic sociocultural and sociohistorical belief factors related to literacy. These belief differences have the potential to support a misrepresentation and subsequent misclassification of under-resourced students into tiers, ultimately placing them on a different academic pathway than their peers. This presents the possibility of disproportional representation of culturally diverse and economically under-resourced youth being placed into RTI, subsequential learning disability categories, or lower-level learning environments as they move through the K-12 educational system. Recognizing that the original intention of RTI was to address this problem, the educational community must review the success of the program at the intervention level and in relationship to the long-term academic outcomes of the students.

This chapter will provide a detailed review of the historical context of Response to Intervention as a national framework for limiting over-placement into special education; explain the differing protocols as related to how the interventions are done; and the discuss the most pertinent implementation fidelity issues. It will then turn to a consideration of the current data on disproportional outcomes for culturally and linguistically diverse (CLD) youth and the

important empirical findings on RTI outcomes. To complete this section, the implications of the findings will be presented.

To conclude the literature review, I will address the three conceptual frameworks that overlap within our educational systems and have the potential to create socioeconomic and cultural boundaries within public school policy such as RTI: 1) the historical pseudo-scientific belief in a comparative “normal” standard as expressed by eugenics; the corresponding educational structures that have resulted; and the ideological constructs that are still embedded within the current educational system; 2) the theory of cultural capital and its influence on a class-based “natural” segregation of students in relationship to perceived ability due to class constructs; and 3) the cultural deficits perspective that permeate class and race assumptions in relationship to literacy development. It is theorized within this dissertation that these three conceptual frameworks do not work in singularity, but are overlapping and reinforcing of each other, with the ultimate outcomes of social stratification within schools and ultimately in society, thus creating the chalkboard ceiling effect.

Origin of Response to Intervention as a National Framework

The origin of Response to Intervention as a national framework is historically tied to the evolution of special education law and policy which has its beginnings in 1965; the complexity of learning disability diagnosis; and problems of misidentification and disproportional representation of CLD youth in special education. These three factors served to promote a program that was based on curriculum-based management⁵, with the hopes of overcoming student literacy inadequacies, through intervention techniques and scientific methods.

⁵ Curriculum based measurement are short answer assessments that include content or important skills sampled across curricular year, representing long-term goals. Data are analyzed in order to evaluate student progress and to modify instruction (Preston, Wood, & Stecker, 2016).

Prior to any national policy on special education, children considered to be handicapped or having perceived learning disabilities were denied access to public education and placed in private institutions or completely left out of an educational setting. Public outcry for education inclusion, spurred on by civil rights legislation including *Brown v. Board of Education of Topeka*⁶ (1954), and other landmark court decisions such as *Mills v. Board of Education of the District of Columbia*⁷ (1972), prompted a national response to fund schools, provide teacher training, and support students with disabilities and in poverty (U.S. Department of Education , 2020). Henceforth, a series of legislative programs unfolded, most significantly the Elementary and Secondary Education Act (ESEA) of 1965. The ESEA served two purposes: (1) it created funding for public schools in order to close gaps; and (2) it placed an emphasis on equal access to education for all students. A decade later in 1975 the landmark passing of the Education for All Handicapped Children Act, Public Law 94-142 (EAHC) was signed into law by President Gerald Ford, furthering the goal of inclusive education for all children (Johnston, 2011; Preston, Wood, & Stecker, 2016; Tileston, 2011). The EAHC was driven by the need to provide all students with equal access to education regardless of disability. The four purposes of the EAHC were: assure that all children with disabilities have available to them a free appropriate public education; to assure that the rights of children with disabilities and their parents are protected; to assist states and localities to provide for the education of all children with disabilities; and to assess and assure the effectiveness of efforts to educate all children with disabilities (Johnston, 2011; Preston, Wood, & Stecker, 2016; Tileston, 2011). In 1990 the program again expanded to

⁶ *Brown v. Board of Education of Topeka* ruled it was unconstitutional for educational institutions to segregate children by race (History of *Brown v. Board of Education* Re-enactment, n.d.).

⁷ *Mills v. Board of Education* established the responsibilities of states and localities to educate students with disabilities.

include multiple age groups and was renamed the Individuals with Disability Act (IDEA), public Law 102-119 (U.S. Department of Education , 2020). Each of these legislative milestones had the goal of ensuring all students have access to public education. However, the issue of over-identification and misplacement of students continued to be a major problem of concern (Hartlep & Ellis, 2012).

The problem at this point was reasoned to be influenced by states administering the policy differently leading to multiple different applications of the law and the use of the academic discrepancy model⁸ as a method for special education identification, leading to over-and-under placement (Dunn, 2017; Garcia & Ortiz, 2008; Sullivan, Artiles, & Hernandez-Saca, 2015). These two problems were believed to be responsible for reinforcing a high level of misidentified students and disproportional placement of students from low income and CLD communities (Cramer, 2015; Willis, 2019).

Underlying the entire special education structure was the fundamental debate of how to “diagnose” students for special education placement. This issue had emerged early in the 1960s, stimulated by the civil rights movement and the war on poverty. Lloyd Dunn’s original article in 1968 brought forward the problem of misplacement and over-representation, and over decades the data continued to show misplacement and over-representation of students from under-resourced communities (Abou-Rjaily & Stoddard, 2017; Garcia & Ortiz, 2008; Willis, Race, Response to Intervention, and Reading Research, 2019). One recognized conclusion from the

⁸ U.S. Department of Education issued regulations for P.L. 94-142, that mandated that states require a severe discrepancy approach to determine eligibility for special education for students suspected of having SLD in 1977. The federal regulation does not dictate a specific procedure for the severe discrepancy, but this approach generally means that an evaluator administers both an IQ test and standardized achievement measures and compares the child’s achievement in skills such as reading and math to their IQ score. Every state set its own criteria and specific procedure for severe discrepancy, using a calculation that often-included test scores, student age, and other criteria, and determined a threshold for discrepancy that would determine whether or not a child would be eligible for special education services. (Whittaker & Burns, 2019).

data was that the academic achievement discrepancy model was not providing the appropriate criteria for identification.

In addition to misplacement due to the academic discrepancy model, there was the problem of defining “learning disabled” and a 20-year historical debate known as the “learning-disabled controversy” that occurred 1980-2000. The term “learning disabled,” created by Samuel Kirk in the 1960s, had addressed disabilities related to reading and literacy deficiencies (Bender & Cara, 2007; Gresham, 2002; Preston, Wood, & Stecker, 2016). Starting in 1963 the term “specific learning disability” (SLD) became a way to classify students who had low reading ability, but not necessarily low intelligence as predicted by the IQ test. In 1977 the term learning disabled was defined by the United States Office of Education (USOE) and is still used today.⁹

The categories of learning disability, however, have posed controversial problems. Ysseldyke, Algozzine, & Epps, (1983) found 17 operationalized definitions to qualify for the LD diagnosis. The study also found that using the varied LD definitions, 85% of the 248 students qualified. Researchers began to question if IQ testing and consequential placement were valid means of labeling students as LD. A call was made to discontinue its use, and a new model emerged from the field based on a curriculum-based model.

⁹ Learning disabled as defined by U.S. Department of Education, Individuals with Disability Act Sec. 300.8 (c) (10) (i) specific learning disability means a disorder in one or more of the basic psychological process involved in understanding or using language , spoken or written, that may manifest itself in the imperfect ability to read, write, spell, or to do mathematical calculations, including conditions such as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. (ii) Disorders not included. Specific learning disability does not include learning problems that are primarily the result of visual, hearing, or motor disabilities, of intellectual disability, of emotional disturbance, or of environmental, cultural, or economic disadvantage. Last modified on May 25, 2018

The Emergence of Response to Intervention as a Disability Diagnostic Tool

The use of Response to Intervention as a valid option for learning disabled diagnosis surfaced from the academic community through a curriculum-based assessment measurement model (CBM) in 2001 by Frank Gresham. Gresham called for a change in LD placement criteria due to the over-placement of students into learning disabled categories and numerous false positives, showing data that indicated up to a 283% increase in LD classification between 1976 and 1997. Gresham hoped to introduce a model that would make up for the “school’s failings” to properly identify true learning disabilities as opposed to low achievement (Gresham, 2002). The response to treatment or intervention model of that time had three common features: 1) assessment is linked to the student’s curriculum; 2) the student’s success is evaluated to determine instructional intervention success; and 3) information from the assessments is tailored to the learning needs of the student (Dombrowski, Kamphaus, & Reynolds, 2004).

Prompted by the misplacement data, the President’s Commission on Excellence in Special Education was formed in 2001 with the mission of providing suggestions for the IDEA improvement. In order to address problems associated with special education placement, the IDEA was reauthorized in 2004. With passage of this Act, Response to Intervention became a viable and publicly supported program to remedy the disproportion problem. Thus, through the reauthorization of the Individuals with Disabilities in Education Act (IDEA) of 2004, RTI became an authorized methodology for states to use as an assessment method for determining learning disabilities as it was considered to be an appropriate program to fit the scientific methodology for assessment and intervention (Artiles, Aydin, & Thorius, 2010; Finch, 2012; Fuchs & Compton, 2010; Fuchs & Fuchs, 2017; Maag & Katsiyannis, 2008; Maier, et al., 2016; Preston, Wood, & Stecker, 2016; Tileston, 2011; Valero-Kerrick, 2015).

In summation, the new requirements of the IDEA 2004 were: local educational agencies would not be required to use the discrepancy model; student's response to scientific data-based decision making should be included; and schools may include the use of other alternative research-based procedure for determining a specific learning disability (Gartland & Stronsnider, 2020). Perceived as a preventative model, grounded in special education law as legal alternative to identify students at risk; RTI is considered to be "a general education preventative model aimed at improving performance of students at risk for poor academic outcomes and provide early intervention prior to the onset" (Gilbert, et al., 2013, p. 135).

Controversy has surrounded the use of RTI and more specifically the intense use of literacy as a flagship for identifying LD categories. It is argued that although RTI was developed to remedy disproportional representation in special education, the use of literacy as the key factor causes over-identification of CLD youth. Willis (2019) explains that literacy negatively affect students who use African American dialect or other languages as part of their culture. These students are impacted by the assessments that are structured around the cognitive skills of fluency, phonemic awareness, vocabulary, and comprehension. Specifically, phonemic emphasis has come into question. Cramer (2015) references the original studies supporting RTI as a national framework did not include ethnicity and to date RTI has not been studied as a culturally responsive program. This is a significant problem. As quoted by Caraballo (2017) "the assumption that literacy is a collection of measurable skills leaves unexamined the idea that literacy is a cultural practice" (p. 596).

Now, nearly 20 years after the introduction of RTI and a continued research-based assessment of the program, RTI has been criticized for its inability to produce the promised literacy improvement results (Balu, et al., 2015; Stahl, 2016; Willis, Race, Response to

Intervention, and Reading Research, 2019), and for its tendency to disproportionately place students from under-resourced communities into the learning-disabled categories (Abou-Rjaily & Stoddard, 2017; Artiles, Kozleski, Trent, Osher, & Ortiz, 2010; Artiles, 2011; Artiles, 2019; Hartlep & Ellis, 2012; Sullivan, Artiles, & Hernandez-Saca, 2015; Tileston, 2011; Willis, 2019). These criticisms are based on two main constructs: (1) RTI implementation fidelity; and (2) misinterpretations of culturally and linguistically diverse youth's abilities due to the literacy standards. Before addressing these concerns, I will first give a detailed description of the general RTI model, the two primary protocols utilized in schools, and variations of these protocols.

RTI as a Curriculum Based Measurement Program and Multitiered System of Support

General Overview of RTI Design

Response to Intervention has its roots in curriculum-based measurement and the use of scientific, data-driven information to identify learning disabilities using a four-phase eligibility assessment. It was included in the Reauthorization of IDEA (2004) to detect weaknesses early in order to avoid academic problems later (Hite & McGahey, 2015). Fuchs and Fuchs (1998) are given credit for the first suggestion of what the program would look like. In their 1998 article, Treatment validity: A unifying concept for reconceptualizing the identification of learning disabilities, the authors identify a “medical model” whereby students would first have interventions within the regular classroom setting through maximized instruction, collection of assessment information, and the reserve of judgment until classroom interventions had been utilized effectively. In addition, a pivotal study done by Vellutino, et al., (1996) showed improved reading ability and significant growth after a semester of daily tutoring in phonics in 67% of students. This study emphasized the outcomes that resulted from intensive tutoring on specific skills such as phonetic decoding, suggesting that early intervention had the potential to

solve the identification problem by providing timely and accurately placed intervention strategies (Preston, Wood, & Stecker, 2016).

The contemporary requirements of RTI are that it needs to be curriculum driven, utilize data-driven assessments, and include instruction from a highly qualified teacher. In addition, the program recommends: (1) a three-tiered system of intervention (although some recommend variations); (2) universal screenings at least twice a year; (3) data-driven placement of students into increasingly intense tiers of reading instruction; and (4) use of intermittent and frequent fluency assessments (Bender & Shores, 2007; Preston, Wood, & Stecker, 2016; Gilbert, et al., 2013; Brown & Doolittle, 2008; Fuchs & Fuchs, 2006). Bender and Shores (2007) define RTI as a process of implementing high quality, scientifically validated instructional practices based on learner needs, while monitoring students' progress, while at the same time adjusting instruction based on student response and failure to respond to effective instruction. In summation, RTI is a preventative model with intended to catch students before they fail. The ultimate goal is to improve a student's outcomes and to have a successful academic experience as they move through the K-12 system.

An additional piece to the IDEA reauthorization legislation was to allow schools to use 15% of special education funding for in-classroom programs utilized in RTI (Valero-Kerrick, 2015). These changes catapulted into the classroom the development of early literacy assessment programs such as the Diagnostic Indicators of Basic Early Literacy Skills (DIBELS), Developmental Reading Assessment (DRA), and Peer Assisted Learning Strategies (PALS). Each of these intervention assessments is focused on a very specific type of recall and word recognition for students and represent a skill-based literacy assessment. The five cognitive skills of literacy within the assessments and interventions are phonemic awareness, phonics, fluency,

vocabulary, and comprehension. Each of these skills is assessed and the data is used to apply the proper intervention strategy. In the next section, the use of CBM and the associated assessments will be discussed.

Curriculum-based measurement is an integral component to all response to intervention programs. Based on small assessments that are frequently administered and utilized for the decision-making process, CBM is thought to improve the ability to identify students who are truly learning disabled as opposed to a student who may just need extra help to catch up via frequent assessments and data collection points and a curriculum-based response to the individual student (Raben, Brogan, Dunham, & Bloomdahl, 2019). These data collection points are utilized to create intervention tutoring that focuses on student needs by monitoring progress and informing what steps come next (Gartland & Stronsnider, 2020). The initial bench-mark assessment is done within the classroom as part of universal screening, and from there an intervention plan is developed. The intensity and frequency of assessments increase at each tier of intervention to try to gather more data points to lead to targeted interventions.

Closely allied to the CBM component of RTI is the use of universal screenings and multiple data assessment points. This enters students into a multi-tiered system of support, typically a 2–4-tiered hierarchy of intensity of intervention, with 3 tiers being the most common (Valero-Kerrick, 2015) and 4 tiered being recommended by some (Klinger & Edwards, 2006). The MTSS is designed to increasingly provide more intensive support to the student, while documenting progress on specific skills, with the goals of catching them up with their peers. There are on-going progress monitoring systems within each tier intended to determine a student's movements from tier to tier (Institute of Educational Sciences, 2020; Otaiba, 2014). Based on the initial screenings, students are placed into the intervention tiers that progressively

increase the intensity of instruction, setting, and rates of assessment and data point collection (Fuchs and Fuchs, 2010; Fuchs and Fuchs, 2017; Hudson & McKenzie, 2016; Sharp, Sanders, Noltemeyer, Hoffman, & Boone, 2016). Table 2.1 presents a general overview of the tier structure for a general model. Otaiba and colleagues have proposed a newer version of RTI in which students progress to tier 2 and tier 3 without having tier one intervention. The rationale is that students cannot “wait to fail” in tier 1, but should progress immediately to higher levels of intervention. This model has been referred to as the upside-down model (Bouton, McConnell, Barquero, Gilbert, & Compton, 2018) or the dynamic model (Otaiba, et al., 2014).

Importance of Benchmarks, Assessments, and Aimslines

The process of “screening” a child and the corresponding use of bench-marks and aimslines is at the heart of the RTI protocols. These assessments must inform language and literacy instruction, tier placements, and intervention strategies (Wixson & Valencia, 2011). Universal screenings are done within the first few days of school in order to gain a baseline for where a student is in relationship to grade level expectations and their peers. They are used to identify “at risk” students and typically utilize a standardized norm-referenced test, such as the DRA or DIBELS, to gain access to their standing on phonics, phonological awareness, fluency, vocabulary, and comprehension. The universal screenings are used as a scientifically-based method as required by the IDEA in order to collect data that is perceived as reliable and valid (Sullivan, Artiles, & Hernandez-Saca, 2015).

Universal screenings are a critical prerequisite to provide early school-based prevention and intervention, and therefore are a key part of the RTI intervention program (Catts, Petscher, Schatschneider, Bridges, & Mendoza, 2009; Glover & Albers, 2007; Klingbeil, McComas, Burns, & Helman, 2015). Conversely, the use of universal screenings have been questioned about their

predictive validity, especially in relationship to CLD, ELL, and low SES students (Orosco & Klingner, 2010; Willis, 2019; Wixson & Valencia, 2011). Most specifically there are questions related to the number of false positives and false negatives that the screenings may produce, whether it measures what it is supposed to, and how accurate the results are (Glover & Albers, 2007). The impacts of false positives are that resources are being used unnecessarily and that the students are being placed into inappropriate tiers which may limit their access to more advanced material. The impact of false negatives is that children who need resources are not actually accessing them.

Catts, Petscher, Schatschneider, Bridges, & Mendoza, (2009) explain that despite the advancement in screening measures, they have shown limited predictive value. In their floor effects¹⁰ study, the authors looked at 18,667 children's reading scores from kindergarten through second grade, seeking to identify the floor effects from five measures: initial sound fluency; letter naming fluency; phoneme segmentation fluency; nonsense word fluency; and oral reading fluency. Each of these measures is part of the DIBEL assessment. The findings were that for all measures, there were high levels of floor effects, but over time the scores represented a more normal distribution. Implications from this study are that students are assessed too early, and according to Catts et. al., "the schedule was less than optimal, each of the DIBEL measures was done on a schedule that resulted in high floor effects," (pg. 11). In other words the study suggest that the intial assessment is done before a child has time to access and understand the factors of literacy. This finding is important in regard to tier placement in RTI, and for the sometimes consequential special education identification

¹⁰ Floor effects are the impact of low scores due to an early screening and false identification of reading disability.

Also in question is the determination of tier placement and special education identification through the use of the assessments in the dual discrepancy model in conjunction with RTI. The dual discrepancy model uses a student's assessment scores to determine if they fall below grade level according to the national data and if the students are also below their peers. This dual discrepancy can lead to students being placed with false positives due to the test schedule as suggested by Catts et al., (2009). The discrepancy model is used to determine if there is pattern of strength and weakness. However, because it is applied across the board to students from all backgrounds at the same time, the model cannot identify true learning disability as compared to a student who has not been exposed to the literacy skills within the test (Beaujean, Benson, McGill, & Dombrowski, 2018). According to the IDEA (34 CFR. § 300.309), "the child exhibits a pattern of strengths and weaknesses in performance, achievement, or both, relative to age, state-approved grade-level standards, or intellectual development, which is determined by the group to be relevant to the identification of a specific learning disability, using appropriate assessments, consistent with § 300.304 and 300.305 (34 CFR. §300.309.a.2.ii). Beaujean et al. (2018) "found no evidence to link the use of the dual discrepancy model with any increase in diagnostic precision or developing / implementing viable positive educational outcomes," (p. 18).

The assessments have a built-in assumption that they can determine placement due to a score that is translated into above-or-below grade level. The underlying assumption is that the benchmarks are predictive of a student's ability, but not necessarily their level of knowledge as they enter school. This creates a divergence between intervention resources and student needs (Beaujean, Benson, McGill, & Dombrowski, 2018; Catts, Petscher, Schatschneider, Bridges, & Mendoza, 2009). Benchmarks thus play an integral role in misplacement and over-placement.

Aimslines are used to project performance and student progress during the varying tiers of intervention. Criteria are set as to what a child is expected to do as they receive intervention. When the aimslines are not met, more intense intervention is designed (King & Coughlin, 2016). An essential problem with utilizing daily, weekly, or even monthly data and aims lines is that there is an assumption of linear growth which does not supported by the literature. Van Norman (2021) demonstrated that not accounting for non-linear growth when using a CBM of reading in Grade 3 students who receive reading intervention, and that using a goal line based on expected linear growth as compared to a non-linear led to suboptimal outcomes for the data points, leading to inaccurate evaluations. Engles (2015) clarifies two assumptions that are built into RTI. One, frequent data collection is necessary; and two, student progress is linear and consistent. Utilizing the frequent assessments of RTI and aims lines to assess growth may thus work counterintuitively due to the assumptions of linear growth built into RTI progress. Van Norman suggests that when reviewing growth, one should look at a fall and spring measurement, or perhaps a fall, winter, spring assessment for determining growth, as compared to drawing conclusions on formative weekly data set at eight-week intervals. Relying on frequent assessments as indicators could lead to misplacements due to the expectation of linear growth (Engels, 2015). None the less, assessments and “science-based” data collection are essential components of the model, used to drive placement and required as part of the documentation.

General Identification Procedure

All students participate in the universal screening. Students who demonstrate a lower level of achievement, typically indicated by not making the “at grade level” benchmark score, are flagged for intervention as part of the tier 1 program. This is typically represented by a benchmark score falling below 80% of the class (Valero-Kerrick, 2015). The tier 1 program is

considered to be the “primary prevention model” where universal screening is used to determine proficiency levels and identify students at risk for reading and reduce the number of new cases by ensuring all students are exposed to high quality instruction within the classroom (Gilbert, et al., 2013; Valero-Kerrick, 2015) Tier 1 instruction is conducted within the classroom and based on high quality instruction by highly qualified teachers. In this setting teachers are the main source of intervention who develop tools or use pre-scripted tools, such as scores from the Developmental Reading Assessment (DRA), Diagnostic Indicators of Basic Early Literacy Skills (DIBELS), and Peer Assisted Learning Strategies (PALS) that assist a student in the five cognitive skills. Teachers administer assessments at least three times per year in tier 1 in order to gauge a student’s progress.

Inadequate progress in tier 1 leads to a more intensive tier 2 instructional level. This may be outside of the classroom in a remote location or within the classroom, supplementing the core reading program. In this intervention setting, students who are in need of intervention work either in small groups or individually with the classroom teacher or reading specialist. Progress monitoring is increased to an assessment schedule ranging from monthly to biweekly. The ultimate goal of tier 2 is to strengthen a student’s literacy skills so that they may return to tier 1 (Bender & Shores, 2007; Fuchs & Fuchs, 2017; Sharp, Sanders, Noltemeyer, Hoffman, & Boone, 2016). The tier 2 instructional framework may also place a student into more intensive intervention strategies, moving up to tier 3 if the identified goal has not been reached. In tier 2, additional time will be spent on skills and fluency up to 90 minutes a day for three days per week. At this point the special education team may be called in to evaluate. If tier 2 does not improve a student’s literacy, they move up to tier 3, where they may ultimately be labeled as learning disabled (Bender & Cara, 2007).

Tier 3 instruction is the most intensive intervention tier, utilizing highly intensive individualized instruction with a reading specialist in a one-to-one setting. Typically described as the final intervention level (although Klingner and Edwards (2006) have suggested a 4th tier for special education placement), tier 3 intensifies instruction, and increases the frequency of instruction to up to one time per day for 90 minutes per day. Tier 3 is considered to be where the “placement into special education” or LD label may be imposed (Fuchs, Fuchs, & Compton, 2010).

Table 2.1 Overview of Tiers of Intervention

Tier	Expected Response Rate at Each Tier	Frequency of Assessment Monitoring	Setting
1	80%	Universal Screening administered 3 times per year	General student population
2	15%	Monthly or weekly	Small group setting plus core classroom curriculum
3	5%	At least 3 times per week or daily	Individualized plus core classroom curriculum

Protocol Overview

Response to intervention has evolved into several protocols for dispensing reading intervention. The two most common protocols are the Standard Treatment Protocol (STP) and the Problem-solving Approach (PSA). In general, all RTI models prescribe the use of evidence-based intervention, whereby evidence refers to the “use of scientific, empirically based intervention directed at students who are at risk for learning problems based on universal screenings” (Valero-Kerrick, 2015, p. 90). Other models that have been introduced are the Upside-Down model (Bouton, McConnell, Barquero, Gilbert, & Compton, 2018) and a dynamic model suggested by Otaiba and colleagues. The fundamental differences between STP and PSA are that the PSA has greater flexibility in instruction, timing and content; has an individualized

focus; and relies on the expertise of the instructor working in teams and making decisions as to assessment and instruction. The STP is standardized with prescribed and sometimes scripted areas of focus on particular outcomes as related to phonemic awareness, phonics, fluency, vocabulary, and comprehension (Fuchs & Fuchs, 2006). The STP model has been more widely used in educational research as it has explicit protocols for targeted learning. These protocols create the potential for use in experimentally controlled settings, as researchers are more able to attribute the outcomes to a particular type of instruction. STP is said to be favored by most RTI researchers, but it is the program that most reflects a drill and assess model and according to research the least apt to be used in schools (Bender & Shores, 2007).

The Standard Treatment Protocol

The standard protocol of intervention is more closely aligned with a scope and sequence model or curriculum-based measurement. The STP follows a well-described set of steps that rely on assessments; data collection points; analysis using benchmarks and aims lines, targeted interventions that are typically scripted; and an assessment of the student's progress. The assessments are focused on the specific skills of phonemic awareness, phonics, fluency, vocabulary, and comprehension (King & Coughlin, 2016; Valero-Kerrick, 2015).

The methodology used in the standard treatment protocol is based on the ability of teachers to provide highly qualified instruction and be able to collect and analyze the data effectively. The data from the intervention is used to assess if the student is meeting specific benchmarks in each category. It is therefore important that teachers are trained and provided the resources necessary to carry out the intensive intervention. In this method, prescribed and scripted programs are utilized in order to directly attribute student outcomes to types of instruction and to create efficiency in catching the student's weakness (King & Coughlin, 2016;

Gilbert, et al., 2013). As described by King and Coughlin (2016), the STP is akin to medical teams in that “school-based teams are expected to identify the problem, hypothesize a reason for the problem, select a treatment protocol to solve, and monitor progress of the patient to ensure they’re getting better” (p. 249). Fuchs and Fuchs (2006) note that it has the highest level of fidelity because it has a very specific model and can directly link instruction to outcomes.

Specific to STP, the RTI model includes a timetable of intervention. Table 2.2 explains the varying levels of interventions at each tier for the standard protocol. The dose of intervention can vary from one to two times per week for up to 90 minutes per day in some schools. The goal of these intensive measurement systems is to use “data driven” points to look for progress. If there is no improvement, then it is recommended to proceed with a greater dosage and a higher tier of intervention (Johnston, 2011). King and Coughlin state that the program provides a skill-based specific intervention, and this could be perceived as easier to administer. But it is also based on the intervention’s effectiveness and how the teacher might adapt to meet the student, which leads to straying from the strategy. In other words, as teachers utilize the prescribed curricula, they may intuitively make changes and therefore alter the STP. This has been a confounding issue in RTI research and anomalies have been found when “real-life” studies are done as compared to studies by research teams who are specifically trained for RTI standard protocols (Balu, et al., 2015).

STP tiers are closely aligned with the general protocols reviewed earlier but include a more intensive and specific timeline. For example, in tier 1, students are in the classroom working on specific skills, but as they progress to tier 2, the requirement is very specific that they are provided small group instruction with students working on similar cognitive skills with a frequency of three to five times per week for 20-30 minutes, with an assessment of these targeted

skills at least two to three times per week for a cycle of eight weeks (Fuchs & Fuchs, 2007; Valero-Kerrick, 2015).

Students who do not respond well to tier 2 are transferred to tier 3 where the use of data is applied to the specific individual in hopes of discerning if it is a skill-based problem, or a true specific learning disability. However, at this point the non-responsive student is viewed as a most likely candidate for special education. Tier 3 instruction is predominately with a reading specialist or special education teacher who provides explicit and systematic instruction. A failure to respond at this level signals that the targeted instruction is not to blame for the continued failure of the child to meet benchmarks. The cause is most likely a learning disability (Bender & Shores, 2007; Gilbert, et al., 2013; Valero-Kerrick, 2015).

Table 2.2 Standard Protocol for RTI (Bender & Shores, 2007)

Intervention	Tier 1	Tier 2	Tier 3
Location	In the classroom	In or outside the classroom	Outside the classroom
Implementation	Classroom Teacher-student must place in bottom 20%	Small group (2-3 children) instruction-consult with school psychologist and special education teachers.	Consideration for placement in special education. One to one instruction
Assessment intervals/ progress monitoring intervals	At least once per week	Daily progress monitoring, intervention 3-5 times per week; assessments 2-3 times per week	Target instructionally specific areas.
Notification of parent	Not necessary	Notification of parents	Yes, and may become part of team
Data points for referral	At least 6 data points	20 data points	As determined by placement
Instructional time frames	Weekly	30-45 minutes daily	As determined by placement.

The Problem-Solving Approach

The problem-solving approach is driven by a different methodology than the standards-based protocol, although both share a tiered model of intervention and utilize assessment data. The problem-solving model is an individualized approach that looks at all aspects of a student's ability before creating an intervention plan. It has been described as individualized and personalized as compared to the scripted and standardized approach (Valero-Kerrick, 2015). It and contains a flexibility of instruction, decision making, and student assessments (Orosco & Klingner, 2010). Within this less formal protocol students are initially assessed in relationship to peers' scores in a common assessment such as the DRA. A team approach is then used to assess the student's aptitude. The use of the DPIE cycle is next. The DPIE cycle follows a pattern of defining a problem, planning an intervention, implementing the intervention, and evaluating the student's progress (Bender & Shores, 2007; Valero-Kerrick, 2015). The problem-solving protocol must include the collection of data and monitoring of students' progress. Similar to the standard protocol, at least six data points administered at least once a week are necessary to draw a conclusion in regard to tier placement.

The problem-solving individualized interventions that drive the analysis of instruction are team-oriented that include multiple stakeholders in the process. Teams of teachers, aides, and interventionists use problem-solving techniques that the team selects after reviewing benchmark assessments. Each of these techniques is designed to serve the individual student's needs, as compared to the skills approach used in STP. In this model, teachers collaborate to design, select, and adapt supplemental interventions that more address specific needs instead of particular curricular programs. This includes flexibility of instructional timing and content, individualized instruction, and reliance on the individual teacher or interventionist making

decisions about assessment and instruction (Alahmari, 2019; King & Coughlin, 2016; Orosco & Klingner, 2010). Tiered intervention in the PSA is utilized in a very similar manner to the general protocols in that tier 1 is situated within the general classroom, tier 2 is done with small groups and outside of the classroom, and tier 3 is utilized for specific individualized instruction with the hope of discerning if the problem is connected to a lack of skill or to a specific learning disability.

As mentioned earlier, each method has its own pros and cons. For the PSA to be implemented effectively, it “requires a teacher to have broad-based understanding of student skill need, mastery of instructional decision making, use of evidence, deep and critical analysis, and appraisal of the effect of pedagogy on performance” (King & Coughlin, 2016, p. 246). The interventions must be modified in order to make them unique for the individual student (Fuchs & Fuchs, 2006). Researchers have doubted the ability of teachers to develop the necessary high-quality instruction and to adhere to implementation fidelity of the PSA. They state that the standard protocols allow for a more specific method to intervene and provide a more “scientific” and empirical model for deciphering learning disability as compared to simply a lack of exposure to certain skills, therefore allowing decisions to be based specifically on instruction for a specific skill such as phonics (Orosco & Klingner, 2010). However, teachers feel more closely connected to the PSA model, preferring not to place students into skills-based groups, using scripted lessons, with lack of support for data (King & Coughlin, 2016). In terms of outcomes, neither program has been proven more effective for student outcomes (Valero-Kerrick, 2015).

The STP is also attractive due to ease of professional development that is focused on specific skill development as compared to multiple different approaches to literacy (King & Coughlin, 2016). The main concern with these protocol choices is that most teachers support the

PSA, while research is based predominately on the STP. This disparity adds ambiguity to the program because the research data is mostly based on a standardized protocol, yet the problem-solving approach has become the teacher's method of choice. This complicates our ability to decipher if RTI is having the proposed impact not only on all students, but also specifically on students from lower-resourced communities; or is it functioning as a continued barrier for some students who are placed in the different tiers, separated from peers due to cultural implications, and placed into a different track?

In addition to the debate on the best protocol of intervention, the methods of implementation have evolved into one of the critical factors in deciphering RTI's value in K-12 education. As explained in the next section, implementation problems have led to an ambiguity in how public schools actually use and disperse RTI and therefore its impact on all students, but more importantly on students from culturally and linguistically diverse communities.

Implementation Fidelity

Defined by Sharp, Sanders, Noltemeyer, Hoffman, and Boone (2016), implementation fidelity or implementation integrity describes the degree to which the actual steps of RTI are operationalized as intended. Klingner and Edwards (2006) contend that fidelity is at the core of reviewing RTI's success because the results of experimental studies lead us to believe the program is transferable across settings. However, research in non-experimentally designed classrooms has shown that not to be the case (Balu, et al., 2015). The implementation fidelity problem is at the core of the research on RTI outcomes, and is an important feature to our understanding of how we interpret the research. Scholars have argued that when initiated with fidelity, reading outcomes can be predicted by interventions (Burns, Appleton, & Stehouwer, 2004; Kovalski, 2007; Sharp, Sanders, Noltemeyer, Hoffman, & Boone, 2016). However, in

the natural classroom setting there have been outcomes that vary from the findings of controlled research environment (Bal, et al., 2015; Chandler, 2014; Finch, 2012; Klinger & Edwards, 2006). These differences have been attributed to implementation integrity.

The causes of implementation fidelity or integrity problems have been linked with a range of influences, which include: a criticism of states for not implementing the protocols consistently with each other and local districts (Gregory & Cornell, 2009; Hudson & McKenzie, 2016; Savitz, Allington, & Wilkins, 2018; Valero-Kerrick, 2015); quality of program and resources allocated (Sharp, Sanders, Noltemeyer, Hoffman, & Boone, 2016; Otaiba, et al., 2019); school leadership and guidance (Maier, et al., 2016); protocol methods used and the fidelity to the protocols (Fuchs & Fuchs, 2017; King & Coughlin, 2016; Maier 2016); and indications that schools were still reliant upon the discrepancy model to assign students to intervention programs (Chandler, 2014).

In general the inconsistent and sometimes confusing research findings on RTI outcomes have been attributed to these structural problems of implementation fidelity to the protocols: inferior instruction and data collection abilities of the teacher; funding and time allotment; and program diversity across states and districts (Fuchs & Fuchs, 2017). Each of these problems has led to mixed empirical results and our ability to understand if the program is successful. In addition, there are questions about RTI's impact on and the potential to affect students from under-resourced backgrounds as they become easy targets for tier placement.

Policy Implementation at the State Level

The Reauthorization of IDEA in 2004 left it up to the states with no explicit instructions to decide on how to implement the program. This has led to a variation in how states incorporate the program into their policies (Hudson & McKenzie, 2016). The burden of deciding on

protocols, state funding for professional development, and implementation at the district or local level has remained with the states. As asserted by Savitz, Allington, and Wilkin (2018) “school districts had been identifying students using the same procedures for three decades and clear consistent guidelines on how to use RTI for special education identification eligibility was therefore critical” (p. 243). One of the main criticisms is that “evidence-based” recommendations have not been consistently incorporated into procedural guidance for RTI implementation,” which varies from state to state (Otaiba, et al., 2019, p. 35). Several studies have been conducted to determine the number of states implementing, the guidance being given, and the consistency of implementation. Savitz, Allington, and Wilkins (2018) surveyed all 50 state departments of education to determine how many states were implementing. They found little consistency in the methods used to identify learning disabled; recommended instructional focus of tiers; instructional group sizes; and personnel providing RTI. A national study sponsored by the IES in 2020 found that only 21 of the 50 states had a state-developed tool to support MTSS and RTI (Institute of Educational Sciences, 2020). An additional study demonstrated that although the national policy called on the abandonment of the discrepancy model, schools were found to still be using it for identification. This demonstrates that although the policy is nearly two decades old, the implementation has not served to support its use as intended, having the potential to make little impact on over-representation (Chandler, 2014). In addition, the states’ implementation differences have inspired others to ask how this affects a student’s access to special education services. Hudson and McKenzie (2016) found that within a sample of 1,556 school districts across 12 states, RTI is often used to identify disabilities without clear guidelines, and in many states RTI is being implemented without communication between the state and the districts. In March of 2020, The Institute of Educational Services investigated the different tools

states had developed to assess implementation. The study found that of the 50 states, 21 states had a tool that the state developed or adapted to support MTSS/ RTI, leaving nearly 60% of the states without clear implementation tools of their own. The lack of leadership at the state level is an important factor in our ability to decipher RTI's impact on its literacy improvement on a national scale, but also to determine how the inconsistencies may effect students from under-resourced communities.

Implementation Building Level Programs and Data based Support Systems

Implementation of RTI has also been problematic due to levels of support at the building and local level. These problems include teacher knowledge of data collection, assessment analysis, and instructional planning. Otaiba et al. (2019) found in their analysis of 139 general and special education teacher survey responses, teachers had a strong knowledge of tier 1 instruction and leadership but lacked understanding of the data decision-making process. The conclusion drawn was that these “findings consistently show that teachers lack necessary knowledge in foundational reading skills and pedagogy to be able to teach reading efficiently to prevent reading problems and to provide structured literacy interventions for students with disabilities” (Otaiba, et al., 2019, p. 38). In a similar survey, Ruffini, Miskell, Lindsay, McInerney, & Waite, (2016) found that 53% of teachers in the Milwaukee school district believed they were implementing RTI with adequate fidelity, with 47% expressed uncertainty about the program. Noteworthy within this study was that the highest implementation ratings were with teachers with advanced credentials, schools with high teacher retention rates, low percentages of SES, and low percentages of students suspended. This discovery is important because a school's ability to use RTI effectiely may be connected to variables associated with high income school districts with greater resources and access to specialists. The conclusion

from the study was that although there seems to be some agreement on implementation, nearly half of the respondents did not feel strongly or were uncertain about their school's implementation. In addition, the study showed that 69% of the schools struggled with tier implementation, and 49% with evaluation. The role of school leadership as a determining factor in RTI success was shown to be a critical component by Mair et al. (2016) who concluded that transformational leadership was a strong predictor of RTI success, and without strong leadership, schools within the study had made little progress for full implementation of RTI.

Gersten, Newman-Gonchar, Haymond, & Dimino (2017) conducted a large scale comprehensive review of the literature from 2002-2014 to determine with what efficacy the program was being implemented. The study included a review of 1,813 studies that were evaluated for implementation strategies that followed the "What Works Clearinghouse guidelines."¹¹ Of those 1,813 studies, only 27 met the standards. The study concluded that within the reduced number of studies there was a positive effect in all but one study, implications of the study are that fidelity to the guidelines can have a positive impact on reading skills. Sharp, Sanders, Noltemeyer, Hoffman, & Boone, (2016) also looked at implementation integrity and its relationship to student outcomes and found that when done with fidelity, data-based decision-making significantly predicts student outcomes. These results illustrate that within the programs offering strict guidelines, the potential to produce positive outcomes as measured by cognitive skill improvement exists. However, since there is uncertainty about the implementation fidelity, it is difficult to determine the comprehensive effectiveness on a national scale. This is a key point. The functionality of RTI is based on specific programming, but if the program is not being initiated as intended or with uncertainty in schools, it leaves the potential 1) continued or

¹¹ The What Works Clearinghouse reviews the existing research on different program, products, practices and policies in education in order to provide educators with evidence for decision making

reversion to the use of old models, which may lead to disproportional representation; 2) misplacement of students because of cultural and social differences because of misunderstandings and deficit perspectives.

From the implementation problems presented thus far, it can be concluded that much work is left to be done in order to align the goals of RTI with the practice of RTI, both at the state policy level and within the classroom. Adding to these problems is the concern of how RTI is working with students from CLD and ELL backgrounds. Scholars contend that RTI needs to be in alignment with culturally and linguistically diverse youth in order to avoid the problem of misplacement (Artiles A. J., 2019; Artiles A. J., 2015; Finch, 2012; Hartlep & Ellis, 2012; Orosco & Klingner, 2010). Unfortunately, only a few studies have explored the direct impact, and more research is needed in this area (Garcia & Ortiz, 2008). The second section of this literature review will examine the current perspectives on how Response to Intervention is functioning with culturally and linguistically diverse youth and the problem of the placement of students due to cultural misunderstandings.

In this next piece, a review of the current empirical findings of RTI success rates in relationship to improved reading scores are presented.

Review of the Empirical Research Literature on the Effects of RTI on Student Achievement in Reading

This review of the empirical research on the effects of RTI on student achievement is included in order to understand what the research shows about the effectiveness of improving student reading scores. The section is broken into three parts: (1) studies that show negative effects and mixed outcomes; (2) studies that show positive outcomes; and (3) a review of the most pertinent meta-analyses and systematic reviews. I conclude this section with a discussion

on how my research will add to the knowledge and outcomes of RTI. I start my review with the most comprehensive study done to date on RTI's effectiveness and a synopsis of the critiques of that study.

The most comprehensive RTI study done to date, the national evaluation "*Evaluation of Response to Intervention Practices for Elementary School Reading*" published in 2015 (Balu, et al., 2015), is considered to be a key study. It expanded our knowledge of three chief questions of RTI's impact: (1) how multiple schools across the states were implementing RTI? (2) what were the practices in schools with three or greater years of implementation? and (3) With proper implementation, was the program able to target effective intervention in order to improve reading scores? The authors make clear the study does not tell us if the RTI framework as a whole is effective, just whether there was impact for the students just above and below the score cut point for intervention. Cut points are scores that indicate a student is below the proficiency and grade level standard of their peers and are determined to be in need of intervention.

The study conducted in the 2011-2012 school year involved two study groups across 13 states and included up to 20,000 students. The first study group was comprised of 147 schools, referred to as the "impact schools." Impact schools were schools that had been using RTI for over three years, had at least three tiers of intervention, conducted universal screenings at least twice per year, used the data to place students into T2 or T3, and conducted progress monitoring for those below grade level, i.e., schools that demonstrated greatest fidelity. The second group of schools, the reference sample, were comprised of 100 randomly selected schools from 13 states, a total of 1,300 schools.

A comparison between the reference and impact schools was done in order to answer the first question as to how the two groups of elementary schools were implementing the program.

The study found that within the impact schools, 86% were implementing with full implementation fidelity, and within the reference schools 56% were implementing with full implementation. This is an interesting finding because as Fuchs and Fuchs (2017) point out in their critique of the study, the impact schools were chosen specifically using criteria for full implementation, again shedding light on the consistency in implementation problems. The main findings between the two samples were that 68% of all schools were conducting 90 minutes of core reading instruction per day. The frequency of intervention differed between the samples in that the impact schools allowed time for tier 2 intervention at least three times per week and for tier 3, five times per week. The impact schools were also more likely to offer data support than the reference schools. In the reference sample, 59% conducted universal screenings at least two times per year as compared to 83% of the impact schools.

The second question of the study addressed a comparison of reading services between the impact schools only. To answer the question of tier movement within school programs, the study showed that the impact schools were more likely to follow prescribed steps of RTI (95%) as compared to reference schools (88%); there was tier movement, however 74% stayed in the same tier, while the greatest movement was from tier 2 to tier 3 or tier 2 to tier 1. Therefore, the impact schools had the greatest fidelity to the program and more consistent support. The movement between tiers is considered to show that the program is assisting in reading improvement or learning disability prognosis as the mobility of the students indicates a positive correlation between intervention and assessments.

The final question in the study has turned out to be the most controversial and has been strongly debated amongst multiple scholars. This portion of the study utilized a quasi-experimental regression discontinuity design to determine the reading outcomes for students in

only the impact schools who received intervention to determine how students fared who were immediately below and above the cut point for intervention. The regression discontinuity design estimated the impact by comparing the two groups. The results of the study were that the students who were just below the cut line and assigned to tier 2 and tier 3 intervention services had a negative effect on comprehensive reading measure in first grade after receiving intervention. The results of grades 2 and 3 were not statistically significant. The results for the tier 1 students who were close to the cut point the effect was -0.17 standard deviations which the authors state is equivalent to “approximately one-tenth of a year less learning than what they would have achieved had they not been assigned” to intervention (p.13). The data showed that across schools the estimated impacts on reading outcomes varied significantly. Across schools the impact was shown that 81 schools (15 significant) had negative effect sizes and 38 (4 significant) had positive effect sizes. The findings of this portion of the study have led many to wonder if the program is having a positive effect, and to what extent does implementation fidelity affect these findings. Three critiques of the study have been brought forward, each reflecting on the study design and overall school implementation of the RTI framework.

In their 2017 critique of Balu et al.’s study, Fuchs and Fuchs emphasize that we cannot generalize from the study due to the methods used and the variability of interventions within schools. They argue that self-reporting from schools, weak guidelines for selection of impact schools (of which only 86% were implementing with fidelity), and a cut score set at 41ST percentile as compared to the typical cut score is at the 20-25th percentile, are underlying factors that limit the study’s findings. Due to these conflicting factors, they believe it is difficult to truly know if RTI is having the intended results. The authors contend that the implementation of interventions and the decision of who did and didn’t receive intervention is a problem, showing

that over-identification can have negative effects on students who do not need it. The authors state that it is “an undeniable and vexing fact that many schools have failed to establish even the most rudimentary forms of the framework” (Fuchs & Fuchs, 2017, p. 257).

Gersten, Jayanthi, & Dimino, (2017) recognized that although we cannot generalize from the findings of Balu et al.’s study, and it does not answer if RTI has an effect on all students, it does present information needed to assess the program. They state that regression discontinuity design is the best for gaining information in this case because any other longterm design would present time constraints, and because it allowed a comparison of those above and below the cut scores. But it does not allow us to suggest intervention is negative in general. The authors also substantiate the methodological flaws as mentioned by Fuchs and Fuchs (2017), such as the benchmarks being too high and the varying school implementation frameworks. The authors conclude with a recommendation for future studies to focus on answering the question as to why the students below the cut score did not show progress.

Katherine Doherty Stahl starts her review by stating the “findings are disturbing and frustrating but not surprising,” (Stahl, 2016, p. 657). She reflects that it is important to remember when considering the findings that we should not over-generalize due to the fact that this only compared students at the benchmark area, which is a narrow band, it is not intended to cover all students receiving intervention. In addition, Stahl notes that one of the greatest weaknesses of the study was that 45% of the students’ received interventions who were above the cut line; the time and type of instruction varied; and conversely to the scores observed, the tier movement of students indicated the program was working. In her critique she remarks in general that it is not surprising because the majority of research on RTI is done with teams of trained tutors and support staff, whereas this study provides “a lens viewing the ways in that

sample schools independently interpret and implement an RTI framework without existing resources” (p. 661). She clarifies that in order to implement with consistency, schools would need time and resources that are just not available. Moreover, RTI is being implemented in multiple different ways in the “real world” as compared to our research, which is designed with very specific controls and protocols.

Additional research has also indicated RTI is not producing the looked-for outcomes. As shown in a 14-week controlled study of first grade students who were at risk for reading failure. Gilbert et al. (2014) examined the efficacy of a multi-tiered system that used the standard protocol of RTI in first grade with tutors who provided lessons in letters, sound correspondance, decoding, spelling, sitewords, word recovery, vocabulary, and comprehension. The study utilized a randomized control trial of a sample of 649 first graders who were screened for reading risk. Of these, 212 were identified as needing tier 1 instruction; of these, 134 were unresponsive and went on to tier 2, where students were separated to either move to tier 3 or stay in tier 2. In each of these groups, students received the same format of tutoring but with different frequency of instruction. The comparison of students showed the following: that of the students in tier 2 only 40% were reading at the normal range, and at tier 3 only 53% were reading at that point, concluding that “the results challenge the preventative intent of short-term, standard proticol, multi-tierd supplemental tutoring programs” (p. 135). These percentages do no align with program goals of 80%:15%:5% in which the tiers should be decreasing in number of students.

In another controlled experiment, Wanzek and Vaughn (2008) used a single dose, double dose, and no dose approach to compare literacy progress. The study had two-phases over two years and included students who were screened in year one for intervention. In year two, they were divided into three groups: single dose, double dose, and no dose of intervettion for five

months. All interventionist teachers received professional development and used the standardized protocols for intervention. The findings of this study were mixed in that there were indications that both the single and double dose made gains as compared to the no dose. But neither the single nor double dose had any significant difference between them. The study concluded that although the single and double dose made progress, both groups remained below the targeted benchmark in fluency, and there was no difference on word reading. The authors noted that “fundamentally, increasing the intensity of the intervention by double dosing students in the spring of first grade did not seem to increase the number of students responding to intervention” (p.12). The authors recommend further study on how the impacts of duration of intervention relate to reading outcomes.

These studies have shown that even with implementation fidelity, there have not been concrete findings on RTI’s effect on students’ success at acquiring reading skills, or if it helps them “catch up” to other students. Even with the single and double dose of RTI, students showed little variation from each other, leaving us to ponder whether the tier effect may have an adverse effect on literacy.

In the next part of this review, I evaluate studies that have found positive results.

Positive Outcomes of Intervention with Implementation Fidelity

Mellard, Frey, and Woods, (2012) investigated the school-wide effects of RTI on student achievement. In this study the researchers looked at the rate of improvement across benchmarks with data aggregated at the school level. The study criteria were that the school had: multiple intervention levels; scientifically-based instruction; teachers/tutors who implement intervention; and progress monitoring. Of the 60 schools across 16 states, five schools met the study’s criteria. A total of 2,720 students were in the study. The analysis revealed that between fall and

spring assessments, the following changes occurred for each of the five schools: one school that had lower than average scores at the beginning of the year closed the performance gap; of the four schools that began the year with grade-average skills, three gained advantage and one diminished its scores. The study concluded that RTI can improve literacy and bring students up to their peers. One of the strongest implications of the study is that with strict implementation, positive results appear to be possible. But there is some variation in outcomes. The authors caution that finding true implementation fidelity is a problem. Even within their guidelines, the best of the five schools had 72% fidelity, and the other schools were between 39% and 42%. Again, scholars are compromised by their ability to gain a true picture of RTI's success due to fidelity issues.

Sharp et al. (2016) examined the relationship between response to intervention integrity and student reading outcomes. The study included 64 principals and school psychologists in 43 elementary schools. School implementation ranking was done using a survey with a Likert scale indicating levels of implementation. The outcome variable was the mean school score on the reading portion of the Ohio Achievement Assessments. The predictor variables were the mean Rasch measures for the characteristics of participating schools. Hierarchical linear regression analysis included the demographic variables of economic disadvantage, minority status, discipline referrals, students with disabilities, kindergarten readiness, and percentage of teachers who are highly qualified. Results showed that tier 1 had the highest level of fidelity and the lowest in tier 3. When comparing implementation rankings to per tier implementation integrity the authors found that fidelity significantly predicted student reading outcomes when controlling for other demographic factors. Results again suggest that if used with fidelity and controlling for

demographic factors, data-based decision making significantly predicted student reading outcomes. The authors concluded that implementation quality may affect student outcomes.

In 2015 Jessica Hite and James McGahey investigated the effects of the program using an experimental design with convenience sampling to discern whether scores on the Georgia Criterion-Referenced Competency Test were positively correlated with RTI. The study was conducted in one school with 35 fifth grade students, thus representing a local and limited look at RTI's effect. Although smaller, it gives credence to what RTI can do on a local scale. The findings were that the scores improved by 14.72 points in reading and that 100% of the students met standards in reading with 37.5% exceeding the standards, a total score increase of 20.2%. The results were not statistically significant, but the implications are that with a larger sample size, results could show significant effect size on state tests.

Meta-analysis

Limited results were identified using the University of New Hampshire data base EBSCO Host to search for "response to intervention meta-analysis." The search turned up a total of six studies published between 2010 and 2019. Of these six, two were identified as utilizing identification of research that supported a comparison among students who either received a treatment or did not. One additional study was found through cross-referencing pertinent literature in this study.

The most recent meta-analysis was conducted by Wanzek, et al. in 2016. This analysis utilized 72 out of 396 studies that were assessed for eligibility, representing 6,617 students. The criteria for eligibility were that each study used a treatment-comparison experimental design or quasi-experimental design to determine the effect size for tier 2 treatment in grades K-3. The colleagues examined the articles to determine what the overall effects of tier 2 interventions were

on students who classified as “at risk” for reading difficulties. The particular focus was on interventions that were “less extensive” interventions. This was defined as interventions that used 15-99 sessions over 4-32 weeks. The findings indicated a moderate to positive effect of the less extensive interventions on both standard and non-standard measures, such as phonemics awareness, word identification, and decoding fluency. However, it was noted that smaller effects were found in the areas of language and reading comprehension. The authors suggest confidence in less extensive measures for improvement in conceptual reading skills such as phonics, phonological awareness, and word recognition. They state “these findings signify opportunities for future research in the development of high impact interventions for improving reading comprehension” (Wanzek, et al., 2016, p. 560). The implications of this meta-analysis are that RTI is complex in that it includes not only an assessment of intervention protocols, but also the multiple cognitive skills that researchers seek to understand. This study addressed both in that it looked at program intensity and specific cognitive skills to show that some skills are improved with less extensive measures.

Tran, Sanchez, Arelleno, and Swanson (2011) conducted a meta-analysis in order to discern how pre-test scores were related to post-test scores and whether characteristics of response to intervention might moderate post-test effect sizes. The synthesis questioned whether individual differences in reading related skills at pre-test predicted responders at post-test across different interventions. A key part of this is the relationship of effect sizes between responders and non-responders from pre-test to post-test. The synthesis included 13 studies that included 108 effect sizes at pretest, and 107 effect sizes at posttest. The results showed that the effect size increased from pre-test to post-test on reading measures of real word identification, word attack, and passage comprehension. The authors state that under RTI procedures, there is

an assumption that the initial gap between children at risk and not at risk is reduced when compared to pre-test. The authors state that there should be a difference, but the fundamental intent of RTI is that the the variance between and pre-and post-test should be reduced with interventon. The colleagues did not find this relationship. Instead they found an overall correlation between pre-and-posttest scores of 1.04 and 1.11 standard diviations, showing little heterogeneity. Linear regression showed that overall post-test effect sizes were significantly moderated by pre-test scores, and that there was no effect for duration in the program. In other words, the pre-test scores are connected to post-test scores. Thus, the data do not support the notion that post-test scores are a function of RTI. Intervention does not provide outcomes independent of pre-test scores. In this review, the non-responders' scores increased, but not at a different or significant rate compared to the responders. It was concluded that for responders and low-responders, pre-test scores are not independent of post-test scores, thus indicating that interventions do not necessarily pull students up to their peers, but do help students to improve on an individual basis (Swanson, 2012). The implications of this analysis are that RTI does influence students' scores in that the non-responders did improve, but they did not catch their peers.

The What Works Clearinghouse initated an intervention report in July 2013. The report focused on the evaluation and success of Reading Recovery, a program whereby teachers tailor one-to-one tutoring in the areas of phonomic awareness, phonics, vocabulary, fluency, comprehension, writing, motivation, and oral language. Considered to be a component of RTI tier one intervention, the program is focused on skill improvement within a 12-20 week period. If students do not make progress during that time, they are referred to further intervention. The review identified 202 studies and investigated the effects of Reading Recovery on the reading

skills of beginning readers. Of the the 202 studies identified, three met the evidence standards without reservations. All studies included four domains of reading: alphabets, reading fluency, comprehension, and general reading achievement. The potential positive effects on each domain by study outcomes where two studies included the estimated impacts on the alphabet domain, and one of these was statistically significant; one of the three studies included outcomes on reading fluency, and it was statistically significant; in the reading comprehension category, two studies reported findings, and both were statistically significant; and three out of three had statistically significant positive effects on general reading improvement. In general, the review showed effectiveness of the intervention strategies, but the extent of the evidence is considered small. The criteria for inclusion was strict in order to assess the impact of the program on reading and literacy, yet even within these closely aligned studies, there is not enough evidence to confirm the success of the program due to the limited number of studies.

Summary of Empirical Findings

The studies reviewed in this segment reveal the varied results of RTI and its impact on literacy skills and outcomes of tier placed intervention. Some findings indicate positive outcomes, but when the studies are compiled, we find considerable variance. The compilation of reviews reiterates Fuchs and Fuchs (2017) comments on our ability to know if and how the program is working: “although its ambitiousness and potential value have inspired many school-based practitioners to work very hard to make it (RTI) a success, its complexity has been challenging and regrettably confounding and frustrating” (p. 83). The variance as stated can and may be attributed to the protocol implementation and type of intervention design. Furthermore, questions remain in regard to the effectiveness of the program within the non-experimental and natural settings of a classroom; the specific cognitive skills that are impacted and whether they

are effective in improving literacy skills; whether the interventions serve to close the “gap”; and whether the program influences learning disability misplacement. Moreover, there is a counter-story that runs parallel to these empirical studies that asks a more specific question about how the program may be working for culturally and linguistically diverse youth and their misplacement.

In this next section of the literature review, I will address the question as to if RTI is able to affect the overreplacement of under-resourced communities into special education. This was one of the prime factors in implementing RTI into the IDEA (2004) and an important indicator as to the program’s success. In order to place the program in context, the chief implementation issues are outlined, and a detailed investigation is done of current and past disproportionality statistics. To conclude this section, the factors are connected to the functionalism and social stratification implications.

Implementation Concerns with CLD and ELL Students

A primary concern of RTI is the effect the program may have on our CLD and ELL youth. Since its inception the program was considered to be a remedy for the discrepancy model and the overplacement of under-resourced students into special education. Chandler (2014) theorizes that there are continued misidentifications due to lack of consistency, and that the problem of misidentification could be teachers who do not understand poverty or the referral process, so teachers rely on and revert to the outdated IQ discrepancy model when deciding on tier and special education placement. This can lead to biases associated with certain groups. The lack of adherence and use of the discrepancy model may have a negative impact on the program’s ability to avert over-representation and may actually be continuing to misplace the very people it was designed to help.

Raben, Brogan, Dunham, and Bloomdahl (2019) conducted a study to determine how RTI was impacting special education eligibility numbers among 15,128 students in 21 rural school districts. Their findings were that although the numbers of learning disabled identification dropped significantly over the previous decade, the numbers of children eligible for other disability categories increased in similar proportions, most notably the categories of developmental delay (DD) and other health impairment (OHI). One reason proposed for the increase was that the labels of DD and OHI are favored because they require less documentation to support eligibility (Raben, Brogan, Dunham, & Bloomdahl, 2019), representing a shift into “softer categories” (Finch, 2012). The authors noted that these changes were similar to those seen across the United States (Raben, Brogan, Dunham, & Bloomdahl, 2019). Hartlep and Ellis (2012) reviewed the changes in disability identification by race in order to determine if the implementation of RTI yielded any significant changes to CLD placement. Across six time points starting in 2000 and ending in 2006, they found that the numbers actually increased from 2000-2005, then leveled off. The national percentage of students considered for disability for African Americans in 2000-2001 was 14.4% and increased to 14.8% by 2006, finding the risk ratio for African Americans at 1.16 times higher than the White population. These numbers indicated that RTI may have impacted the numbers in a negative way, prompting the researchers to recommend a form of culturally responsive intervention (Hartlep & Ellis, 2012).

At the core of the implementation problem with CLD youth and ELL is the misunderstanding of how children come into school with different approaches to literacy. The framework is not inclusive of sociocultural, socio-political, and linguistic contexts (Artiles, Kozleski, Trent, Osher, & Ortiz, 2010; King & Coughlin, 2016). This causes a disjunct between the stated goal of the program, which is to “minimize the risk for long-term negative learning

outcomes by responding quickly and efficiently to documented learning or behavioral problems and ensuring appropriate identification of students with disabilities” (United States Office of special Education , 2010, p. 4) and the use of benchmarks set via a curriculum-based on a traditional English literacy pattern. Specific to the ELL community, Orosco and Klingner (2010) explain that the use of some of the skills such as phonological awareness in English can present special challenges with English language learners because some sounds are not present. This can lead to spelling and decoding problems and may present as underachievement. They implore us to recognize that instructional methods do not work or fail as disconnected practices but only in relation to socio-cultural contexts in which they are implemented, and that “a one size fits all policy approach to RTI might not work” with the ELL populations (p. 283). Brown and Doolittle (2008) express concern that only 56% of public school teachers have had a class in ELL, and of those only 20% were certified in ELL. They caution that using RTI without appropriate instruction and can yield disproportion stating, “an appropriate foundation for RTI must include life experiences and how they facilitate learning” (p. 66). Without such knowledge students from diverse backgrounds are easily misplaced.

The use of universal screenings has been questioned with CLD and low income students as well. Willis (2019) cautions that although screenings are referred to as “universal,” they are a “misnomer because the assessments reflect a dominant way of knowing” (p. 410). She argues that the law requires the use of “scientifically-based assessments.” Consequently, the school has taken up the universal process without recognizing the accuracy of the screenings for students from differing backgrounds. Sharp et al. (2016) showed evidence of this assertion when examining the relationship between RTI implementation, demographic variables, and reading scores in that they concluded “the percentage of economically disadvantaged and number of

disciplinary referrals accounted for 36% of the variation in reading scores” (p. 156). Fuchs and Vaughn (2012) substantiate the limits of screenings, stating “studies have more commonly provided predictive utility data, with results revealing unacceptably high rates of false positives, particularly but not exclusively at the early grades. Problematic classification accuracy with one-time, brief universal screening has been documented widely across fields of investigation and raise fundamental questions about whether schools can allocate costly intervention services on the basis of one-time, brief universal screening” (p. 2). Gartland and Stronsnider (2020) assert that the quality of RTI depends on the effectiveness of these interventions, fidelity of screenings, and the education to interpret the screenings, without which they contend it is difficult to evaluate its success. These conclusions are key to understanding not only the initial assessment of students, but also the programs that are built into the protocols, which can lead to long-term outcomes of lower tracks and lower societal results.

Further adding to these worries are the ways in which RTI uses specific cognitive categories to assess a student’s reading progress. Steubing and associates (2015) conducted a meta-analysis of 28 studies and 39 samples to determine the magnitude of the association between various baseline child cognitive skills characteristics and the response to reading intervention. The study selected students who were at risk and enrolled in third grade or below. The analysis looked at the cognitive skills utilized in reading intervention to determine their connection to three models of change. The cognitive skills addressed were: attention, fluency, nonverbal, oral language, phonemic awareness, print knowledge, rapid automatized naming, spelling, non-verbal intelligence, and reading comprehension. Results indicated that of these 11 cognitive skills, only four showed significant improvement. The categories that demonstrated improvement were phonological awareness; rapid letter naming; verbal working memory; and

oral language vocabulary. This finding is important as it relates to RTI's reliance on cognitive skills as tools to assess and administer interventions, assign tier placement, and make consequential decisions. If the use of cognitive skills and their targeted instruction are not entirely useful in the prediction of outcomes, then the assessments of RTI that focus on these are not valid instruments. Furthermore, the phonomic awareness skill has been shown to be associated with ELL misidentification. If the phonomic portion shows the strongest predictor for reading success, then ELL students are at a disadvantage due to their initial benchmarks being lower than their English speaking peers.

Goodman and Webb (2006) investigated the potential for bias that could lead to over-identification in a community in Texas with a population of students who were 86% economically disadvantaged. The purpose of the study was to examine the CBM data of students who were referred for special education evaluation based on a presumed reading disability. The study also collected demographic data on ELL, socio-economic standing, and gender. Before referrals, teams of campus-based intervention assistants were provided to the students. The researchers proposed that if the students were referred due to reading but perform well on the state test, then the referral was due to bias and not disability. Of the 66 students referred for learning disability by teachers, only 21 qualified. Forty passed the minimum competency test; of the 40 who passed, 11 qualified as having a reading disability. The authors concluded the teachers' identification of students for RTI were biased and led to learning disability over-identification. However, it is important to note that they found no significant gender or ethnic bias as compared to the population of the school. They concluded that this was because the school was mostly Hispanic and lower income, so that the disproportion would not be as remarkable as perhaps in a demographically different community (Goodman & Webb, 2006).

Bouman (2010) reported that in a sample of 142 school districts in California that implemented RTI there was not a significant lower placement rate for CLD youth in the RTI, schools as compared to non-RTI schools. The data that was collected from 2002-2007 showed African Americans were over-represented in the emotional disability, developmental delay, and mental retardation cognitive disability category in both sets of schools. The implications are that within a large school system, RTI made little difference in the placement of students from African American backgrounds, thus leaving the possibility of disproportion not being solvable with RTI implementation.

Finch (2012) concluded after reviewing the major research findings both empirical and qualitative that the impact on CLD youth was not sufficient to support full implementation. She expressed concern that RTI will shift students into soft categories rather than reducing over-representation (Finch, 2012). Chandler (2014) focused on how teachers perceived poverty and literacy, finding that placement into RTI was more connected to teacher bias than student ability, and that placement was done nearly 50% of the time without adherence to exclusions written within the law.

Each of these studies contributes to our very limited understanding of the impacts of RTI on students from under-resourced communities. Whether it stems from policy implementation, teacher understanding of literacy differences, or literacy biases; the problem remains: students from under-resourced communities are easy targets for tier placement and interventions that may not be necessary.

The next segment summarizes the national data on disproportional long term academic outcomes of students from under-resourced communities in order to place the long-term outcomes in their current national context. These data show that although disproportionality

within special education programs has been a consideration since the program's inception, and the inclusion of RTI in the IDEA (2004) was an attempt to ameliorate the problem, the national data still shows an uneven playing field. According to Artiles, Aydin, and Thorius (2010), Response to Intervention has not yet addressed the strengths and needs of students from non-dominant backgrounds so that we continue to misplace, creating the same or similar disproportional outcomes. This is important as it demonstrates that although we initiate programs, they do not always have the consequences that we are looking for in the long-term.

National Statistics of Students from Under-Resourced Communities

According to the National Center for Educational Statistics, racial and ethnic minority gaps remain and are unchanging. As of 2019 the National Assessment for Educational Progress (NAEP) showed a continued gap of 26 points between African Americans and their White counterparts.¹² In addition the gap remains in the percentage of students entering Advance Placement and International Baccalaureate programs, where White Americans represent 40% and African Americans represent 23%; nearly half as many African Americans are represented in these higher level college bound courses. (National Center for Educational Statistics, 2019). Further substantiating the disproportion gap are the results of both SAT scores and ACT scores. In 2020 the average SAT composite score for African Americans was 927, compared to White Americans' average score of 1109. Likewise, only 1% of African Americans scored within the highest test score bracket of 1400-1600 as compared to White Americans' 7% (College Board, 2020). ACT scores show similar results. When parsed by income results, the ACT showed that

¹² According to National Center for Educational Statistics in 2019, the National Educational Assessment of Educational Progress reading assessment indicated that in fourth grade, African American students scored 26 points lower than their White counterparts (National Center for Educational Statistics, 2019).

if a family made greater than \$80,000 per year, the average score was 23.4, while earning less than \$80,000 gave an average score of 19.5. This gap has increased over the last five years (Mattern & Radunzel, 2016). In terms of racial differences, the ACT 2019 report shows that 47% of White Americans taking the exam made the college readiness benchmark, while only 11% of African Americans hit that mark. Likewise, when looking at the ACT scores of students meeting three underserved criteria,¹³ the odds of a student meeting the benchmark are one-tenth of that for students who have no underserved criteria (National ACT, 2019). The data indicates that although programs such as RTI have intended to change this scenario, after 35 years of special education programs, the gap remains, begging the question do interventions work?

To further support this unequal playing field are the data from the United States Office of Special Education Programs (OSEP) which tallies the percentage of students enrolled in special education programs annually and compares them to the national population. The SY 2018-19 data set showed the national population of Blacks ages 6-21 comprise 13.8 % of the general population yet have a representation of 17.8% in a learning disability category, hence supporting the belief that race is a factor in disproportionate placement.

Interestingly, when examining the data for 3-5-year old's, the disparity amongst the population is not evidenced. In school year 2018-2019 the percentage of 3–5-year-old's, enrolled in special education programs had the breakdown: 12.86% were Black¹⁴; 26.53% were

¹³ Criteria for underserved include parents have a high school diploma or less; family income less than \$36,000 and race of African American, American Indian, Hispanic or Pacific Islander.

¹⁴ Total population ages 3-5 in US is 13.77%

Hispanic¹⁵, and 50.61% were White¹⁶ (U.S. Department of Education, 2020). Here the representations appear nearly equal to the general population. This is an important fact as it clearly supports the idea that intervention programs and school itself may create greater disproportionality due to cultural differences. Gillborn and Mirza (2000) demonstrated this effect in the UK. Their study showed that in the early years, students of color scored as well as their peers on literacy assessments, but by age 11 and 16 they were below average as compared to their White peers. This challenges the assumptions that Black children enter poorly prepared and led them to wonder how the school system may have impacted the outcomes. A similar study attempted to look at how students' academic self-concept was affected by the assessment and schooling process. The study assessed students' self-concept as they entered school at age 4 finding a high level of academic self-concept as compared to their scores on tests. But by the fourth grade their self-concept had decreased to match low scores on assessments (Cohrssen, Niklas, Logan, & Tayler, 2016). This again lends support to the idea that the assessment and schooling process itself may be counterproductive to the goals of positive academic mobility.

Each of the studies referenced demonstrates that student outcomes can have a negative direction during the schooling process. Because RTI is now part of literacy evaluation at a national level, it may have a large-scale effect of separating students into tiers early in elementary school due to the reliance upon literacy assessments based on specific cognitive skills. Consequently, these students may be set upon a long journey to lower-level classes and special education services (Skiba, Poloni-Staudinger, Simmons, Feggins-Azziz, & Chung, 2005). The process of RTI may thus be continuing to present a barrier in educational attainment

¹⁵ Total population ages 3-5 in US is 25.90%

¹⁶ Total population ages 3-5 in US is 49.34%

between those who emanate from lower-resourced and non-dominant communities and their peers. Perpetuated over time, this phenomenon known as social reproduction theory can serve to perpetuate disparities in academic achievement and lead to economic stratification in the greater society.

The Question of Long-term Academic Outcomes

Response to Intervention (RTI) is a program designed to intervene in the process of a student falling behind and to “catch” them before they fail. The logic is that if we can “catch” them early, we will not see the misidentification into special education and be able to identify who truly needs special services. This supposition is thus part of the argument that RTI creates a level playing field for those who may come into school not meeting the benchmarks due to reasons other than a learning disability. If this were the case, then these students should continue with their non-RTI peers into similar tracking as they progress and move into the high school. In other words, we ought to see them dispersed into different tracks in the same proportions as the background population. However, the question remains as to whether RTI may be serving as a promoter of mobility or a barrier and gatekeeper for students who do not meet the acceptable level of competence. As examined in the disproportionality section of this literature review, the causes of students being identified for RTI may be due to cultural differences versus true learning aptitude. Understanding the long-term outcomes of these students and the level of disproportional representation is therefore essential to understanding if RTI is servicing the student or the school. Is RTI Functioning to promote or divide students? Is it influencing their academic trajectories as indicated by track level placement?

This study will attempt to shed light on these complex issues by using a quasi-experimental design in order to compare students’ long-term outcomes at the secondary level,

seeking to identify if RTI may have influenced their academic outcomes at the secondary level. Because the results of RTI studies are varied and complex involving multiple different skills assessments and intervention types, the true impact of RTI on students may only be realized through the consequential validity of the program. Regardless of intentions, protocols, or strategies, I ask does RTI make a difference and provide the identified students in need of intervention a leg up to meet or exceed their peers? Or does it not have any significant influence on upward mobility and leverage any change in academic placement as related to their peers? Does the program support the continued problem of social reproduction and stratification within public schools?

In conclusion, multiple studies have shown that although RTI was considered to be a “cure all” for academic misplacement and over-representation in special education, its efficacy still remains questionable. Proponents of RTI have explained the reasons for its failures: state and leadership variance, teacher lack of knowledge, protocol variance, arbitrary cut points, funding, and data collection procedures. Each of the reasons generally corresponds to either the implementation procedure used or an inability of teachers to follow the protocols and understand data collection. Proponents of RTI rarely connect this failure to cultural bias but instead call for state policy and tighter administration with greater accountability to ensure proper implementation within school districts. In opposition to this stance lies a group of scholars who have placed a critical lens on the subject of labeling and misplacement seeking to understand the sociocultural and historical components of special education policy, tracking, and educational outcomes. These factors will be explored in the following section through the historical implications of eugenics, cultural capital, and deficit perspectives in education.

Conceptual Frameworks

The Chalkboard Ceiling Effect: The Impact of Eugenics, Cultural Capital, and Deficit

Pedagogies on Upward Mobility

The chalkboard ceiling effect is the imaginary ceiling that limits academic mobility due to educational belief systems and corresponding policies. The ceiling is comprised of three conceptual frameworks that work in harmony to create advancement for some, and lack of access for others: (1) the socio-historical and socio-political effects of eugenics and its continued influence on educational policy, procedures, and protocols, as well as its influence on educators' belief systems; (2) Pierre Bourdieu's theory of cultural capital and its influence on "natural" class distinctions and their effect on student placement; and (3) the cultural deficit perspectives that are related to beliefs about what knowledge is considered "standard." Each of these theoretical frameworks do not stand alone but work in concert with one another. Therefore, in order to understand social stratification, we must examine the ramifications of their impact as a trifecta of factors that influence upward mobility. Utilizing past and current literature, each of the frameworks will be examined as it relates to historical forms of tracking students into different categories of academic success. Tracking in this instance is defined as the act of placing students into different tiers, levels, or tracks of learning based on a type of assessment, whether it be skill based or culture based. The assessments can be linked through RTI as data-driven universal screenings or subjective cultural assessments of ability-in either case determinations are being made early with consequences that impact a student's future. It will be reasoned that each of the theoretical frameworks presented produce a form of educational and social stratification.

Framework I: Eugenics and the Socio-Historical Context of Disproportionality

Eugenics, the science of biological determinism as a cause of intelligence and social attributes, has been referred to as “America’s crazy uncle” (Cargill, 2020)- it is a part of American history that has been swept away and hidden from view, not unlike a crazy uncle. It is deeply embedded in historical education and societal policies, and as such eugenics lingers in the undertones of our values, beliefs, policies, legal systems, and procedures, impacting those who do not fit the standard or “normal” mode of being (Baker, 2002; Cohen, 2016; Gamoran, 1987). The history of eugenics is key to understanding how and why educational systems test, assess, and screen in search of deficits, while simultaneously creating categories of academic ability, such as learning disabled and emotionally disabled. Eugenic belief systems are also critical to the understanding of how and why we create models in education that perpetuate a disproportionate number of students from under-resourced communities entering intervention programs and consequently being labeled as in need of improvement. Whether RTI tiers, special education, or tracking systems the programs rely on a dichotomous view of “good” or “bad,” or “normal” or “abnormal.”

Historically, eugenics has its roots in a part of history in which the science of evolution and biological determinism were being used to explain phenotypic traits in nature. During the late 19th century, the scientific theory of evolution made its way into the mainstream population as a valid and legitimate reason to classify people as related to desirable and undesirable traits, through eugenics. The results of this ended in a fervor of classification and labeling in order to promote the strength of the nation and legitimizing discrimination as a science-based methodology of fitness. Although hidden in our past, remnants still exist today in programs that continue to label students and others in relationship to a standard of what is “normal” or

successful and what is not. Defined as scientific racism¹⁷ by some, eugenics is not as far gone as one may believe (Cargill, 2020). This section will explore not only the historical aspects of the “science” of eugenics, but the places where it still exists in our schools and is perceived as normal, as within special education law, academic assessments, and tracking policies in schools. In addition, the section will explore current literature on the “new eugenics” as it relates to RTI and social stratification.

Eugenics as a theory was developed by Sir Francis Galton in the late 1800s. The theory provided a “scientifically” based rationale for labeling individuals as inferior and unworthy of reproduction, the opposite of which was fitness and the encouragement of healthy reproduction in the White Anglo-Saxon race (Baker, 2002; Cargill, 2020; Kohlman, 2013; Selden, 2000; Smith, Tuck, & K, 2018). Utilizing the ideas of his cousin, Charles Darwin, Galton created a belief system that supports the theory that testing and measuring could outrightly determine if one was considered worthy of being a part of the greater society and passing on their genetic code, or being unworthy and subjugated to a lower place in society. The development of Galton’s theory of eugenics ushered in a scientifically based legitimization of one’s place in society as either normal and worthy or not worthy and the “other.”

Eugenics is the belief that human traits of pauperism, feeble-mindedness, uncleanness, and behaviors could be passed on through generations and are thus biologically determined. Historically the impacts of eugenics on American values can be seen in the attempt to create and define differences within a medical model of classification that would govern reproduction privileges. Cargill (2020) relates this to a fear put forth into American society that the

¹⁷ Scientific racism justifies White superiority using scientific methods as an inviolable source of knowledge; it includes notions of merit, objectivity, and science to defend, justify, and maintain White culture (Willis, Race, Response to Intervention, and Reading Research, 2019).

population would be diminished by inferior breeding, a type of eugenics referred to as negative eugenics. The products of negative eugenics would be an inferior and weak nation (Cargill, 2020; Cohen, 2016; Dorr, 2006; Thomson, 2000). On the opposite extreme were the outcomes of positive eugenics in which the White Anglo-Saxon Protestant (WASP) traits could be preserved and passed on creating a strong and vibrant nation. The results would be a superior and healthy nation and a betterment of society (Cohen, 2016; Thomson, 2000). It is in this fervor to produce certain traits and stop other certain traits that scientific beliefs about race, ethnicity, and poverty took hold in early 20th century America and advanced in the progressive era of education.

The Birth of Scientific Testing to Legally and Medically Categorize Individuals

In the early 1900s, French psychologist Alfred Binet's IQ test was utilized as a method to screen individuals in order to determine their intellectual fitness and most importantly their place in society. The determination of mental ability included legal categories such as "moron," "imbecile," and "feeble-minded" (Artiles, 2011; Cohen, 2016 Kohlman, 2013; Selden, 2000; Thomson, 2000). The use of IQ testing to validate the "lack" of mental capacity served to place the deficit within the person and attributed to the supposed outward genetic phenotypic traits such as race, ethnicity, class, and gender, as well some diseases such as syphilis, tuberculosis, and cancer (Artiles & Trent, 1994; Dorr, 2006). Within this classification system, it was believed the "feeble-minded" were unfit and their reproduction would hurt the general good of society. More conclusively it was reasoned that the genetic and Mendelian traits of humankind could be attributed to pauperism, moral laxity, race, merit, and disability (Selden, 2000). Thus, the IQ test served to measure the extent to which a person is deemed worthy of reproduction and

access to privileges, such as education, families, and freedom, through the labeling and outward expression of physical and social traits.

Eugenic labeling of the population as a medical classification became the realm of the medical profession and the courts to dictate and assign the “feeble-minded” to institutions where their genes were segregated from the population (Baker, 2002; Cohen, 2016; Dorr, 2006; Thomson, 2000). Segregation due to testing and assessment with a consequential label became mainstream in America, leading to policies in schools and society that supported the labeling of the inferior and separation into different ability levels. So mainstream was this model that courses were offered in eugenics at universities, such as Harvard, Columbia, Cornell, Brown, Wisconsin, Virginia, Northwestern, and Clark. Eugenics also entered the mainstream in high school biology courses and textbooks (Kohlman, 2013). Eugenics was considered to be a scientific basis for determining abilities based on race, class, and ethnicity—it therefore served as method to place people into categories of “worthiness” in society. This underlying belief is connected to our basis of testing and labeling in education and to the belief that based on outward appearance, some are more intelligent than others. Medical classification gave credence to these judgements and was recognized as a scientific basis for assessment.

The medical model of classifying intelligence via testing made its way through the legal system via the policy of sterilization. In 1926 sterilization laws were used to legally sterilize individuals whose IQs were considered to be below the normal range. Labels which had been created to categorize the level of intelligence were used to justify the conviction that the feeble-minded should be removed from the genetic pool (Cohen, 2016; DenHoed, 2016). The fervor to identify, label and to stigmatize the poor and unkept, and the push to identify, segregate, and sterilize was accordingly deemed appropriate by the American legal system. It

was considered not just legal, but an obligation to hunt for the “feeble-minded.” Laboratories sprang up around the country where the medical profession worked to classify unfit stock. The birth and normalization of labeling people not meeting the standards within a legal confinement system are the beginning of what would become the foundation for the acceptability and appropriateness of ability placement and the corresponding legal title of “learning disability” which has been normalized within our schools today.

Thus, the science of intelligence became a testable and scientific methodology for determining ability to function as an equal, in turn legitimizing institutional racism, cultural imperialism, and a deep-seeded belief in a superior genetic pool. Once this was verified by science and merit and recognized as legitimate by the courts and schools, the unfit could now be identified and contained (Selden, 2000).

The science of ontological determinism and eugenics stems from this belief that those who are “unfit” in a multitude of sociocultural and physical ways, including poor, mentally ill, deaf, blind, race, etc., should be sought out and labeled (Cohen, 2016; DenHoed, 2016; Selden, 2000). Although the practice of labeling individuals as “idiots” dates back prior to the 13th century, it is the connection between Darwin’s theory of evolution, Francis Galton’s theory of eugenics, and the strong belief in the ability to measure intelligence through testing that substantiate the concept of learning differences and segregation. The eugenics period gave permission to the White Anglo-Saxon to control resources, set policies, and prescribe penalties for those who were not considered equal in both the greater society and in the schools.

Eugenics Connection to the Curriculum Wars and the Progressive Agenda

Running on a parallel historical track to the eugenics ideology was the debate on what to include in public education and for whom it might serve. The turn of the 19th century was a time

when the development of curriculum theory in American education was fraught with two contrasting belief systems: the underlying belief in equal opportunity, autonomy, and freedom versus the contrasting belief in the idea of meritocracy and legitimization of status with a heavy connection to positive and negative eugenic forces (Bowles & Gintis, 2002; Gamoran, *The Stratification of High School Learning Opportunities*, 1987). Both of these were exhibited in the late 1800s and early 1900s as Charles Elliot, then president of Harvard, and G. Stanley Hall, leader of the American Eugenics movement, came head-to-head in a battle for defining “what curriculum and for whom?” when creating a vision for secondary schools in America. Elliot, head of the Committee of Ten, believed that all students should be exposed to college preparatory curriculum, and that the exposure is key. Exposure to the same type of curricula would allow all students to have equal access and make choices. His argument vanguards the premise that schooling should not be about future plans, but instead about being educated in a democratic society (Kohlman, 2013; Loveless, 1999; Oakes, 1985).

On the other hand, Hall has other ideas. As a turn of the century psychologist, his beliefs were highly influenced by eugenics. As a leader of the progressive movement, his ideals for preserving the common good and qualities of the superior led him to conclude that some were more worthy than others of reproduction and aspects of education (Thomas, 2009). The heavy influence of Galton, coupled with an influx of immigrants into the United States, led Hall to argue that individual differences ought to be the basis for curriculum differentiation. Key to this point, was the premise that individuals are not created equal. Hall preached that many children were culturally neglected, biologically inferior, and undeserving of any betterment within societal rankings (Oakes, 1985; Selden 2000). Hall’s argument promotes a significant shift in ideology from schools having the responsibility of providing all individuals a proper education

for participation in a democratic society to one in which the school served to educate the individual due to an individualistic merit through traits and cultural ways (Cohen & Rosenberg, 1977; Oakes, 1985). The theory of eugenics paves the way for the acceptability of the theory of social engineering within our educational system. In addition to Hall's influence on American public schools, there were other progressive educators and curriculum theorists emanating from universities such as Harvard, Stanford, Columbia, Brown, and other prestigious schools of education who aligned themselves with the eugenics ideology (Kohlman, 2013). Each of the curriculum advocates viewed the "poor" with great ambivalence in that the poor needed uplifting but were also a threat to the nation (Thomas, 2009). These progressive scholars developed curriculum programs and policies that are built into our current systems of testing and tracking with a backbone of eugenics beliefs.

Hall argued for creating types of schools that would position students into different ability levels or tracks, which became the common and dominant policy. Historically, Hall's perspective was also used to address a multitude of problems arising in the United States at the turn of the 19th century, which included the massive number of immigrants, the decision of how to place children according to ability, and the capitalistic goal to provide a minimally educated workforce to the factories (Oakes, 1985; Thomson, 2000). In addition, the belief served as a scientific methodology to treat others differently, to construct curricula with different end points in mind, and to organize the masses into different groups based on a scientific measurement of testing and assessment. It was this standpoint that ultimately won the battle for curriculum design in secondary schools. The school would promise something for everyone, but just not the same for all. The different needs of children would be met first, and the curriculum would be designed around them (Oakes, 1985; Thomson, 2000). Science through testing and observation

would pave the way for the modern educational system, and thus the system of educational tracking, the practice of grouping students into classes by ability, was born.

The Policy of Tracking and its Impact on Social Stratification

Tracking in schools has been shown to be historically connected to eugenic principles and the corresponding use of science as a way to determine perceived academic ability through testing and assessments. Using science as a rationale for tracking began in the 1900s with the science of testing and exams. Coupled with the creation of “IQ” as a measure of intelligence, testing created a methodology of sorting that was deemed meritocratic and necessary. The assessments serve to reinforce the belief that those who score high are meritorious and legitimately placed into accelerated groups, and those who score low are segregated into intervention or lower tracks (Goodlad, 2004). Whether labeled as tracks, ability placement, tiers, reading groups, or levels, the system of classification of children due to testing and assessments remains a backbone to public school function. As noted in the review of RTI and CLD youth, the lack of studies on CLD and literacy acquisition has the potential to place students into tiers early, thus beginning the tracking progression (Caraballo, 2017).

During the 1970s and 1980s, the policy of tracking was examined with some alarming findings. Starting with Bowles and Gintis’s 1976 book “Schooling in Capitalistic America: Educational Reform and Contradictions of Economic Life,” the claim was made that American schools were functioning as reproduction agents by integrating students into social, occupational, and familial roles. Additional studies were published in 1984 and 1985 that served to address the issue of school curricula as a method of classifying children head on. In 1984 John Goodlad published *A Place Called School*, a study that examined the data from more than 27,000 students, teachers, and parents in over 1,000 classes to assess the standing of American schools.

Within a year of the Goodlad Report, Jeannie Oakes publishes *Keeping Track: How Schools Structure Inequality* (1985).

Goodlad's overall finding was that tracking is common in schools and the outcomes of students are connected to their placement within tracks. Moreover, he found English was the course where students spent the most time; all schools used reading groups designed by classroom teachers; and the groups stayed the same with the outcome that the accelerated groups continued to progress at rates five times the amount of the slower groups. He also found that by the fourth-grade, students differed in achievement by four full grades; in reading it could have been as much as six grades. This pivotal research showed that the level of placement in primary grades is predictive of track placement (Goodlad, 2004). This key finding alone asserts that although formal tracking doesn't commonly begin until secondary school, the placement of students occurs from the earliest days of school experience in literacy programs. RTI is a perfect example of a tracking platform focused on literacy. Thus, results of Goodlad's study are still pertinent today as the outcomes of tracking are reviewed. Whether in tiers or reading groups, each is formed by early screenings that have the potential to track students into unequal outcomes as they move through the system.

Goodlad also explored the outcomes of students by race, finding that certain populations were being directed toward vocational programs, which led Goodlad to question "is the division of secondary schools into tracks emphasizing vocational studies and others pursuing primarily academic programs a self-fulfilling prophecy reflecting a popular myth about learning that begins a relentless course in the primary grades? Are these attributes of tracking further dividing into two types of workers?" (p. 147). He questioned whether the process was supporting a

fundamental belief system that some of the population is going to have significant difficulties in school and at best can be prepared for jobs with narrow preparation.

This study was a decisive American study that exposed the ways in which schools serve to allow access to programs for some while limiting access for others. The study indicated that the main place for division begins in the English track or reading programs and that via the allocation of time and resources to such programs, the divide was perpetuated throughout the entire K-12 system. Combining the work of Bowles and Gintis with the work of John Goodlad, a picture of American schools comes into focus that shows the unevenness of the field, the influence of inequality through literacy, and the continued reliance on social attributes to place students into different academic tracks. Clearly, the eugenic policies and practices that began in the early 1900s were alive and well in the public schools as of the 1980 and 1990s. Moreover, the programs were doing exactly what they had been intended to do: classify and create different outcomes for different types of students.

Within a year of the Goodlad report, Jeannie Oakes published *Keeping Track: How Schools Structure Inequality* (1985), a publication that reflects the experiences of 13, 719 teens in 25 secondary schools and their placement into different tracks. Oakes's study finds tracking to be done in predictable ways, providing labels that can be openly viewed and characterized in the minds of peers and teachers. She refers to the tracking of students as the "hand that guides," concluding that it is the way of "guiding" students into certain tracks that lead to very specific outcomes. She discovers in the schools five elements of tracking policies that represent formal attributes of curriculum: pervasiveness, limited mobility, locus of control with counselors and teachers, portions of all classes were tracked, and flexibility in types of programs. In addition, she finds that once a student is placed in a certain track, it is almost impossible to move after 9th

grade due to prerequisite requirements. Oakes concludes that tracking is consistent with social reproduction and creates different social relationships (Oakes, 1985).

All three of these publications expose to educators the realization that tracking and sorting of students is a phenomenon with very real consequences for people in terms of social mobility. The underpinnings of the three studies are that inequality exists within the educational institutions, and the placement of students is a reality. Based on socio-historical perceptions of eugenic principles, tracking policies of schools continue to attribute differences to models of superiority and inferiority, perpetuating social stratification. The use of RTI is considered an extension of these policies in that it tracks students early into tiers of intervention based on literacy. Determining the long-term outcomes of these students in relationship to track placement at the secondary level may be the ultimate determinate of whether RTI is serving as a tracking initiation or if it is able to change the trajectory. Placement into tracks at the high school level has implications for how students move on as they exit high school and enter the workforce. Instructional differences at the secondary level help pave the way for that future. Differences have been noted academically, socially, and in self-perceptions.

Instructional Differences within Tracked Programs

Instructional differences represent the varying ways in which methods used by teachers vary within the classroom when comparing high and low tracks. The type of instruction delivered to students has been shown to be different depending on track level. Lower-level classes tend to have experiences based on drills, recall, worksheet-based classwork, and a type of education for “docility or the workforce” (Bowles & Gintis, 1976; Brosio, 1994; Gamoran & Berends, 1987). Multiple studies have shown that within the curriculum for each tracked subject, there are significant differences in content with different styles of instruction. More

specific to inequity is that studies have shown that in lower-resourced classrooms, a more recall driven instructional method is used vs a critical thinking and analytical methodology of higher tracked classrooms (Goodlad, 2004). Furthermore, it has been found that the distribution of knowledge and content was different in the kinds of knowledge learned. In the college level track, students received and interacted with the material in an analytical way, whereas low level tracks used more computational and directive methods of instruction (Oakes, 1985).

Knigge, Vibeke, & Walzebug (2016) found that teachers have stereotypes about class and the associated track a student was placed in, which augments the unequal playing field. When students are placed into lower academic levels, teachers rate the students as lower achieving and apply the stereotypes of that track to the entire group, ultimately creating a Pygmalion effect¹⁸, whereby students lower their standards of learning. These instructional differences translate into different patterns of thinking in which some are more aligned with a college track and scoring high on SAT tests, while the lower-level track receives “directives” and instruction that must simply be followed, which is more in alignment with trades and lower-level work skills where orders would be received from a manager. Because of RTI’s close association with drills and skills on words taken out of context, it is theorized that the use of RTI as a screening agent can lead to tracking in the early grades.

Further establishing these differences in ability-leveling placement are the findings on social interactions between peers and their teachers. The social interactions and atmosphere in lower-level classes have been shown to have a more punitive interaction between the teacher and students with more disruptions and poor peer relationships (Knigge, Vibeke, & Walzebug, 2016;

¹⁸ Cotton (1989) defines the Pygmalion effect as a person’s place in society is largely a matter of how one is treated. This translates into the way teachers treat students and the impact it has on their beliefs and self-concepts.

Goodlad, 2004); In higher-level classes the atmosphere has been shown to be the opposite, with little hostility, high levels of self-esteem, and strong peer relationships (Goodlad, 2004); In lower levels there was a marked conformity and authoritarian rule, while upper levels were autonomous and independent (Oakes, 1985). In lower levels social relationships have also been shown by Legette (2018) to be distant, authoritative, and represent a more punitive classroom structure with greater negative attitudes and alienation. These track differences create different social dynamics, different attitudes, and ultimately different places in society. Legette (2008) also found that teachers reinforced the self-perception of the high track being “good” and low track being “bad.” Gamoran and Berends (1987) found that the distinctions between these classroom environments polarize students into pro-and anti-school tracks. Sacerdote (2011) showed behaviors within peer groups are influenced by tracking, including shoplifting and smoking. The interest here are in the polar outcomes of student social interactions with their peers and their teachers. Students in lower-level tracks have, by this point in their journey, learned different ways of social classroom interactions that funnel into behavior and beliefs about themselves.

The outcomes of tracking on academic achievement show significant gains for students in higher-level tracks as compared to lower-level tracks. Gamoran’s study in 1987 showed that the dropout rate and achievement differ per track, as does the level of socio-economic status. In general, as the track level increases, so does the average GPA. And as the track decreases, the number of students in low-income quartiles and dropout rates increase. However, differences were small when controlled for race and SES (Gamoran, *The Stratification of High School Learning Opportunities*, 1987). The studies also looked at the achievement differences between tracked and non-tracked students and found there was a greater gain for low-track students if

placed with high-track students. The study also found a large achievement gap between vocational and college prep programs and that track affects the number and kinds of courses taken, especially math; the greater number of math courses taken, the greater the effects on scores (Gamoran & Berends, 1987; Gamoran, 1987). Karlson (2015) found that moving tracks from low to high was equivalent of going from a C average to B+ average. He also found the expectations changed due to placement, and it was as if a student's income moved by two quartiles. This effect was best observed when the move contradicted the middle school placement. Sacerdote's (2011) study examined peer effects in that high-ability students benefit from pressure of other high ability students; in this situation the top achiever gets lower scores if and bottom gets higher scores if the school is untracked.

The effects of tracking have also been shown to affect student self-perceptions, self-esteem, and self-concept. The main aspects of self-perceptions shown to be impacted by tracking are age dependent and have the ability to influence attitudes about one's self, cause belief adjustments in self, and disrupt success. Early education levels of tracking have been found to cause problems with academic self-concept at a time when social comparison has lasting effects on self-belief and track level placement. The impact is highly related to attitudes of self and future plans (Sacerdote, 2011). Moreover, higher tracks have been found to have high academic self-concept, while the low tracks have negative self-views. Track level membership was highly related to concept of self and future plans: the high tracks had strong academic self-concept, low had negative views (Oakes, 1985). Johnston refers to this phenomenon as the causality of the probable, a process through which low-perceived probability of success causes low SES students to adjust and lower their aspirations. Legette documented that the academic outcome of tracking influences self-perceptions. Students perceive themselves

through the track they are in as “good” or “bad,” and teachers reinforced this effect. In general, it showed students’ self-perceptions were of a “fixed intelligence” and the perceived stigma associated with a “slow” classroom was that it was “bad.” A more accelerated classroom was associated with smart was “good” and had an associated high level of merit for the honors track (Legette, 2018). This effect was also observed in a Flemish study that compared within school tracking to between school tracking and concluded that lower tracks have a greater sense of futility in both environments (Jaeger, 2009). After completing her study, Oakes concluded student attitudes cluster in high and low tracks and differ in self-attitude, which retards academic progress, fosters low self-esteem, promotes misbehavior, and lowers aspirations (Oakes, 1985).

The studies highlighted provide important indicators as to where tracking can lead students from under-resourced backgrounds. The concern is in the long-term, polar opposite outcomes of students in relationship to their social interactions with peers and teachers, as well as their academic differences and curriculum exposure. In addition, the unequal outcomes of tracking can lead to differing placement in the greater society in terms of employment, college access, incarceration, and class standing. Because of the way in which RTI serves as an early tracking structure, it has the power to serve as an initial tracking agent as it screens and makes decisions based on scores. This structural policy of schools is not only directly connected to the historical aspects of tracking and eugenics but is directly connected to IDEA and Special Education legislation. Screening, testing, and assessments are embedded and required in the policies and procedures of decision making in public schools. Moreover, the methods used to assess and divide are considered to be one of the most important daily occurrences in the program, the legitimizing of assessments leads to the determination of student outcomes, through the meritocratic principle that underlies the rationale for the placement. In other words, the

system is designed to classify and sort children into categories of value based on a very specific way of knowing and being, which ultimately has consequences in the economic world and a lifetime of impact. The lack of research on the long-term outcomes of students in RTI adds to the debate over whether these programs can promote upward mobility or set a child on a different path of lower-track placement.

Modern Eugenics and the “Hunt for Disability” in the 21st Century

Bernadette Baker (2002) argues that the term “learning disability” is geared around differences, delays, and unreadiness in learning. She explains that disability classification is really seeking the label of “not White” and homogeneity of classification. The new eugenics is the concept that programs within special education policy such as RTI seek disability, compare it to the norms, and separate students by socio-economic status, race, and gender into colleges, neighborhoods, and classes (Baker, 2002). A child from an under-resourced background is accordingly caught in the crosshairs, which can lead to tier placement, special education labeling, and a journey toward lower-level track placement. The journey from P-K to secondary school for that child may hold little promise of escaping the confinement of lower scores, interventions, and pull-outs, all signifying the differences between them and the perceived “normal” classroom.

The process of creating labels thus serves to compare one to a “normal” standard of academic success at certain levels of schooling. Normalization theory as translated by Selden (2000) explains that all students are compared in a hierarchical quantified fashion to a normal and affirms that the process of labeling is dependent on defining one as normal and the other as abnormal. The five elements of normalization are stated as comparison, differentiation, hierarchy, homogeneity, and exclusion. RTI works as an assessor and distributor of the population of incoming students in relation to what is perceived as normal to be able to know

and do in literacy. As stated previously, the program adheres to general cut scores and will send the bottom 20% into intervention programs. RTI and special education services make use of each of the elements during the process of identification. Baker reinforces these thoughts when she explains how students are pushed out of the norm via the practice of comparison and labeling, which is a case of “having it,” as compared to “I’m different and multicultural.”

According to Alim, Baglieri, Ladson-Billings, Paris, and Rose (2017), teaching and learning have been built on a basis of White middle-class knowledge, and accordingly teachers are focused on the model student they teach or will be teaching. This creates the idea that there is one generic child to educate and therefore one generic way to respond to that child. When teaching children that fall outside of this model, the modules are brought in to specifically respond to a deviation, such as sign language for the deaf. The response is thus centered on a “normal” vs “not normal” intervention, which does not welcome diversity but instead sets it apart. The division and exclusion of students outside the normal leads to the labeling of a disability, and the promotion of ableism as the standard. Whether in testing or physical assessment the premise of one normal standard to be measure against reigns supreme.

Gillborn (2010) rationalizes that high-stake testing such as early screenings creates divides and serves as a racist reality, where old-style assumptions about racial order and intelligence shape new eugenics, all supported by an “immutable belief in differences, inability, and potential” (p. 235). In addition, the medical model serves to create evidence of a “lack” within the student and not within the methods used. Buried in history, eugenics is still an underlying theme of educational policy and techniques that serve to sort children creating channels of success. As stated by Joseph Valente “exclusion, even in inclusion education, is

inevitable, and it is a reminder that there should not be a hierarchy of oppression; but inevitably with the way inclusion is set up in special education, there is one.” (Alim, et al., 2017, p. 9).

In conclusion, eugenics is a significant piece of our American history and remains in some of our educational policies. The socio-historical construct of eugenics has led to three important outcomes that ultimately have produced the effect of making the segregation of children in early education an acceptable policy: 1) academic placement using the long-standing belief in testing and screening students; 2) The requirement to legally assign labels to students through special education programs; and 3) the sociocultural segregation of those who do not fall within the standard scores that are deemed acceptable of specific knowledge type. Together the outcomes lead to a disproportion of lower-resourced communities being targeted. This history serves to underscore and reinforce the legitimacy of placement into programs such as RTI, which create dividers between children due to race and cultural attributes. Although on the surface RTI appears to serve as a means to improve student learning, the underlying eugenic principle may instead serve to divide students into labeled categories that perpetuate disproportional outcomes and social stratification both within schools and society. Understanding the outcomes of students and the consequential validity of RTI can help us gain insight into whether the program continues to reinforce old belief systems or whether it has a positive impact on our most vulnerable students.

The next section will explore Bourdieu’s theory of cultural capital and its influence on “natural” class distinctions and the consequential effect on student placement and misplacement. Cultural capital and its multiple associated capitals have an influence on the basis of class stratification, creating norms of acceptance and satisfying eugenic beliefs that there are differences of who is accepted in society, and the appropriateness of certain behaviors, mannerisms,

linguistics, prior knowledge, and dress are all associated with the “right” way of being. It will be shown that cultural capital plays a role in the eugenic history of class-based acceptance, with the consequence of others being perceived as outside a standard that is acceptable. This appropriation of acceptance is transferred within the classroom due to a specific class-based knowledge and repertoires of social significance, creating social capital that can be used in exchange for advancement. These class signals thus pave the way for social stratification, access to resources, and the outcomes of inequity due to the systemic ways of labeling of the successful student versus non-successful student. In this next section, the connection to RTI is visited through the vantage point of specific culture-based literacy norms and ways of early learning that influence initial intervention placement; class-based assumptions as students enter the system; and the role of families as they interact with the school to perpetuate outcomes for their children.

Framework II Cultural Capital and the Sociocultural Influence on Social Stratification in Schools

Defining Cultural Capital Theory

In the 1960s French sociologist Pierre Bourdieu applied the theory of cultural capital as a means of explanation for both the segregation and perpetuity of class in France. In the 1970s the theory of cultural capital made its way to America. American researchers from the varied fields of sociology, economics, and education became interested in the theory as a way to explain the stratification of class and educational inequalities that had been increasingly observed in America (Dika & Singh, 2002). Bourdieu’s theory of cultural capital explained why these stratifications happen “naturally” in society. His theory explained that the cultural capital one family or individual might possess is associated with the individual resources one has and is comparable to IQ when it comes to educational advancement (Kraup & Munk, 2016). Cultural

capital as explained by Dika & Singh (2002) is a symbolic power that includes norms, behaviors, and access to institutional resources. Bourdieu uses the theory to explain how culture and class create a symbolic violence by imposing systems of symbolism and meaning upon groups and classes in such a way as to legitimize privilege (Lareau, 2000; Lareau & Weininger, 2008). The combination of an individual student's cultural capital and the symbolic violence perpetuates inequity by ignoring it and treating everyone as equal and meritorious. This in the long run leads to inequitable outcomes that are justifiable through social markers (Jenkins, 1992). Cultural capital has become one of the most discussed theories in educational social justice issues, and it has been argued that it plays a significant role in determining academic placement (De Graaf, Graf, & Kraaykamp, 2000; Dika & Singh, 2002; DiMaggio, 1982).

Cultural capital is complex. It represents a variety of different tangible items or assets one might have, such as art, books, tastes, dress, and mannerisms; experiences one may partake in such as going to galleries, museums, hobbies, and creative pursuits; and the intangible items that Bourdieu refers to as the "embodied capital." The embodied capital is an integration and assimilation of two of the most important components of Bourdieu's theory: the "habitus" and "field." These attributes, enmeshed together, ascribe and confer signals of social status and can influence how a person interacts within the organization and social structure.

The field and habitus form a dynamic relationship of play, acceptability, and comfortability within a network of social players or institution, such as school. Richard Jenkins (1992) interprets Bourdieu's field as a metaphor for the social arena in which you are embedded, where struggles and maneuvers take shape daily. In this interpretation the field can be institutions or individuals, as well qualities you possess for which you are accepted. More commonly referred to as the social field, the field is the relational character of the social network

of class and how groups, individuals, and institutions are not so much defined by their objects, but by their position in the structure and social network (DeGraaf & Matthijs, 2001; Krarup, 2016; Jeager, 2006; Ostrove & Cole, 2003).

The habitus is considered to be a social condition that guides social practices. Jenkins (1992) explains Bourdieu's idea of the habitus by stating that Bourdieu "considers the habitus to be inside the head, and exists because of the practices of actors and their interactions with each other and their environment" (p. 75). Bourdieu (1984) references that the tastes and habits function as a sense of one's place whereby tastes, gestures, postures, and words are reminders of where we fit in the field. This creates memberships and social identity where goods can be converted into signs of status (Bourdieu, 1984). Friedman (2016) highlights that there are three dimensions of the habitus: the volume of capital; the composition of capital; and the change in this over time. A person's cultural capital trajectory will be based on the volume of inherited capital overtime. In other words, your habitus is not the possession of the materials but the way you inherit and attend to the cultural practices overtime. Habitus is the knowledge and depth we have in relationship to behaviors and attitudes, and as such it keeps us true to our class. Another way to look at the habitus is through the idea that we are working with a set of social and cultural codes (De Graaf, Graf, & Kraaykamp, 2000). These codes get passed on from one generation to another and have a specific value when it comes to social class and the educational community.

The habitus is therefore part of our daily practices, history, feedback from others, and relationships with others, and ultimately represents the embodiment of our cultural ways. It is complex in that it is multivariate, including our habits and ways of being, but also that it includes multiple forms of capital being constantly exchanged for goods and power. The capital exchange provides the individual with access to different types of resources, such as upward

mobility, through social networks, status, and educational achievements. This capital can then be passed on to friends, family, and co-workers providing an intergenerational, as well as context dependent mobility for those in your like field. The recognition of the field and habitus as parts of a student's capital as they enter school has implications for how they fit into the system. Students who are comfortable and at home in the field may excel due to common cues from teachers and surroundings, whereas students who enter from other cultural ways of being may not have the same comfortability, misunderstand cues, and experience a sense of difference from the initial school experience.

In addition to the field and habitus, Bourdieu's theory is broken into three separate categories of capital: economic, of which includes money, home ownership, summer homes, etc.; cultural, including taste and preferences for "highbrow" activities, such as going to the theater, fine dining, speaking a foreign language, and symbolic presentations, such as choices of conversations and books; and social attributes, which includes the network of social connections one has and relationships with others (Jaeger & Holm, 2006; Jenkins, 1992; Dika & Singh, 2002). Another way of looking at these categories is via the three forms of capital labeled as objectified, embodied, and institutionalized. The objectified form of cultural capital represents the items or objects we have in the home that represent higher class; the embodied forms are the attitudes, tastes and values one has in regard to education and culture; and the institutionalized form relates to the institutions that are recognized as a social marker, such as higher educational institutions, private schools, and professional employment (Bourdieu, 1977, 1984; Dumais, 2002; Jenkins 1992; Tan, 2017).

Bourdieu (1984) explains that in a class-based society, all the products of a given agent are embodied or objectified in common phrases and in reasonable and unreasonable ways which

creates membership. Each of these attributes are embedded in the daily interactions of social situations in the “field” and “habitus.” Within the educational institution, cultural capital signals are displayed through the embodied capital as well as the capital markers of educational capital, symbolic capital and disposition (Troels, 2016). These common exchanges and displays influence how an entering student experiences the classroom, books, materials, tests, and peers. The capital of some students is more highly matched with American classrooms, leading to a comfortability for some and discomfort for others. Lareau argues that the middle class has an advantage when entering because the capital of the teacher and middle class are more tightly aligned, creating an unfair advantage (Lareau, 1987; Lareau, 2000; Lareau, 2011).

Linguistic Capital

One final component of cultural capital critical to the understanding of the relationship between cultural capital and educational settings is that of the relationship of Bourdieu’s habitus and field to linguistics capital. In the educational “field” and other social institutions, the type of linguistic capital a student possesses presents a significant impact on their interactions with each other and the teacher. Linguistic capital is part of the habitus and embodied form of capital (Panofsky & Vadeboncoeur, 2012). It includes the propensity to say certain things in certain ways. The “linguistic market” is filled with different sanctions and censorship and includes an authority and audience who recognizes the speaker through linguistic markers (Jenkins R. , 1992). The linguistic markers used in conversation, such as intellectual and academic vocabulary, accents, and intonations can then be used to confer status or not upon the individual.

In education the importance of this cannot be overlooked for it is an impression assessed within minutes of conversing and observing students and is reflected not only in conversation but in writing style and ability to comprehend written components in the curriculum. Moreover,

linguistic markers present themselves in various hidden ways within text. These sculpted ways of communicating within conversation and text come forward in the initial correspondence within literacy screening as one enters the educational community. The linguistic markers of what is portrayed as successful via the text is critically important, leading to either a “green light” to move forward or “red light” to stop and gain intervention. Students who possess the right kind of capital easily harmonize within the educational setting, creating a sense of comfort whereas others who may not possess the harmonizing linguistic capital are left out of the educational “field.”

Cultural capital embedded within the linguistic code is one of the most powerful elements of social stratification and a theoretical determinant of academic mobility within the classroom. Gaining access to the “proper” code within American public schools requires a class and cultural background that leans heavily on a specific way of interacting with literacy. The way a student interacts with the text and language is typically specific to a White ideology of individualism and objective relationships (Delpit, 1995). Cole (2013) reinforces this idea that text creates an advantage by recognizing that children from middle-class homes have the vocabulary that is built into the “readers.” The cultural linguistic code is directly related to the physical representation of text within books and interactions with books as compared to narratives and storytelling. In this way, the capital is exchanged with ease from one middle-class environment to another. This presentation of linguistic markers is easily connected to cues within the universal screenings that are presented on the first arrival at school and have the possibility of misidentifying representations of ability.

As a reference to the importance of linguistic capital, Jaeger has looked at both the presence of educational resources in the home and the level of beaux arts that students are

exposed to, such as trips to museums and art galleries and even engaging in hobbies. He found that within the home, the possession of cultural capital in the forms of books had the largest impact on a student's selection to an academic track, and that socioeconomic status was important, but the cultural capital of certain possessions such as books created an advantage in schools (Andersen & Jaeger, 2015; Jaeger & Holm, 2006; Jaeger, 2009, 2011).

This is important as it represents an initial divider, not necessarily in ability or learning disability, but in the sociocultural ways in which we construct language, communicate, and converse, as well as the way in which we learn language and literacy through text. Explored in subsequent sections, it will be argued that understanding these linguistic codes is essential to creating opportunities for others in a way that does not limit them due to the specific linguistic capital that is valued within schools, and thus accepting different ways of being literate.

Bourdieu's theory is both implicitly and explicitly apparent in the social and academic interactions in the classroom. Implicitly, the field and habitus emphasize that within the classroom, there are norms of acceptance that are implied through social interactions of classroom behavior, linguistic codes, embodied capital, and cultural cues. Explicitly the cultural barriers are further demonstrated by assessment data based on literacy that demarcates differences in ways of knowing and being. These implicit and explicit markers are forever present as students and teachers from different class backgrounds interact, providing a social field in which the cultural cues emerge as to the educational standing of the student. Additionally, the explicit barriers of assessments that are driven by a cultural framework that is based on the White middle-class culture and construction of knowledge can lead to a misunderstanding of a student's ability. The early assessments that are part of the universal screening process are able to pinpoint lack of knowledge due to class differences and frame it in a manner of lacking or deficit.

The class basis for determining success both implicitly and explicitly is directly connected to the practice of literacy assessment. Specifically, the ways in which information is presented and questions are asked can create a divide between those who understand the linguistic code and are thus able to interact with it, and those who may not. Those who are outside of the understanding of the field and habitus may consequently be left out of the success bubble. In RTI the success bubble includes all of the students who have the appropriate linguistic capital.

Cultural capital is a socio-historical concept in that it is perpetuated within schools due to a reproduction of certain classroom beliefs in regard to what the appropriate knowledge and behaviors are for children as they enter the system. The initial barriers of class-based knowledge arise on day one as teachers meet and interact with students, and place judgements due to cultural markers. However, the policy of “science” based testing and screening has potential to lead to a data-based substantiation of cultural differences. These differences may then be linked to a need for intervention services, tier placement, and special education labels. In this next section, the elements of literacy that are related to differences in home-based early childhood experiences will be examined as they unite the distinctions between the lived experiences of children from different classes and their cultural backgrounds. It will be argued that the differences in cultural capital serve as a marker via social interactions, and through linguistic markers based on intervention assessments and benchmarks.

Class Based Differences and Their Implications for Literacy. In order to define class-based literacy differences that present in the classroom, we must first examine the differences between class-based knowledge and cultural differences. Annette Lareau has done extensive study of the differences between middle-class families and working-class families since the early 1980s. Lareau’s ethnographic studies have been driven by an attempt to understand class

differences at the family level and their connections to the capital presented in the classroom and schools. Key to her work is the role that class plays in not only helping students navigate classroom curriculum, but also the role that White middle-class parents play in ensuring that their students receive the best resources.

Lareau's qualitative and ethnographic work has focused on the impacts of cultural capital, social class differences, transmission of advantage, and social capital within schools and families. More specifically, her work has focused on how White middle-class families cultivate certain behaviors, attitudes, beliefs, and values that are recognized within the educational system to have value and deliver a certain "leg up" in the classroom. The outcomes of these differences are that students from the White middle-class tend to have the experiences needed to align with the curriculum standards and assessment materials. Moreover, they have the right types of capital that lead to harmony and synchronous interaction with curriculum, assessments, classroom repertoires, and communication platforms. Lareau defines cultural capital as the institutionalized and widely shared high-status cultural signals used for social and cultural exclusion – these signals activate attitudes, preferences, behaviors, knowledge, goods, and credentials and serve to promote or detain the individual (Horvat, Weininger, & Lareau, 2003).

Key to Lareau's focus on the social dynamics of cultural capital and influential in all her work is the phenomenon of "concerted cultivation." Lareau (2008; 2011) describes this as a middle-class phenomenon whereby parents treat their children as projects. They place a "concerted effort" on cultivating cultural capital through an abundance of activities, behaviors, and communication methods. Concerted cultivation transforms children into perfect matches for classroom success (Lareau, 2011). Bourdieu's theory of cultural capital and cultural reproduction theory is easily connected to the concept of concerted cultivation. In its

“Bourdieuian” terms, concerted cultivation is an “investment” in the capital and the return is access to educational advancement. Lareau argues that this class related factor shapes children’s ability to negotiate with adults, think critically, develop rich language, and make decisions in their scheduling. Each of these skills are valued in our educational settings and accounted for in academic assessments. Cultural capital theory suggests these middle-class family norms and intergenerational forms of transferring capital promote educational achievement and school related motivation and engagement. Lareau sees the impacts of the middle-class family’s ability to pass on traits that are valued in an educational community. This cultural capital leads to educational capital that in turn creates or maintains status and upward mobility.

Cultural capital creates divisions due to the academic community’s embrace of specific ways of knowing and being able to do. The cultural dominance of specific repertoires and knowledge base during a child’s entry to school creates inequities between students who do not share the same background. Policies such as RTI reverberate and reinforce these differences via their methods of daily assessments and early screenings focused on specific literacy styles, while educators observe cultural capital differences that further substantiate learning differences. These differences can easily be translated into a type of learning deficit. In the final section of the trilogy of disproportionality, the concept of deficit thinking will be addressed as it relates to literacy and childhood experiences; beliefs about “missing or lacking” pieces of information; and the idea of closing the gap. The deficit perspective will be highlighted as it relates to literacy and specifically to the model of RTI as an identifier of gaps.

Framework III Perceptions of Cultural Deficits Within the Classroom

The sections prior to this examined the ways in which the culture of a specific class-based way of behaving has become the dominant way of knowing and exchanging goods in

schools. In the current educational system, the standard is set via these norms, and others must work toward it. Associated with this method of cultural assessment is the foundational skill of literacy and the differences between how one develops and displays literacy. Differences in literacy are recognized upon entry to the school system, whereby literacy becomes the flagship of deficit for children from different class, cultural, and racial backgrounds. The perceived deficit, arising from cultural differences, sets the foundational basis for a student's passage through the school system. Referred to as deficit pedagogy, the deficit perspective views "language, literacies, and cultural ways of being of students and communities of color as deficiencies to be overcome" (Paris, 2012, p. 93). It is the notion that youth of different cultures are lacking in a multitude of ways, including language, culture, family support, academic skills, and even moral character (Paris & Alim, 2017). It is the "view that assumes that growing up in poverty deprives children of essential cultural conditions for normal intellectual development" (Cole, 2013, p. 85). The deficit perspective takes the position that minorities and poor are at fault for poor academic performance because: 1) students are entering without "normal" skills; and 2) parents don't support education (Yosso, 2005). Rogoff et al. (2017) states "the deficit view is not simply the idea that somebody still has something to learn; it is the idea and assumption they should have already learned it and remediation is needed to fix this" (p. 879).

Within the educational community, deficit pedagogy can lead to assumptions that children growing up in poverty are deprived of the essential culture necessary for success and normal intellectual development, making deficit a psychological function (Cole, 2013). The basic premise of what is deemed correct knowledge in schools is governed by specific cultural assumptions that privilege White middle-class values and perspectives. Teachers are most familiar with the patterns of those who share the same class background and can perceive it as

ability and compare others to it via the deficit model (Artiles, Aydin, & Thorius, 2010). If the cultural capital exhibited by the student does not match the cultural capital of the school, it can become a perceived deficit. The beliefs of lacking may be attributed to the child having less social interaction, less emphasis on reasoning, fewer instructional materials, less strategic play, and lack of impulse control (Cole, 2013).

The historical roots of deficit pedagogy are long and buried in the conceptual frameworks already reviewed in this dissertation. They include eugenics, special education legislation, access to resources, war on poverty, and basic freedoms and property rights. However, more recent applications of deficit pedagogy can be seen in the continued discussion on the “achievement gap” and its corresponding terminology. During the 1960s, as desegregation took aim at public schools the “gap” emerged in assessment scoring, leading to the 1964 War on Poverty that brought focused on intervention as way to dismantle the “gap.” The War on Poverty started from the belief that poverty cannot provide moral, intellectual or financial resources, and put the nation at risk (Avineri, et al., 2015). The “war” produced “Head Start” as a way to close the deficit gap and to bring children of poverty and color up to the “standard” and as such repositioned the deficit model to one of “lacking” and “fixing” (Cole, 2013). The essence of poverty was perceived as one of deprivation in terms of culturally recognized values and the perception that the poor cannot produce or enjoy life unless they rise to the White middle-class standard. The gap and deficit are stated as though they are deficiencies that must be overcome if students are to learn the “dominant language, literacy, and cultural ways of being as demanded by schools” (Paris & Alim, 2014, p. 87). Valentine (1969) labeled the approach as “a cult of discrimination” in which poverty and lower classes are seen as weak and unequal and deprived of culturally recognized values (Paris, 2012). Poverty is thus associated with deficit,

creating a system of beliefs that educators use as they develop programs and curriculum.

Unfortunately, it is proposed that the programs may actually serve to divide and reinforce these beliefs instead of impacting a students academic success (Alim, et al., 2017).

The use of literacy and language to assess students in the early grades creates a substantiation of deficits due to students from under-resourced backgrounds consistently scoring lower due to cultural differences. Teachers may use results as a way to substantiate and confirm their beliefs that students from different class and cultural backgrounds are “bankrupt” of any language practices of value and are limited. Assessments can therefore serve as “pedagogical tools of exclusion as they provide and teach the value of certain knowledge systems, abilities, behaviors and skills over others” (Waitoller & King Thorius, 2016, p. 383). In this way the “gap” becomes naturalized and expected (Artiles, Aydin, & Thorius, 2010).

The discourse on literacy and language gaps are founded on a view of what counts in education and views poverty as a “moral failing” (Paris & Alim, 2017). Language, the language gap, literacy, and the “achievement gap” have become the trade names for deficit for children from under-resourced backgrounds because they highlight the failings of the “home” and substantiate the deficit pedagogy. The logic embedded in this circular argument is that there is a deficit in literacy, and the test is proof. Therefore, the child needs fixing. However, the argument is based on the premise that there is only one type of knowledge that is correct and worth being able to do in education. This golden premise underlies the entire system and continues to be promulgated via accountability and special education policies. Assessors of literacy success have limited knowledge outside of their own culture and assume their cultural ways are neutral, whereas classrooms are not culturally neutral and tend to represent the dominant group (Rogoff, et al., 2017). Utilizing identifiers of differences creates the idea of a

“gap” in knowledge. The continued discussion of the “word gap and achievement gap” is the language that sees a place to “fix” our current disparities, instead of reflecting on the ways in which differences bring diversity and new knowledge into the classroom. RTI has the ability to substantiate this view by utilizing standardized benchmarks via early screenings and subsequent tracking of skills acquisition which are based on specific cognitive skills, showing the gap in a “scientific” way.

The “Word Gap” Belief and Cultural Literacy Markers

The White middle-class forms of culture and class are set via an independent, word counting, and individualistic approach to learning (Delpit, 1995). It is a form of literacy culture in and of itself that represents a very specific identification of success while demoting others to a “not yet” stigma. The rigidity of the system becomes a way of enabling or disabling by what it counts as success. This creates stereotypes that lock out other ways of knowing language. As a consequence of this rigidity, the American education has created contexts that make children problematic instead of the adults that are setting the standards (Baker, 2002; McDermott & Varenne, 1995; 2006). Culture becomes the great divider as assumptions are made about the culture of poverty, race, and other “isms,” while assessments confirm and reaffirm the need for intervention, labels, and lower-track placements.

The divisions that arise create isolation within remediation and intervention programs, most specifically RTI, which sets the bar during the first years of public-school entry. More specifically, as Rogoff, Dahl, and Callanan (2018) state, “interventions assure that middle-class children are the norm or the only way, and disregards and risks harm to children and communities that function with different logic” (p. 8). The effects of the misappropriation of a specific cultural standard of literacy on other’s abilities ends with labeling students within

categories based on literacy, which also comes with a consequence of deficit. The methodology can serve to sort students from non-dominate backgrounds into lower-achieving groups and placements with labeled categories such as learning disabled, with the assumption that the student is missing something and being locked out for a good reason (McDermott & Varenne, 1995). However, intervention programs rely on a small and narrow scope of the world's population and assume a fixed developmental pathway with an assumption that greater verbal input equals greater cognitive development. In reality, the mechanisms for literacy development are varied with no connection between verbal input and cognitive development (Weber, Fernald, & Diop, 2017). Instead, the programs that highlight these specific differences create the inequities. Paris and Alim (2017) refer to this method of subjugation as “linguistic racism and policing of language,” in that young people are framed as lacking and uneducated. But research has shown that youth from economically, racially, and linguistically marginalized communities are in fact innovative.

Literacy in American schools is very much connected to a specific type of culture and is narrowly focused on print learning, which creates a divide between how you demonstrate success at school. It is nearly impossible to show strengths in history, science, humanities, and art without demonstrating success at literacy; in this way literacy becomes othering (Alim, et al., 2017). Due to RTI's focus on literacy and specific cognitive skills, it has potential to funnel students into tiers that could lead to impacts on all subjects and to long-term disadvantages.

Languages and Literacy Differences

Language and literacy are situated at the center of the deficit pedagogy within educational communities and serve as the great sorting method upon arrival due to the early introduction of screenings. Delpit (1995) describes how students from differing cultural

backgrounds experience language differently and the influence this has on literacy markers in educational settings. Delpit explains that White narratives are very topic and object centered, while black student narratives are episodic. In addition, she lists other differences, including questioning style, storytelling, and listening techniques. Further adding to these differences, Michael Cole (2013) explains that White middle-class families tend to use reflective speech, questioning, and labeling from early ages. Rogoff et. al, (2017) note cultural differences in the way questions are asked, narrative styles are presented, and oratory virtuosity are present in some cultures with the use of metaphors. Although recognizing that all cultures have overlap and evolution, these differences are mainly highlighted in literacy assessments, classroom rituals, and community interactions, thus creating a difference, deficit, and disability context for those who do not align.

Markus and Kitayama (1991) assert that American culture is individualistic and independent, not interdependent, with a focus on autonomy, which leads to differences in understanding classroom interactions. Other authors have observed the similar patterns of differences between the western, educated, industrialized, rich, and democratic (WEIRD) countries and the rest of the world (Markus & Kitayama, 1991; Sperry, Sperry, & Miller, 2019; Rogoff, et al., 2017; Weber, Fernald, & Diop, 2017). Brady, Fryberg, and Shoda, (2018) argue that “research on education illustrates the importance of attending to culture and including non-WEIRD samples to avoid ineffective and detrimental interventions” (p. 1409). When policies and programs are in place that are intended for rote indoctrination of vocabulary words from one culture into another, the meaning is lost, students learn to reject literacy, fail, and ultimately are put into lower reading groups, tiers of intervention, or learning-disabled programs. The process of decontextualizing subjects and words disrupts the learning process as conscious versus

unconscious learning hinders meaningful communication and the true nature of learning literacy (Delpit, 1995).

McDermott and Varenne (2006) conclude “the problem facing American Education is not that we have so many failing children, it is rather we have so many scales ready to fail them” (p. 17). In this way schools appear to be built so that many children can declare failure before they have a chance to succeed (McDermott & Varenne, 2006; 1995). The scales (seemingly tipped toward White middle-class culture) sort according to culture, ultimately labeling some as “successful” and others “in need of improvement,” creating what is commonly referred to as the deficit approach to deciphering culture, in that the students are lacking a critical piece (McDermott & Varenne, 1995). In this manner literacy becomes the big marker as to who will be placed in intervention services.

To further substantiate how the literacy gap has become the great demarcation of class and race differences, Hart and Risley (2003) produced a study entitled the “*Early Catastrophe*”: *the 30-Million-word Gap*, a study that proclaimed to uncover a phenomenon in which lower SES students experienced 30-million less words spoken to them between birth and preschool than their higher income peers. This study was seized upon by proponents of the deficit, differences, and disability frameworks as a “flagship” study in that it exposed the heart of the literacy problem: students in poverty are word poor, thus substantiating the idea that students are at a deficit when entering schools because they have been exposed to less vocabulary than their middle-class counterparts. This study used data to legitimize and reinforce the structure of deficit by assessing a student’s aptitude as directly connected to and legitimized by a “science-based” word count of direct spoken words between caretaker and child. The socio-economic status as

represented by the number of words spoken directly to a child created a signpost for intelligence differences, further solidifying a White middle-class advantage (Avineri, et al., 2015).

Miller and Sperry (2012) critiqued the Hart and Risely study for calling it language deprivation that added to the deficit perspective of class and culture. The authors explained that social context is the most important determinant of verbal behavior. When differences are measured on standardized tests of verbal ability in evaluative context, they are asymmetrical (Finch, 2012). The authors go on to explain that the Hart and Risley study was not useful to understanding literacy and language. In 2019 Sperry, Sperry, and Miller repeated the study using three different ways of accessing speech: direct, overheard, and words of caretakers. Results showed that the words heard were varied between economic groups; some black neighborhoods had nearly the same number as professional communities. The authors concluded that there is no gap when you look at all words spoken. Children can profit from overheard words, but key to literacy assessment, there is an association between direct words and later vocabulary development and growth. They argue that just counting words directly spoken to a child does not constitute the entire picture of language development. Different cultures have different ecological settings, but literacy is still included, just differently than in White middle-class America (Finch, 2012; Miller & Sperry, 2012).

These studies highlight the ways in which literacy is developed and interacted with across different social and ecological settings. Miller and Sperry (2012) review the history of studying language through socialization, stating that language socialization history starts in the 1980s. In their review they found many narratives that developed dramatic, pejorative verbs from lower-income homes. They noted that lower-income parents made children defend their stories and elaborate, whereas the middle-class homes, the children were granted a wide range of latitude to

present stories independently. The authors noted that the narrative style of language emerged early, and that the storytelling process had open-ended questions in games of storytelling. Other studies have demonstrated similar differences in the way in which language is constructed. In White middle-class families, it is more strongly associated with labeling objects and giving objects to children as a way to calm or entertain them (Delpit, 1995). This interaction tends to create a more objective-based naming of objects and things that is consistent with word fluency assessments provided in early screenings.

As summarized by Sperry, Sperry, and Miller (2019) in the classroom there is little scope for developing narrative skills. Most valued is the middle-class way of speaking. Children outside of the dominant form of literacy have ability, but because it is not the way of the school, they are limited in their ability to demonstrate, and there becomes a symbolic domination of minority speakers. Their competence does not count. The authors state that tones count too. Verbal strengths are looked upon as bossy and offensive in the middle class. This is a misrecognition of talent and a clearer association with the cultural capital and social capital that is not aligned. Language deficiency is now a mainstream part of educational policy and implicit in institutional practices. Middle-class children sound smarter, and this translates into a perceived language deficiency of others from different backgrounds (Miller & Sperry, 2012; Sperry, Sperry, & Miller, 2019). In addition, teachers assume poor children are language deficient and at a deficit before entering the classroom. Because not all discourse is ranked the same or perceived as intelligent, teachers may teach down or discount contributions (Delpit, 1995).

Taken as a learning differences approach, Rowe (2018) suggests we look at the differences in how communication moves in more of an ecological setting. Differences in literacy in early development are related to a host of different variables within the home,

including spoken and overheard words; object labeling; declarative versus descriptive; questioning; call and response; and narratives and dialogue. Yet in school culture word and object identification are key to success. The education level of a parent is important as it yields vocabulary, literacy, beliefs, goals, mindset, and knowledge about children and begs the question as to whether or not this perceived methodology of determining success is true for all cultures. Literacy is constructed and negotiated within social and institutional organizations and is thus a social construct. There is an assumption with RTI that literacy is a collection of measurable skills, which leaves out the idea that is a cultural endeavor that is always evolving and used in relationship to what is practiced, ignoring the many ways children learn and are socialized (Caraballo, 2017). When language and literacy are presented as “one-size-fits-all” dominant method, it creates divisions in who can and who cannot succeed. The social construction leads to the appropriation of labels and new policies for “closing the gap.” Leading the current charge of methods of gap closure presented is the intervention program RTI.

RTI and Deficit Perspective

Response to Intervention serves as a “word gap” and “achievement gap” identifier and has the potential to serve as a deficit culture reinforcer. The program utilizes daily, weekly, and yearly verbal literacy counts to identify if a student should be placed in tiers for intervention. In this way it is literally the “word gap” study conducted on a daily or weekly basis. The program does not recognize differing cultures but maintains pluralistic markers of culture and identifiers through the cognitive skills assessment (Cramer, 2015). This influences teacher perceptions, personal assumptions, language variation, and dialect acquisition (Artiles, Kozleski, Trent, Osher, & Ortiz, 2010). Hartlep and Ellis (2012) explain that “RTI in essence could be labeled as merely an extension of an already Eurocentric and culturally biased battery of education

processes and practices” (p. 93). These differences are important to understanding why the RTI program and its associated tiers and screenings may contribute to disproportional representation that have lasting consequences. The ways in which we learn language are very different, so that utilizing a “one-size-fits-all” model for early assessment ends up screening class and cultural capital more than it does ability. This generic student model discriminates based on social constructs in a relational system where smartness is equivalent to Whiteness and eugenics and reproduction hierarchies shape one’s future (Waitoller & King Thorius, 2016). In this way “the teacher is imbued with authority, assessor, and expert as interpreter of tests” (Panofsky & Vadeboncoeur, 2012, p. 203). RTI is built on testing and data collection that reinforce the idea of deficit in the educational community. Children are the recipients of labels that can incur a lifetime of challenges on them as a direct outcome of intervention screenings. Cole (2013) pondered the ways in which testing can create a deficit impact and maintained that “low scores on standardized language tests of children who speak non-standard English or African American English (AAE) arise from inadequacies of the testing not inadequacies of the children” (p. 86). The creation of RTI and response to the “word gap” has thus led to the persistent and consistent misrepresentation of a student’s ability via cultural bias built into the procedures, policies, and assessment practices.

These insights are directly connected to the reauthorization of the IDEA in 2004 and special education legislation, ability tracking, eugenics, and cultural capital are also historically embedded in the policies and procedures of decision making within public schools. The legitimizing of assessments leads to the determination of student outcomes through the meritocratic principle that underlies the rationale for placement. In other words, the system is designed to classify and sort children into categories of value. The inclusion in a learning

disability category or low tier becomes the exclusion to access to resources: “it is a reminder that there should not be a hierarchy of oppression; but inevitably the way inclusion or special education is set up there is a legal one” (Alim, et al., 2017, p. 9).

In this way, RTI may be serving as a vehicle for the commute from early screenings, tier placement, and track level placements in high school to social stratification and reproduction in the greater society. Moreover, disability can become the consequence of cultural, political, and economic practices and serves as an identity marker. The “culture of disability” is set via the methods and “institutional tools, and resources to create scenes in which students are shown to be disabled” (Waitoller & King Thorius, 2016, p. 374). It is not inclusion, but a form of exclusion that serves to label the able and disabled with clarity and precision. In addition, it makes a grand assumption that all knowledge that is deemed important comes from and is maintained by the culture of Whiteness, and this is “normal”: “Culture, the great enabler becomes the disabler and disability a potent cultural fact” (McDermott & Varenne, 1995, p. 332).

How and Why Does the Culture of Literacy Create Borders and Boundaries?

Systemic problems need to be addressed through systemic analysis. As we sort through the variables of culture that lead to inequitable outcomes, it is important to recognize the depth of the problem in the values and beliefs of the system. Mental models and structures of thought give way to patterns and events in all systems (Senge, Cambron-McCabe, Lucas, Smith, & Dutton, 2012). Changing events and patterns (i.e., policy, procedures, tests, texts, and curriculum) will have little impact on the overall function and outcomes of the system. Instead, the work must be done at the structural and mental model levels within the system. Here is where one can uncover the functions that lead to patterns and events. Clearly underlying the deficit approach to learning lies the mental models of a belief system whereby one method of showing

success is best, and any deviation from that prescribed method of knowing is not acceptable. Why does that model resonate? And what is that model? The model resonates because the academic community has been established through it: teachers, professors, administrators, and policy makers. It is as they say part of our “DNA.” It is a belief system that is difficult to escape from, where there are no easy answers for what comes next, nor a way to fit the new model to the old structures. Seeking to answer the questions of how literacy confers deficit and impedes a child’s success is an important question. However, a more important question is why? Why does the educational system continue to utilize culturally biased methods to segregate students via a constructed curriculum with underlying pedagogical racism and classism? And what are the differences that continue to reverberate a deficit?

In the final section of the review, the pedagogical approach to learning will be framed through an asset-based pedagogy based on the idea that differences should be celebrated and acknowledged as contributing to the community. In addition, it will explore the ways in which curriculum can be adapted to exonerate pluralistic bias through culturally sustaining pedagogies, dismissal of biased assessments, and opportunities to expand and evolve culture through schools.

A Reconstructionist Approach to Education

This section of the dissertation has visited three important conceptual frameworks that explain “the how” of classifying students by class, race, and culture: socio-historical concepts such as eugenics lead to a scientific legitimization and meritocratic placement, while cultural capital and deficit perspectives integrate lived interactions within the classroom and society as to markers of acceptability. The conceptual frameworks thus serve as an invisible barrier as students from differing backgrounds enter a school system already at a socio-historical and sociocultural disadvantage. Unraveling the system will take new ways of viewing differences

that stem from interest, enjoyment, and inclusion of children as they enter the system instead of seeking to define benchmarks and cut scores such as RTI. The past had a “perceived normal” which was found in high stakes accountability contexts which assume that all students should learn the same academic content at the same pace, demonstrate learning in the same manner, and what to expect and to be able to know and do at a certain grade level” (Waitoller & King Thorius, 2016, p. 366).

RTI and its associated protocols, IDEA policy and special education labels, are part of the system. Although at first glance they appear to be altruistic in hopes of providing a “leg up,” they have the negative effect of comparative success to the “normal,” which places some students at a disadvantage early on. Reforms such as RTI may be unable to “close the gap” because they actually reaffirm the gap. It has been nearly a quarter century since Tyack and Cuban published *Tinkering Toward Utopia* (1997), yet their pronouncements are the same: policy may be grandiose and create symbolic change but not big shifts. Policies simply become structural additions, but teachers and classrooms stay the course. New programs and reforms in institutional structure come and go, but the same patterns emerge of who gets left behind by family type, occupation, income, race, gender, physical and mental handicaps, and place of residence (Tyack & Cuban, 1997).

Our ways of marking communities are mostly substantiated through policies that are based on antiquated eugenic principles of race, class, and notions of intelligence. RTI intervenes early, labels, and provides services. It does not consider life experiences and language differences (Brown & Doolittle, 2008). The recognition of disability is thereafter treated as a static trait from biological to sociocultural. It becomes a visible trait that must be attended to through intervention testing, special education services, meetings, pullouts, and family

communication (Artiles 2019; Artiles & Trent, 1994). The verticle hierarchal nature of schools enable institutional discrimination, and “policies that purpot to be about inclusion, can therefore perpetuate and concede systemic exclusion” (Valentine, 1969, p. 29). Power differentials due to assumptions and practices create a “broad brush deficit which is a type of epistemic viololence” (Gutierrez, et al., 2017). The words of Guitierrez et al., should serve as a reminder to the educational community: creating new policies that subscribe to old practices of deficit and disability will lead to the same ends. In contrast, Alim and Paris (2014) ask the question “what if the goal of teaching and learning with youth of color was not to see how closely students could perform White middle-class norms, but to explore, honor, and extend their heritage and community practices?” (p.86).

It is therefore vital to consider what the societal outcomes of education ought to be and the ways in which future learning could be oriented towards approaches of seeing individual ingenuity, not ineptness and inability. New ways of assessing students should be aligned with an ecological approach, whereby we see the past and future in the present. Gutierrez et al., (2017) state the “key is to imagine a social future for people, communities, and schools” (p. 2). Without the imagined outcomes, the functionalist approach will remain. By utilizing the past mechanistic approach to the system outcomes, we can envision a new outcome based on different beliefs.

Sociocultural Theories, Asset Pedagogies, and Culturally Sustaining Pedagogies

The power differentials expressed in the assessments of students through literacy are attached to one set of guidelines and standards that have been interpreted by a typically White middle-class group of educators as acceptable milestones for certain grades and subjects. Yet, the variety of learning experiences of our students means that they walk into educational settings

coming from a cultural background that may have experienced literacy development in a different way. Understanding those learning experiences is what sociocultural theories and asset-based pedagogies bring to bear on our classrooms.

Sociocultural theory is designed to take cultural context into account and therefore has the power to help educators come at learning from a perspective of “differences” doesn’t mean deficits approach. The use of sociocultural theory is also considered to be important in breaking down the social justice issues that are embedded in the current educational system. Sociocultural theories create “bridges across the gap” instead of the ever popular “closing the gap,” which typically means bringing the poor and “uncultured” up to the dominant marker.

Powerful forms of sociocultural theory that impact our understanding of different cultures include a type of perspective referred to as asset pedagogies. Asset pedagogies as described by Waitoller & King Thorius, (2016) are based on an assumption that learning is the lifelong acquisition of overlapping cultural practices, and that all students’ cultural practices are valuable tools for learning academic content. The focus on asset pedagogies has its beginnings in the 1990s as scholars began to reposition the linguistic, literate, and cultural practices of working-class communities, especially the poor and colored, as resources and assets to explore and extend. In 1995 Gloria Ladson-Billings published “Toward a Theory of Culturally Relevant Pedagogy,” which encouraged a use of culture in the classroom that made use of differences as a way to critique school culture, develop students who can achieve academically, and ensure cultural competence (Ladson-Billings, 2014; McCarty & Lee, 2014; Paris, 2012). The evolution of Ladson-Billing’s initial theory has since made its ways into multiple ways of expressing a critical analysis of how we treat differences in education.

Critical theory, critical pedagogy, critical race theory (CRT), culturally responsive education, and culturally sustaining pedagogies (CSP) are all branches of what Kris Gutierrez would refer to as socio-critical literacy practices and the “syncretic testimony,” the use of social theory and emergent socio-critical literacy to locate and relocate personal, political, and cultural ways. The underlying premise is that learning comes from everyday interactions; it is a collective and individual process that ultimately leads to a development of self (Gutierrez, 2008). Each of these makes use of reflective practices that enrich and strengthen cultural ways instead of approaching them as a deficit. According to Alim et al. (2017), it is not just about barriers and access but how the individual experiences “disabilities,” and that there is an “assumption school is the remedy, but school is the problem” (p.13).

Within the recent evolution of asset pedagogies, there has emerged the “remixing” of Culturally Responsive Pedagogy into Culturally Sustaining Pedagogy. Culturally sustaining pedagogy “seeks to sustain linguistics, literate, and cultural pluralism as part of schooling for positive social transformation” (Paris, & Alim, 2017, pg. 1). It works against the “White imperial” project and forces us to focus on fundamental questions concerning teaching and learning, to reframe equity and access. CSP calls for and demands a critical emancipatory vision of schooling that redirects the object of critique away from children and to the system. As such CSP calls for “schooling to be a site for sustaining the cultural ways of communities of color” (Paris & Alim, 2017, p. 5). Culturally sustaining pedagogies within the classroom create a celebration of differences in non-superficial ways by allowing them as equal and part of the dominant curriculum. Paris and Alim (2017) argue that the next iteration of asset pedagogy “moves away from the pervasiveness of pedagogies that are too closely aligned with linguistic, literate, and cultural hegemony and toward developing a pedagogical agenda that does not

concern itself with panoptic gaze” (Morrison, 1998 in text) (p. 86). CSP theory is considered to be a more dynamic way of envisioning student variation in culture and builds on CRP to address complexities of social inequality, particularly in relationship to home languages and literacies in a more expansive knowledge of culture (Paris & Alim, 2014). It acknowledges that “educators must address the marginalization of non-dominant languages and literacies” (Paris & Alim, 2014, p. 589).

Valentine (2016) suggests we consider the relational nature of groups and dialogues as a way to negotiate and reconstruct belief systems. He states “there should not be a hierarchy of differences, but a shared burden to deal with differences in ways that allow all members of the group to share rights and responsibilities to establish an inclusive community” (Valente, 2019, p. 101). Within this relational nature lies what Cole (2013) has stated as a need to better educate teachers and “to provide dialectic sensitive and culturally sensitive instruction that promotes awareness and appreciation of dialect variations so that children are actually supported” (p.87). In this way the relationships among students bring together a culture of shared learning in which one group does not dominate another, and a relationship of interest, context, and depth of communication can emerge. The implications of this for the classroom environment are the development of respect, trust, and of contextual driven literacy development between all groups.

Critical theory and critical race theory use sociocultural methods to address power through social relations (Yosso, 2005). Critical race theory is an attempt to unravel the social construct of race and to erase the hegemony associated with power and oppression over people of color. Its number one premise is that racism is always present, and that we must come to recognize this in order to reflect and make sense of our legal and educational systems of oppression (Esmonde & Booker, 2017). In this way critical race theory forces us to examine the

multiple ways we intersect with racism whether it be in an assessment activity, or choice of textbook or mechanisms of speaking and socializing. Critical race theory asks educators to examine the structures we have produced and analyze them through a race lens.

These types of theories are making their way into educational research through methods such as understanding children's lived experiences. It is a method that relies on understanding a student's behavior in the classroom by connecting it to their daily interactions across institutions, such as home ways of being and socializing versus in school activities. Rogoff, Dahl, and Callanan (2018) explain "to understand child development in the sociocultural context requires deepening and updating our understanding of what children are up to in their everyday lives, in the variety of cultural settings they navigate." (p. 5). With this statement the authors make an assertion in their work that in order to understand the complex lives of children, or for that matter any social interaction, it is essential to focus on the understanding of the lived experiences of others. Additional methods that are impacting change are Pablo Freire's critical pedagogy, which employs problems-solving methods to explore power relationships and inequities through critical dialogue and Kris Gutierrez's work on expansive learning through social design of what she calls third spaces (Gutierrez & Jarrow, 2016).

Summary

In summary this chapter has presented the historical background on the policy of Response to Intervention in our schools and its connection to special education law. I have shown that within RTI protocols there is conflicting research on how RTI and its tiers may affect a student's literacy outcomes. In addition, I have presented the theoretical frameworks for understanding how intervention programs and assessments can serve as an initial tracking program for students in the early grades. Three theoretical frameworks have been shown to be

woven into the policies and procedures used to assess and make judgements based on literacy markers in schools. Although designed to alleviate misplacement and over-representations of under-resourced communities, the consequential outcomes of these policies may unfortunately lead to a type of social stratification that limits mobility and separates students into learning tiers and tracks as they move through the system.

Taken together, the three frameworks create a trifecta whereby students who do not possess the social capital and linguistic codes and who are limited by historical ways of evaluation, may be slated for a lower level of learning. The three frameworks thus create a barrier or ceiling which can be difficult to break through, creating the chalkboard ceiling effect. In addition, I have offered a theoretical model for working toward a more equitable future in which students are recognized for their unique attributes and cultural assets.

The empirical research on student outcomes has investigated how student's scores improve over time or not, but no studies have addressed the long-term outcomes of students. The limitations of the past studies are that without knowing the long-term outcomes and whether or not RTI is meeting the goal of bringing students up to their peers we have no way of knowing what goals are being met. This leaves us wondering how early intervention helps a student rise above the chalkboard ceiling effect and does the effect stay with student for their K-12 journey allowing them to access deeper learning classrooms and access to higher level course work.

In this next chapter I present the methodology used to answer the research questions in this study. Each of the research questions have been designed to identify the long-term outcomes of students who were placed in RTI in grades 1-3, seeking to understand if RTI was able to help them breakthrough the chalkboard ceiling, or if the program is unable to produce a positive effect on a student's academic upward mobility.

Chapter 3: Methodology

The primary objective of this study is to examine the long-term academic outcomes of students who were enrolled in Response to Intervention (RTI) during their elementary school years as compared to a group of similar students from the same school district who did not receive RTI intervention. The purpose of this chapter is to introduce the research methodology used for this retrospective-longitudinal design study.

This study was designed to gain information on comparative groups of students and their current academic standing as measured by high school track level placement and weighted GPA. Demographic data was used to investigate any disproportional placement of under-resourced students within the RTI group of students as compared to the non-RTI group and the general high school student body. In this study, two groups of students from the same school district and high school are compared: a group who experienced RTI in grades 1-3 and a group of students who were in need of intervention but did not participate in RTI because their elementary school did not offer the program. Due to the unique attributes of this school district, a quasi-experimental design was used to compare the treatment group with the non-treatment group. The study also included a post hoc look at how three students experienced the program. Interviews with these students provided an exploratory understanding of their current perceptions and experiences in relationship to their academic placement at the secondary level and their remembered experiences of learning to read

Past RTI research in general has focused on students' literacy scores and their impact on RTI tier movement and reading score improvement in grades 1-3, but no studies were found that evaluated the long-term outcomes of students as related to secondary school success. This study expands the research on Response to Intervention in relation to the academic outcomes of

students later in their lives. The study serves to connect early intervention programs to the end point of high school placement, seeking to understand the relationship between the two as well as the relationship between any disproportional placement of under-resourced communities into RTI. The research plan, including the methodology, site selection, study participants, procedures, analysis method, and ethical concerns are included in this chapter.

Design Selection

This study utilized a quantitative methodology to determine whether RTI had any long-lasting positive academic effects on student outcomes at the secondary level, as indicated by English track level placement, average track level placement, and weighted GPA by using the statistical outcomes of students at the high school level. Specifically, the study addresses whether RTI serves to promote academic upward mobility or produces no or little effect on academic mobility at the secondary level.

In this study the student sample was identified initially by the student's early literacy scores on the Developmental Reading Assessment (DRA) in grades 1-3, which signaled that the student was below grade level and in need of intervention. These scores either placed or did not place the student into RTI if the elementary school utilized the program. Schools 1 and 2 utilized RTI, while school 3 did not. The students' academic outcomes at the secondary level were determined by their freshman and sophomore English track placement, average track level placement, and weighted GPA.

The three questions in this study were designed to assess whether students in RTI were able to experience greater or lesser academic mobility as compared to a similar group of peers. In order to assess this one over-arching question was developed, and three research questions were developed to address the over-arching question. Table 3.1 presents an overview of the study.

Over-arching Research Question: What impact does Response to Intervention (RTI) have on the academic placement of students at the secondary level? Specifically does RTI serve to promote academic mobility or produce little or no effect on a student's academic placement at the secondary level?

- **RQ1:** In what ways does the academic placement in freshman and sophomore English track level, average track level, and weighted GPA differ for the students who were placed in RTI as compared to similar students from the same district who were not enrolled in RTI but had comparable benchmark scores in grades 1-3 that would have placed them in a program if the school utilized one?
- **RQ2:** What is the impact of RTI participation on the probability that a student enters into a higher-level English track at the secondary level? How, if at all does the effect of RTI change when controlling for gender, race, free and reduced lunch status, and special education placement?
- **RQ3:** What is the probability that a student from an under-resourced community as indicated by race, free and reduced lunch, and special education are represented in the RTI sample as compared to the non-RTI group, and as compared to the representation in the sending elementary school and high school?

Table 3.1: Research Model Overview

School	<p>Impact and Implementation of RTI</p> <p>School 1 and 2- Response to Intervention participation school</p> <p>Comparison School with No RTI</p> <p>School 3-early literacy scores used to identify comparison group</p> <p>Cumulative Comparison of Cohorts</p> <p>High School</p>
Data Collection	<p>Research Questions</p> <p>RQ 1, 2, and 3</p>
	<ul style="list-style-type: none"> • Class of 2023 and 2024, identify students enrolled in RTI in primary grades. • Class of 2023 and 2024, identify students from school 3 who had screening scores making them eligible for RTI in primary grades. • Student track level placement at the receiving high school. • Student academic indicators for all students: weighted GPA; Track level placement. • Student demographic data. • All schools' data for demographics. • Weighted GPA class of 2023 and 2024
Datasets	<p>SPSS for descriptive, OLS regression models, logistical regression, t-tests, and chi square test of independence</p>
Analysis and Interpretation	<p>Descriptive and Inferential Statistics.</p> <p>Hypothesis Testing for Statistical Significance.</p> <p>Multiple Regression and Logistic Regression.</p> <p>Analysis of RTI findings.</p>
	<p>Over-arching Question Analysis</p> <p>Quantitative Results Implications.</p> <p>Analysis of implications for RTI and long-term academic outcomes.</p>

Research Site Selection

The research questions in this study were designed to answer the question: what impact does Response to Intervention (RTI) have on the academic placement of students at the secondary level? Specifically, does RTI promote academic mobility or produce little or no effect on a student's academic placement at the secondary level as indicated by English track level, average track level, and weighted GPA? In order to do this retrospective longitudinal study, a unique school district in southern New Hampshire was chosen. The study site was unique in that students who were in the study came from three elementary schools in the town; two of which offered RTI to students who were below the benchmark scores on literacy assessment and one of which did not. Each school used the same assessment tool of the Developmental Reading Assessment (DRA) in grades 1-3 to determine these benchmarks. The tests were administered in the first few days of school in grades 1, 2, and 3. Students who did not make the benchmarks were assigned to intervention. All students in the study attended the same middle school and high school. In addition to these unique attributes that allowed for a quasi-experimental design, the high school is also one of the only remaining fully tracked high schools in the state. In this study site, high school students are placed in academic track levels from 2 to 5 with 2 being the lowest level and 5 being considered honors or AP classes. This tracking program allowed for assessment of where the students ended up academically.

The site was also selected as a convenience site in that I am employed in the district. I have been employed in the district since 2007 and have had opportunity to observe students who are placed into lower- and higher-level tracks. The motivation for my dissertation stems from these background observations that I see as an educator in the high school. I believe this experience in the district and high school assisted me in conducting a knowledgeable study with

an important focus. However, my role in the district could be a concern in that my prior knowledge could impact the interpretations of the data. Keeping a critical eye on assumptions and interpretations was an important aspect of my work as I reviewed the student data. Anonymity of the district and individuals responsible for collecting the data as well as anonymity of students was assured in order to ensure no one received negative impacts from the study. The elementary school's names have been eliminated from the study and replaced with a numbered system of 1-3 by alphabetical order in order to maintain the anonymity. The high school site is simply referred to as the high school. Student IDs were replaced with pseudonyms for the three-interview analysis.

Research Setting

The location of the study is in a small urban town in southern New Hampshire with a total population of 21,927, an above-average median household income of \$78,027, and a poverty rate of 6.7%. The school district serves a population of 2,634 students with a total free and reduced lunch percentage of 15.3% and a mean family income of \$113,676. The three elementary schools have the following populations and associated free and reduced percentages: RTI school 1 has a size of 318 with a free and reduced percentage of 19.1%; RTI school 2 has a size of 256, with a free and reduced percentage of 24.2%; school 3 the non-RTI school has a size of 400 with a free and reduced percentage of 13.25%; All elementary schools feed the same high school, which has a school population of 1,126 students with a free and reduced percentage of 11.1%. The high school also serves three other surrounding towns. The percentage of the High School by race is as follows: White, 85%; Hispanic, 5.5%; Black, .5%; Asian, 3.5%; two or greater races, 5%. Total number of ELL in the District is 87, representing a percentage of 3.25% (National Center for Educational Statistics, 2019; New Hampshire Department of Education

Bureau of Educational Statistics, 2021). See table 3.2 for a demographic breakdown of each elementary school and the high school.

The state of New Hampshire has a total population of 1.36 million with a demographic representation of White 93.1%; Asian 3.0%; Hispanic 4.0%; Black 1.8%; and two or greater races of 1.8%. The poverty rate in New Hampshire is 7.3% (Quick Facts NH , 2021). State level data show a total school enrollment for the 2020-2021 school year of 176,168 students. Public-school demographics in New Hampshire show a state level free and reduced lunch population of 21.15% (New Hampshire Department of Education Bureau of Educational Statistics, 2021). From the demographic data, it can be acknowledged that the school district's percentages for race are closely aligned with the state level percentages. Individual schools, however, show some variation on free and reduced lunch percentages. The state's percentage of free and reduced is closely aligned with the two RTI schools, while school 3 shows a below average free and reduced lunch percentage. The school district represents on average a close approximation of the overall demographic representation of New Hampshire.

Table 3.2: School Study Site Demographics, (National Center for Educational Statistics, 2021)

School	Population Served	Percentage Free and Reduced	Racial Demographic Percentages 20
RTI School 1	318	19.1	White – 70.9 Hispanic – 5.2 Black – 1.6 Asian – 14.4 2 or greater races-7.2
RTI School 2	256	24.2	White - 75.0 Hispanic – 6.6 Black – 1.5 Asian 3.0 2 or greater races- 13
NON- RTI School 3	400	13.25	White -80.4 Hispanic – 1.8 Black – 1.4 Asian - 10.1 2 or greater races-6.2
High School	1,126	11.1	White -85 Hispanic – 5.5 Black - .5 Asian 3.5 2 or greater races- 5.0

Research Sample

The graduating classes of 2023 and 2024 were used as the sample of students. They were compared to each other (non-RTI vs RTI) and to their peers in order to analyze the impact of RTI on students in need of intervention. The target students in this study were all students in the classes of 2023 and 2024 who had early literacy scores as indicated by Developmental Reading Assessment that fell below proficient and were assigned to early intervention in RTI (N=74). The treatment group was the students who attended an RTI school (schools 1 and 2) in grades 1-3 and are now attending the high school; the comparison group was students who had scores that would have placed them into RTI (school 3) but did not participate because the school did not

offer an RTI program. This specific class of students was chosen for two reasons 1) RTI school 1 did not start a true program until 2011; prior to that there was no RTI program in school 1, which allowed for a larger comparison group. And 2) the freshman and sophomore curricula are prescribed in that all students take the same classes but at different track levels as compared to their junior and senior years, where there are less tracking and more electives.

Students selected for the study were identified through the district's central office administration. Students were selected by searching the Infinite Campus data base for students in the classes of 2023 and 2024 who did not make the proficiency benchmarks for early literacy and were placed for intervention. The data were then sorted by sending elementary school. Student data for the high school variables of freshman and sophomore weighted GPA, English track level placement, science track, math track, and demographic variables were matched to the students. The students' average track level placement for freshman and sophomore years were calculated from the data. In addition, data were collected from the Infinite Campus data base on total school level percentages per track and weighted GPAs for classes of 2023 and 2024.

Sample Group Participation Criteria

Students were selected for this study from the school district's Infinite Campus data base (N=74). Students were selected based on their scores on the Developmental Reading Assessment (DRA) in grades 1-3. The DRA is an early literacy test designed to assess students as they enter school and track their progress up until the 8th grade. This test is administered to all students in first grade within the first two to three days of school. The scores are used to determine which students need intervention by using scores as cut points. Cut points are scores that indicate a student is below the proficiency and grade level standard of their peers and thus in need of intervention. Scores are then used to decide a course of action. The scores for the DRA

are read and interpreted by a reading specialist in three categories: text, fluency, and comprehension (example score 16.12.20). In this school district, a fall score cutoff for grade one is text level 2 or below; for grade 2 text level 16 or below; and for grade 3 text level 28 or below. For grades 1-5, a fluency and comprehension score of below 11 for fluency and below 19 for comprehension triggers intervention.

After being placed into an intervention program, a student will then be assessed on different skills as they progress. Then at mid-year and at the end of year, the DRA will again be given. Students are continually monitored for progress and move out of the program or stay in the program as determined by the benchmarks and cut points set by the district. Students who are above the cut point are only reassessed in the spring. Each school in this study uses identical tests and cut scores in order to determine placement into intervention. Students who were continually below the cut score in grades 1-3 were used in this study, indicating that they received RTI in grades 1-3 or would have if the school had the program. After grade 3, a decision is made about their placement in special education.

Since all schools in the district utilize the same scores for determining reading interventions, the student sample represented students who are comparable but received different reading intervention: two schools with RTI, and one school without RTI. The students were then sorted by graduating class level and school with schools 1 (N= 21, 28.4%), and 2 (N=32, 43.2%) having an RTI program and school 3 (N=21, 28.4%) not having an RTI program. School 3 did have intervention, but not RTI as a prescribed method. See Appendix A for detailed descriptions of each school's intervention program. These two groups of students served as the comparison groups within the study.

Formation and Rationale of the Quantitative Data Set

The school district maintains a data base of all students called Infinite Campus. The data base houses students' academic grades, weighted GPAs, state testing data, district testing data, schedules, transcripts, free and reduced lunch status, and demographic variables. The data set was collected from this source utilizing the following steps: 1) a request was sent to the assistant superintendent for students in the classes of 2023 and 2024 who fell below the benchmarks in elementary grades 1-3; the school they attended; gender; race; free and reduced lunch status; special education placement, and whether an ELL student; 2) the student list was sent from central office to the high school assistant principal who matched the data with the student's track levels in both freshman and sophomore years in English, science, and math and their weighted GPA. The student data was then de-identified and individual students were given a corresponding number. Data was sent to me as de-identified data.

In addition, data was collected at the high school on the general student body's weighted GPA for the classes of 2023 (N= 292) and 2024 (N= 275) and average track level placement for the entire student body (N= 1,126). This was done in order to gather baseline information about what is the general student body track level and what is the average weighted GPA for the students' peers at the high school. This allowed an additional comparison so as to uncover what is "normal" for students in the district as compared to the RTI and non-RTI students.

Categorical variables of track level, gender, race, free and reduced lunch, special education placement, and ELL participation were coded using dummy variables. Table 3.3 presents a description of the data collected. The variables in the study include: RTI participation (RTIPAR; 1 = yes, 0 = no); average track placement (AVGTRK) as calculated from the student's three core classes of math, English, and science; Freshman English level track placement

(FR_ENGTRK; 2, 3, 4, 5); sophomore English level track placement (SPH_ENGTRK; 2, 3, 4, 5); freshman low (level 2 and 3) and high (level 3 and 4) English tracks (FRSHENGHL, 0= low, 1 = high); sophomore low (level 2 and 3) and high (level 3 and 4) English tracks (SOPHENGHL, 0= low, 1 = high); weighted GPA (GPA); gender (GND; 0=male; 1 = female); free and reduced lunch participation (FRL; 1= yes, 0= no); English language learner (ELL; 1=yes, 0 = no); special education placement (SPED; 1= yes, 0 = no); and race (BLK; HISP; ASN: WHT; and 2GRT); race White and non-White (WHTNONWHT; 1= yes, 0 = no). All school data include the classes of 2023 and 2024's weighted GPA (GPA_2023; GPA_2024) and whole school track level percentages (PCTRAK_SCHL).

Table 3.3: Variables Included in Analytical Model

Variable	Representation	Type of Variable	Defined
Response to Intervention participation	RTIPAR	Dichotomous dummy variable (yes =1; No= 0)	Students who participated in RTI in grades 1-3, students who did not participate but had the screening scores that would have placed them there had they been in a school that offered RTI.
Average track placement	AVGTRK	Continuous variable	Students' average track which is calculated using the 4 possible levels and has a range of 2 to 5 (applied or level 2; college prep or level 3; advanced college prep or level 4; honors and AP or level 5); for each of the 3 core classes (English, math, and science) for their freshman and sophomore years.
Freshman English track level high and low placement	FRSHENGHL	Dichotomous variable	Students' freshman English track level as indicated by levels 2 and 3 being considered low track and 4 and 5 being high.
Sophomore English track level high and low placement	SOPHENGHL	Dichotomous variable	Students' sophomore English track level as indicated by levels 2 and 3 being considered low track and 4 and 5 being high.
Freshman English track level placement	FR_ENGTRK	Polychotomous dummy	Student track level placement in English for freshman year. Modeling for four total levels (applied or level 2; college prep or level 3; advanced college prep or level 4; honors and AP or level 5).

Sophomore English track level placement	SOPH_ENGTRK	Polychotomous dummy	Student track level placement in English for sophomore year. Modeling for four total levels (applied or level 2; college prep or level 3; advanced college prep or level 4; honors and AP or level 5).
Gender	GND	Dichotomous 0=male; 1= female	Identified gender of student in study.
Weighted GPA	GPA	Continuous variable	Student weighted GPA for freshman and sophomore years.
Free and Reduced Lunch Status	FRL	Dichotomous variable 1= yes; 0 = no	Variable to indicate if student is enrolled in free and reduced lunch during grades 1-3, and at high school level.
Race / ethnicity with coding for White, Black, Hispanic, Asian, and 2 or greater races.	WHT BLK HISP ASN 2GRT	Dichotomous variable 1= yes; 0 = no Polychotomous for race category	Using dichotomous dummy variable to code for: 1= White, 0 = not White; 1= Black, 0 = not Black; 1= Hispanic, 0 = not black; 1= Asian, 0 = not Asian; 1= two or greater race, 0 = not two or greater race. 0= White, 1=Black, 2= Asian, 3= Hispanic, and 4 = two or greater
Race- White vs non-White	WHT NONWHT	Dichotomous variable 1= yes; 0 = no	Using dichotomous dummy variable to code for White vs. non-White students.
English Language Learner	ELL	Dichotomous variable 1= yes; 0 = no	Variable to indicate if student is enrolled in ELL during grades 1-3.
Special education placement	SPED	Dichotomous variable 1= yes; 0 = no	Variable to indicate if student was placed into special education.
All school data classes of 2023 and 2024's weighted GPA	GPA_2023 GPA_2024	Continuous variable	Variable to serve as comparison to background school population weighted GPA.
All school track level percentages	PCTRAK_SCHL		Variable to serve as comparison to background school population track level percentages.

This data set was collected in order to answer the quantitative questions in this study as to whether a student who participated in RTI was able to experience upward mobility as indicated

by high school English track level, average track level, and weighted GPA as compared to the group of students who did not participate in RTI and to identify any differences between the groups and their peers in the high school. The demographic variables of gender, race, free and reduced lunch, ELL, and special education placement were used to look for disproportional representation and to uncover any impact these variables may have had on the linear association between average track level and weighted GPA. Statistical analysis was done to determine relationships between sample groups using descriptive methods, chi square tests of independence, t-tests, multiple linear regression, and logistic regression.

Quantitative Achievement Data Collection

The quantitative achievement data set was collected in order to compare the RTI group's academic standing to the non-RTI group's academic standing. Academic indicators for comparison were the sample students' English track level placement for freshman and sophomore years, average track level placement for the classes of math, English, and science for freshman and sophomore years; and cumulative weighted GPA. PSAT data was originally included but was unavailable because students did not take the test during COVID.

Track level is used in this study as an indicator of upward mobility. The track levels at the high school range from track 2 to track 5. Descriptions of each track level qualifications were identified using the High School's Program of Studies and Student Handbook. Table 3.4 describes the track levels. In general, tracks 2 and 3 emphasize developing skills of critical thinking, becoming a more efficient learner, and improving; as compared to tracks 4 and 5, which describe upper-level thinking techniques, such as analyzing, complex problem solving, applying to new situations, and challenges. This emphasizes the belief that the lower-level students are placed to develop, where the upper levels are presumed to have the skill and will

now enhance that skill in higher-order thinking. Track level thus serves as indicator of whether or not a student was able to progress from the literacy skills level of RTI to the higher-ranking levels of analysis and advanced comprehension. In this study, levels 2 and 3 are used to indicate there was limited or no academic mobility, while levels 4 and 5 indicated movement or high-level of movement.

Table 3.4: Description of High School Academic Indicators and Rationale

Achievement Variable	Description as Described in Curriculum of Studies	Rationale
Weighted GPA	Combination of a student's grades in all subjects weighted for rigor. Honors classes are weighted at 5.0.	Indicator of upward academic mobility higher GPA is indicative of student having academic success at a higher level than their elementary years, lower GPA indicates a student staying within the lower levels of academic success.
Track Level 2	Applied courses provide students with a solid foundation in essential skills and concepts and help students become more efficient learners. Courses guide students with many practical activities and problem-solving challenges to help them prepare for future career and educational goals.	Indicator of a student not having academic mobility in that the lower level 2 is for students who need more processing time and are working on academic skills.
Track Level 3	College prep courses offer students opportunities to do both independent and collaborative work while preparing for more advanced classes in high school and college. Courses offer students problem solving challenges resulting in a deeper understanding of the content area. Students will improve critical thinking, study skills, and analytical skills.	Indicator of a student not having a high level of academic mobility in that the level 3 is considered to be a "general" level of study.
Track Level 4	Advanced college prep courses are designed for students to have opportunities for self-directed work and analysis of complex concepts. Courses offer students many problem-solving challenges and opportunities to explain, generalize, or connect ideas. Students will fine tune their critical thinking skills, study skills, and analytical skills and demonstrate mastery of their written and verbal communication skills.	Indicator of a student having a high level of academic mobility.
Track Level 5 / AP	Honors and advanced placement courses are designed for students who have shown high academic achievement in a particular discipline in the past. Courses offer students challenging opportunities to apply their understanding of the content area in a new or novel way. Students will analyze, synthesize, and evaluate information across disciplines.	Indicator of student having a high level of academic mobility.

Weighted GPA is also considered to serve as an indicator of academic upward mobility.

According to the High School Program of Studies, weighted GPA is calculated using the

following formula: the grade a student received in the class is computed to a numerical score and

then weighted according to track level selection. In the freshman class, all classes are weighted the same; weighting begins in sophomore year. In this study the freshman GPA is averaged with the sophomore GPA. This indicator is used to identify if a student who had lower than average literacy scores in the early years was able to progress to a higher level of academic success later on. It is used to recognize whether the student realized the benefits of RTI as compared to students who did not receive the program. The weighted GPA serves as an indication as to whether the student utilized the benefits of the program to gain upward academic mobility as compared to the group that did not receive the treatment. Table 3.5 shows the weighted GPA point scale for the high school in this study.

Table 3.5: Weighted GPA Calculations for the High School

Letter Grade	Level 2/3	Level 4	Level 5
A+	4.3	4.8	5.3
A	4	4.5	5
A-	3.7	4.2	4.7
B+	3.3	3.7	4.3
B	3	3.5	4
B-	2.7	3.2	3.7
C+	2.3	2.8	3.3
C	2	2.5	3
C-	1.7	2.2	2.7
F	0	0	0

Because there are other factors that may influence academic standing and track selection, the study included the categorical demographic variables of gender, free and reduced lunch (as an indicator of socioeconomic standing), race, special education, and ELL. These data sets were

used to compare students in the RTI and non-RTI groups as well as to compare the background populations in each sending elementary school, high school, and the school district in general. This collection was necessary to see if there was any significant difference between the individual schools, knowing that all schools have unique attributes that may lead to varying degrees of student achievement. These data were also utilized to identify any disproportional placement within groups and within the student sample as a whole as well as to identify any influence they may have had on the indicators of academic standing. This is important because all students in the study regardless of RTI group status, were in need of intervention. Thus, the inclusion in any program of intervention might be related to demographic variables and a consequential academic outcome at the secondary level. In addition to addressing the impact of demographic variables on academic mobility, additional comparisons were of the entire student body's representation in each track level and the class of 2023 and 2024's weighted GPA. This allowed for the general student body to serve as a comparison group for what the average track, weighted GPA, percentages of race, and free and reduced lunch status are for this particular high school. This comparison was done in order to see if there were any deviations for what we would expect for this particular setting; in other words, does the sample group show significant differences in track level or weighted GPA for what we might expect to find in the general student body in this setting?

Quantitative Descriptive Data Analysis Procedure

The first step in the descriptive analysis was to run a descriptive analysis of the entire sample (N=74) in order to gain an overview of the sample. This initial descriptive analysis was done for the categorical variables of RTI participation (RTIPAR); English track level placement for sophomore and freshman years (FR_ENGTRK, SOPH_ENGTRAK); science track level

placement; math track level placement; high and low track English track level placement (FRSHENGHL; SOPHENGHL); free and reduced lunch status (FRL); race as indicated by Black (BLK), White (WHT), Hispanic (HISP), Asian (ASN) and two or greater (2GRT); race as indicated by White and non-White (WHTNONWHT); special education placement (SPED), and English Language Learner (ELL).

For this first step, all data was uploaded to SPSS from Excel and coded using a system of 1 for yes, and 0 for no for the categorical variables of RTI; free and reduced lunch enrollment, race (White and non-White), special education placement, and ELL. A polychotomous system was used to code the races of White (0), Black (1), Asian (2), Hispanic (3), and two or greater races (4). For the variable of gender, dichotomous variables of 0 = male and 1 = female, were created. For the variable of track level, the levels were coded as 2 = applied; 3 = college prep; 4 = advanced college prep; 5 = honors and AP. The track level data was then separated into categories of high tracks and low tracks for freshman and sophomore English and coded as 0 = low tracks and 1 = high tracks.

SPSS was then used to create frequency tables and bar charts for the different categorical variables. For the continuous variables of weighted GPA and average track level, histograms and frequency tables were constructed in order to explore the frequency and distributions for weighted GPA and average track for the sample as a whole. The mean, range, median, standard deviation, and mode were also assessed on the continuous variables in order to gain a general overview of the sample.

RTI and Non-RTI Data Set

The descriptive analysis of the RTI group as compared to the non-RTI group was run using SPSS. The sample was sorted into RTI vs non-RTI (RTIPAR, 0= no, 1= yes). This descriptive analysis is most closely associated with the research questions 1 and 2, helping to answer 1) what the differences in the outcome variables of track level and weighted GPA per group are; and 2) the demographic make-up of each group.

In order to analyze the demographics of the sample at this level, SPSS was used to create cross-tabulation tables to display the frequency of data based on the categorical variables and bar charts using percentages and numbers for the demographic variables of: gender (GND); race (WHT; BLK, ASN, 2GRT); White vs non-White (WTHNONWHT), free and reduced lunch status (FRL); ELL status (ELL); and special education placement (SPED) per RTIPAR. This analysis allowed for the initial investigation of any differences within the RTI and non-RTI groups.

The next step was to use SPSS to calculate the number and percentages of students in the RTI group and non-RTI group per the track levels in which they were enrolled for English, science, and math for both freshman and sophomore years. This data was used to gain insight on the relationship between RTI participation and track level placement in general.

English track placement is considered an important indicator of the academic success of the students in this study. This is due to the close association between RTI and literacy, the goal of which is to bring students up to the rest of their peers early so as to avoid setbacks later. Therefore, this variable was used to look at how students placed in multiple ways, including the high versus low tracks. Other subjects of math and science were reviewed in order

to observe if there were any anomalies to the placement. For example, does a student rank lower in one subject as compared to another?

The categorical variable of track level placement was analyzed using both polychotomous variables of levels 2-5; and dichotomous for high and low tracks (0=low, 1=high). Bar charts and cross-tabulation tables were created to compare the RTI and non-RTI group as percentage of representation per track level.

For the continuous variable of average track level placement (AVGTRK), the track levels for all subjects were combined for sophomore and freshman years and the average was calculated per student. This data was uploaded to SPSS. Histograms and box plots were then constructed in order to explore the frequency and distributions for average track for the RTI versus the non-RTI group. The mean, range, median, standard deviation, and mode were also assessed for average track level. Box plots were used to compare the median track level for the two groups.

For weighted GPA, the student's data was explored using histograms and box plots in order to explore the frequency and distributions for weighted GPA for the RTI versus the non-RTI group. The mean, range, median, standard deviation, and mode were also assessed for weighted GPA. Box plots were used to compare the median track level of the two groups. This step in the analysis allowed for an initial overview of the two groups and allowed for a comparison of the mean, median, and range of the RTI group to the non-RTI group. This comparison between the RTI and non-RTI group gave an initial view of the students' academic placement. Since English track level, average track level, and weighted GPA are the main academic indicators in this study, the comparison between the two groups was an essential component to understanding if mobility was seen between the groups. This helps answer the

research question as to what differences exist between the two groups when it comes to academic outcomes.

The next step was to run a descriptive statistical analysis on the sample of students by sending school. It is important to overview the sample per sending school as there may be variations within each school that are essential to understanding the overall representations of the students in this sample. For example, the school's percentage of free and reduced lunch can be compared to the percentage of students placed into intervention in order to discern any over-representation in that particular school. In other words, it helps us gain access to a comparative background per sending school, which is important to understanding the demographics of the groups and whether there is over-representation of specific groups. This descriptive analysis was done for the categorical variables that include: RTI participation (RTIPAR); English track level placement freshman year (FR_ENGTRK) and sophomore year (SOPH_ENGTRK); science track level placement; math track level placement; free and reduced lunch status (FRL); race as indicated by Black (BLK), White (WHT), Hispanic (HISP), Asian (ASN) and two or greater (2GRT); race as indicated by White and non-White; special education placement (SPED), and English Language Learner (ELL). For this analysis of the categorical demographic variables, SPSS was used to create frequency tables and bar charts for the individual schools. The continuous variables of weighted GPA and average track level were analyzed using SPSS in order to discern any outcome differences per school by constructing histograms and box plots. This analysis is important to answering research question 3.

The final step in the descriptive analysis was to upload the entire classes of 2023 and 2024's weighted GPA to SPSS. This data was then used to compute the average weighted GPA for the classes of 2023 and 2024 and compare to the sample of students in this study. In order to

calculate the average track level for the entire school, the number and percentage of students in the school was calculated and used to compare the average track levels of the student to the average track level of the sample groups using a chi square test of goodness of fit. In this way the students in the study could be compared to the general population of the school in order to see if there was over-representation of RTI students in lower-level tracks.

Descriptive Summary

The initial descriptive analysis was used to compare the sample at three different levels: the entire sample makeup; the RTI group as compared to the non-RTI group; and the elementary and secondary school make up. By doing this, I was able to discern if there were disproportional representations among the three levels of analysis with greater clarity, hoping to understand the differences between the groups. When seeking to answer the question of upward mobility it is important to gain insight into the track levels accessed and weighted GPA, and also the demographic makeup of the entire sample and their individual sending schools. By conducting this analysis, I was able to discern any preliminary differences between the groups that would impact the results of my study. In addition, it was used to examine whether one school might have specific outliers as compared to the others that might affect the overall data analysis.

Inferential Analysis Method

Research Question Analysis (RQ 1-3)

The over-arching research question in this study asks what impact does Response to Intervention (RTI) have on the academic placement of students at the secondary level? Specifically, does RTI promote academic mobility or produce little or no effect on a student's academic placement at the secondary level? This question is connected to the three research

questions and their analyses. The methods used to address each of the research questions are presented below.

Research Question 1

Research Question 1 (RQ1) asks: in what ways does academic placement in freshman and sophomore English track level, average track level, and weighted GPA differ for students who were placed in RTI as compared to similar students from the same district who were not enrolled in RTI but had comparable benchmark scores in grades 1-3 that would have placed them in a program if the school utilized one? For this analysis, several statistical tests were conducted.

For the initial step, chi-square tests and t-tests were run in order to identify if there was a statistical relationship between RTI participation (yes or no) and English track level placement as compared to the non-RTI group's English track level for both freshman and sophomore years. The second step was to fit an OLS linear model to explore the relationship between RTI participation and the students' weighted GPA and average track level placement.

Chi-square Hypothesis Tests

Because there are two indicators of track level placement (ENGTRK and AVGTRK) two different hypothesis tests were initially conducted. A chi-square test using SPSS was used to determine if there was a relationship between RTI participation and ENGTRK level placement for both freshman and sophomore years.

The hypothesis for this test for the first analysis was:

H₀: In the population of students there is no relationship between English track level placement and participation in RTI.

H_a: In the population of students there is a relationship between English track level placement and participation in RTI.

Independent t-test

Because the average track level placement and weighted GPA are continuous variables, SPSS was used to run a t-test to determine whether the average track level placement differs between students who participated in RTI as compared with those who do not and whether the average weight GPA differs between students who participated in RTI as compared to those who did not. Two hypotheses were created:

H_o: In the population of students who participated in RTI in grades 1-3 there is no relationship between their average track level placement and participation in RTI as compared to the students who did not participate in RTI.

H_a: In the population of students who participated in RTI in grades 1-3, there is a relationship between their average track level placement and participation in RTI as compared to the students who did not participate in RTI.

H_o: In the population of students who participated in RTI in grades 1-3 there is no relationship between their weighted GPA and participation in RTI as compared to a similar group of students who did not participate in RTI.

H_a: In the population of students who participated in RTI in grades 1-3, there is a relationship between their average weighted GPA and participation in RTI as compared to a similar group of students who did not participate in RTI.

Linear Regression Model

Linear regression modeling was conducted to investigate the relationship between the RTI participation and those who did not participate in RTI with the students' weighted GPA and average track level placement. Two simple linear regression analyses were conducted with the predictor variable of RTIPAR (1= yes, 0= no) and the outcome variable of weighted GPA; and with the predictor variable of RTIPAR (1=yes, 0=no) and the outcome variable of average track level placement. The t-statistic and associated p-value were used to test the null hypothesis that states the average value for each outcome variable is the same for both the treatment group and non-treatment group. The model was used to understand if there is any statistical relationship between the RTIPAR and the outcome variables of weighted GPA and average track placement.

$$yGPA = \beta_0 + \beta_1 RTIPAR + \varepsilon$$

$$yAVGTRCK = \beta_0 + \beta_1 RTIPAR + \varepsilon$$

A secondary investigation included a multiple regression model in which potential control variables of gender, race, free and reduced lunch, and special education were systematically entered. The following equation was used to predict the interactions between the variables. Each variable was added sequentially, and models were fit to determine any confounding variables. The multiple regression model taxonomy is listed in table 3.6. This analysis was important to understanding the relationship between RTI and average track and weighted GPA.

$$AVGTRK = \beta_0 + \beta_1 RTI + \beta_2 SPED + \beta_3 FRL + \beta_4 GND + \beta_5 WHTNONWHT + \varepsilon$$

$$GPA = \beta_0 + \beta_1 RTI + \beta_2 SPED + \beta_3 FRL + \beta_4 GND + \beta_5 WHTNONWHT + \varepsilon$$

Table 3.6: Model Taxonomy

Class	Predictor	Comments
High Priority	RTIPAR	Addresses main question
Medium Priority	SPED	SPED showed a significant correlation with track level placement.
	FRL	FANDR showed a significant correlation with track level placement.
Low Priority	GND	Was not significant and had no correlation with track.
	RACE	

Research Question 2

Research question 2 (RQ2) asks: What is the impact of RTI participation on the probability that a student enters into a higher-level English track at the secondary level? How, if at all, does the effect of RTI change when controlling for gender, race, free and reduced lunch status, and special education placement?

In order to further address the over-arching question as to how Response to Intervention may impact track level placement as an indicator of academic success, logistic regression was utilized. Logistic regression was used to model the relationship between the predictor variable of RTI participation and the dichotomous dependent variable of track level placement. Specifically, I used logistic regression to estimate the probability of a student being placed in a high-level track (4 or 5), as compared to a low-level track (2 and 3) for both freshman and sophomore years as a function of whether they participated in RTI in grades 1-3.

Logistic Regression Model

Logistic regression is a better approach to working with a dichotomous outcome than OLS linear regression because assumptions of the OLS model (linearity, residual normality, homoscedasticity) are violated when the dependent variable is binary (Peng, Lee, & Ingersoll, 2002). Logistic regression is well-suited for hypothesis testing between categorical outcome variables and predictor variables (Peng, Lee, & Ingersoll, 2002). Because the outcome variable in this case is dichotomous and therefore bounded by 1= high level track and 0= lower-level track, we cannot have a normal distribution of the residuals.

In this analysis, fitting a logistic regression model allows us to estimate the odds that a student who was in RTI would be placed in a high track as compared to a low track, as compared to students who would have been placed into RTI if the program had been offered in their school. In this model the probability that $Y=1$ or that the student entered into a high-level track given that they participated in RTI is modeled using a natural logarithm of the odds. The odds in this case are the probability that a student is placed into a high-level vs low-level track.

The logistic regression model was used to test the following hypotheses:

H_0 In the population of students who participated in RTI, there is no difference in the probability of their track level placement as compared to students who would have been in RTI if the school had offered it.

H_a In the population of students who participated in RTI, there is a difference between the probability of their track level placement as compared to students who would have been in RTI if the school had offered it.

The simple logistic model has the form of:

$$\text{Logit}(Y) = \text{natural log (odds)} = \ln\left(\frac{\pi}{1-\pi}\right) = \beta_0 + \beta_1$$

In this equation, π is defined as the probability that a student will be in upper-track English their freshman or sophomore year. The “logit” transformation, i.e., the natural log of the odds, results in a linear model. Specifically, there is a linear relationship between the predictors and the log-odds. Fitting this model allows us to predict the probability of the outcome of interest, in this case English track level placement for freshman and sophomore years. Estimates of β_0 (intercept) and β_1 (slope) are obtained by maximum likelihood estimation. The maximum likelihood is designed to maximize the likelihood of reproducing the data given the parameter results (Peng, Lee, & Ingersoll, 2002).

Once the parameters are estimated, the following equation was used to estimate the probability of being in a higher-level track:

$$\pi = \left(\frac{e^{\beta_0 + \beta_1}}{1 + e^{\beta_0 + \beta_1}} \right)$$

(Note that $e = 2.71828$.)

The procedure for fitting the model was as follows:

Model 1

SPSS was used to enter RTIPAR (1= yes; 0= no) as the main predictor variable and English track level placement (this was run for both freshman and sophomore years), (0= low track of 2 and 3, and 1= higher tracks of 4 and 5) as the dependent variable. This was done to obtain the parameter estimates with only one variable.

$$\text{Logit } p = \ln \left(\frac{p(RTIPAR_{ij}=1)}{1-p(RTIPAR_{ij}=1)} \right) = \beta_0 + \beta_1 RTIPAR$$

This model was used to predict whether adding the additional control variables of gender, race, free and reduced lunch, and special education placement would influence the likelihood of track placement.

Model 2-5

Once the probability and p-values were determined, additional predictor variables were added to the model in order to calculate their relationship to the dependent variable of track level placement. Table 3.7 shows the analysis plan. The order of addition was: gender (0= male, 1= female); race (0= White, and 0 = not White); free and reduced lunch (0=no, 1= yes); and special education placement (0 = no, and 1 = yes). This additional analysis was done in order to answer the question of what is the likelihood that an RTI student is placed into higher or lower tracks and does the probability of being assigned to a higher track change when controlling for gender, race, free and reduced lunch, and special education placement. As each predictor is added, the effect was compared to the original model in order to discern if there is an effect, while controlling for RTI, gender, race, free and reduced lunch, and special education placement.

When this is done, the final model is represented as:

$$\pi = \left(\frac{e\beta_0 + \beta_1 RTI + \beta_2 GND + \beta_3 RACE + \beta_4 FANDR + \beta_5 SPED}{1 - e\beta_0 + \beta_1 RTI + \beta_2 GND + \beta_3 WHITE + \beta_4 FANDR + \beta_5 SPED} \right)$$

Table 3.7: Logistic Regression Analysis Plan

	Predictor	Rationale
Model 1	RTIPAR	Introduce the main predictor variable and interpretation of parameter estimates
Model 2	GNDR	Does the effect of RTIPAR change with addition of GNDR compared to model 1?
Model 3	WHTNONWHT	Does the effect of RTI change when controlling for WHT?
Model 4	FANDR	Does the effect of RTI change when controlling for FANDR?
Model 5	SPED	Does the effect of RTI change when controlling for SPED?

The parameter estimates in each case were used to interpret the average effect of RTI participation on track level placement (β) and the estimated odds ratio ($\text{Exp}(B)$) for the track level of participation given they were in RTI. As dependent variables were added the parameters were used to see if there were any interactions.

Research Question 3

Research question 3 asks, what is the probability that a student from an under-resourced community as indicated by race, free and reduced lunch, and special education is represented in the RTI sample as compared to the non-RTI group; and as compared to the representation in the sending elementary school and high school? For this analysis, chi-square tests were used to compare the percentages of each demographic variable: 1) for the RTI and non-RTI group; 2) the student body percentages from the elementary schools; and 3) percentage of students in each track and weighted GPA for the high school student body.

The hypotheses were:

H_0 within the population of students enrolled in RTI, there is no difference between the percentage of race, free and reduced lunch, and special education as compared to the non-RTI group.

H_a within the population of students enrolled in RTI, there is a difference between the percentage of race, free and reduced lunch, and special education as compared to the non-RTI group.

H_0 within the population of students enrolled in RTI, there is no difference between the percentage of race, free and reduced lunch, and special education as compared to the school's percentage.

H_a within the population of students enrolled in RTI, there is a difference between the percentage of race, free and reduced lunch, and special education as compared to the school's percentage.

Chi-square tests were run for each variable for each comparison. The results were used to answer the questions as to whether there was any statistical disproportional placement.

Summary of Methods

In this chapter the methods of the study were outlined in detail. In addition, the preliminary data exploration shed light on the sample of students and foreshadowed any relationships between the RTI and non-RTI students. In this study the over-arching research question is whether or not students were able to realize the long-term benefit of the early intervention program of RTI. In order to analyze this outcome, students were separated into two groups, one which received the treatment and one that did not. The sample was then used to compare the groups at multiple levels of analysis to uncover if there was a significant outcome as

to English track level placement, average track level placement, and weighted GPA. In addition, the developed methods incorporated levels of analysis based on the entire district, elementary schools, and participation in the program. In Chapter four the results of the study will be presented with a focus on understanding potential relationships between RTI participation and academic upward mobility, as well as any indication of disproportional representation within the groups.

Methodological Considerations, Validity, Generalizability, and Ethical Concerns

Research credibility is developed within the research design itself and “refers to the correctness or credibility of a description, conclusion, explanation, interpretation or other sort of account” (Maxwell, 2013, p. 122). Creating a trustworthy and transparent research design included attending to the following threats: rich data collection, triangulation, tests of significance, searching for discrepant evidence, bias, reactivity, reliability of data, and generalizability (Creswell & Creswell, 2018; Firestone, 1993; Maxwell, 2013). In this study, the quantitative design elements provide a high level of integrity. The specific areas of validity consideration are addressed in this section.

This study addressed the consequential validity of students who were placed in the intervention program RTI. Consequential validity was used as evidence and rationale for evaluating the intended and unintended consequences of early RTI placement. This therefore created a type of validity that looked at the placement into RTI and the long-term outcomes of the placement as related to academic indicators. Consequential validity in this case will be difficult to relate specifically to the RTI program because there are numerous possibilities as to what has transpired between their early years and current experiences (Chu, 2012; Messick, 2003; 1998). This study thus only sought to understand their current academic standings,

perceptions, and experiences, and gain insight about commonalities and themes, about schooling, both now and in the early years.

The main validity concern in this study is the amount of time that has elapsed between the original RTI program and the student's secondary school attendance; the natural variations and experiences that each student may have had in that time; and program variations. According to Shadish, Cook, and Campbell (2002), this may lead to three types of validity threat: selection, maturation, and unreliability of treatment manner (Shadish, Cook, & Campbell, 2002). In this study the average student who received the RTI treatment may already differ from the student who did not receive RTI even though they qualified for services. In order to improve the validity and address this problem, the study compared the students' demographic backgrounds to look for similarity and differences between groups and therefore increased validity.

The final threat to validity is recognition that the RTI treatment group may have received differing levels of interventions dependent on the elementary school, teachers, and administration. According to the assistant superintendent, all RTI protocols were adhered to and reviewed consistently through professional learning groups. In addition, reading specialists who worked in the school 2011 -2013 were interviewed in order to gain access to the differences between the RTI and non-RTI school. This ensured that each school's protocols were followed and to provide details into the RTI and non-RTI's school policies. To further enhance the validity the study compared each group of students to their high school peers, sending schools, and district as a whole.

Generalizability

The purpose of this study was to examine long-term academic outcomes of students who participated in RTI during grades 1-3 and are now in high school. In order to assess the internal

generalizability of this study, the findings were used to assess whether the results show a relationship between the RTI group and the non-RTI group in regard to academic standing. This investigation specifically looked into the context of the outcomes for the participants in this study. External generalizability and extending the results to a larger population may be difficult due to the unique characteristics of this site and lack of diversity.

Potential Research Bias and Ethical Considerations

Bias Potential

Potential research bias exists in all research. Therefore, it was essential in this study for me to be aware of biases early on. As mentioned earlier, my position in the school district gave me a less objective vantage point and certain steps were adhered to in order to remedy any predispositions or beliefs.

In this study, data were collected in an unbiased manner wherein I only had access to de-identified information. The data was transferred to SPSS and reviewed for accuracy. Once the data were reviewed, the analysis was conducted using approved statistical methodology. Data was interpreted with an objective vantage point, open to any and all results.

Ethical Considerations

Ethical considerations are involved in every aspect of research design. Maxwell (2013) explains that part of the ethical components of research are the relationships we have with the questions we ask, methods deployed, data collection, viewpoints, stereotypes, data analysis, and conclusions we draw. The recognition of subjectivity and being transparent with our inner biases allow us to negotiate and respond as we design to alleviate the impact of such biases. He explains that within a study, we must explain and state how we will “deal” with them instead of pretending they do not exist (Maxwell, 2013). Levitt et al. (2018) advises the same, explaining

that the researcher should make explicit how their values guide or limit the formations of analytical questions and interpretations seeking to discover conceptual embeddedness.

One of the main considerations I have in relationship to bias is my prior beliefs on how tracking is connected to disproportionality. As an educator in the school district, I have had experience in all of the different track levels and observed the outcomes for students from lower-resourced communities. The injustices I see are part of my passion to understand social stratification and class reproduction. However, the same passions that drive my interests must be turned into an objective mindset in order to alleviate any potential bias within the interview process, data collection, and analysis process. I worked to eliminate bias by 1) creating methods that were driven by clear questions, guidelines, and purpose; 2) adherence to multiple reviews of the data from a variety of perspectives; 3) reporting the results that are evident and clear without a high level of speculation or inference; and 4) being open minded and accepting of results that did not align with the conceptual frameworks. Adherence to these four priorities in the methods, collection, and reporting were built into the methodology in this study.

The American Education Research Association (AERA) is clear on the five categories of ethical considerations: professional competence; integrity; professional scientific and scholarly responsibility; respect for people's rights, dignity and diversity; and social responsibility. The goal of the code of ethics is to ensure human subjects are treated with respect and dignity. There are three main areas of impact within this study that include: proposed location and my connection to the location; imbalance of power; access to information.

This study was located in a school district where I am currently employed as a classroom teacher and school board member. This relationship with the district brings me closer to the data. However, it leaves the ethical responsibility of relying on the data collected versus situational

influences or pre-conceived ideas I may have. In addition, the confidentiality of students is essential. Working within a community where others may inquire about your results adds an additional level of strict adherence to ethical standards and confidentiality. All student data were kept confidential and was de-identified. All results were stored in a safe and secure location. There was no discussion of the study results within the professional community except with the assistant superintendent, superintendent, and assistant principal who provided the necessary data.

In the post hoc interviews, my role as teacher is an important consideration. Merging the role of teacher with researcher can create a conflict of interest. Students may believe they must participate in order to achieve a certain grade, and the question of “is it truly voluntary” arises. The imbalance of power was eliminated from this study by specifically choosing students who were not part of my classroom. In addition, conflicts of interest may arise due to my position as an authority, which may influence their perception of their ability to opt out. Student participation guidelines were clearly written to allow for the ability to opt out and approved by the IRB. Parental permission was given prior to any contact with the student as per IRB approval. None of the students interviewed were currently in my classroom.

The final category of ethical consideration is that of data collection methods and field note transcription. The technical skills of data collection, transcribing, reporting, and analysis were done with precision and accuracy; taking clear notes, using clear recordings, and using reputable transcription services, and having high ethical standards for the translation of data and storage of data to preserve accuracy and confidentiality. Being accurate with data and observations was essential to presenting the results without any missing or misrepresented information.

Summary

In this chapter I provided a description of the methodology used in this study. This study utilized quantitative data in order to examine whether RTI has long-lasting positive effects on student outcomes at the secondary level as indicated by English track level placement, average track level placement, and weighted GPA. This chapter described the process of data collection and the exploratory and inferential statistical methods employed to explore the impact of RTI on the academic outcomes of students at the high school level. The methods used were designed to answer the over-arching question: What impact does RTI have on the academic outcomes of students at the secondary level? Specifically, does RTI promote academic mobility or produce no or little effect?

In the next chapter, I discuss the results of the quantitative methods.

Chapter 4: Findings

This chapter presents the quantitative results of the study. In Chapter 3 I described the methods used to answer the over-arching research question in this study: What impact does Response to Intervention have on the academic outcomes of students at the secondary level? Specifically does RTI promote academic mobility or produce no or little effect? This chapter explores the results of the analyses addressing the primary research questions (RQ1, 2, & 3).

The questions are as follows:

RQ1: In what ways does the high school academic placement in English track level, average track level placement, and weighted GPA differ for the students who were placed in RTI as compared to students from the same district who were not enrolled in RTI but had comparable benchmark literacy scores in grades 1-3 that would have placed them into a program if the school utilized one?

RQ2: What is the impact of RTI participation on the probability that a student enters into a higher-level track at the secondary level? How, if at all, does the effect of RTI change when controlling for gender, race, free and reduced lunch status, and special education placement?

RQ3: What is the probability that a student from an under-resourced community as indicated by race, free and reduced lunch status, and special education is represented in the sample of students?

This chapter is broken into two sections and is focused on the analysis of the data. The first section focuses on the demographic representations within the sample. This portion of the analysis sought to find preliminary similarities and differences between RTI students and participation eligible non-RTI students' demographic representations, English track level placements, average track level placement, and high school weighted GPA for freshman and

sophomore years. The second section of the analysis addresses RQ 1-3 by using inferential statistics of chi-square tests, linear regression modeling, and logistic regression in order to discern relationships between the variables and seeking to understand any indicators of RTI's effect on a student's upward mobility.

Quantitative Analysis

Demographics Description of the Sample

Table 4.1 presents the demographic information for the full sample (n=74). The total from the two RTI schools was 53 and represented 71.6%, with school 1 referring 21 students and school 2 referring 32 students. In the non-RTI school, there was a total of 21 students that represented 28.4% of the students identified for the study. The sample showed a larger number of males at 60.8%, representing nearly-two thirds of the sample, indicating that males may be at risk for over-identification into intervention programs within this sample. In addition to the larger number of males, the percentage of free and reduced lunch students was represented by over one-third of the sample at 37.8%. This large number of students may indicate that certain percentages of the population are being targeted for intervention due to socio-economic differences as compared to true learning differences. The percentage of students referred to special education was 41.9% nearly half of the sample. The large percentage of students being referred to special education may indicate that in general there is a greater over-placement into special education regardless of intervention programs.

Table 4.1: Descriptive Statistics on the Demographic Variables of the Student sample (N=74)

Variable	Number (n=74)	Percentage %
Male	45	60.8
Female	29	39.2
White	59	79.7
Black	2	2.7
Asian	4	5.4
Hispanic	4	5.4
Two or greater race	5	6.8
Total non-White	13	20.3
Free and Reduced Lunch	28	37.8
ELL	1	1.4
Special Education	31	41.9

English Track Level Placement

In general, the data indicated that within the entire sample, the majority of students, regardless of RTI intervention, were placed in lower-level classes of level 2 and 3. Table 4.2 displays the percentage of students per freshman and sophomore English track. The data showed that over three-quarters (78.87%) of the sample were in the lower levels for freshman year and just under three-quarters for sophomore year (74.65%). This information indicates that within the

sample, students who are slated for intervention tend to be in the lower-level tracks regardless of an intervention program. When comparing sophomore and freshman English track level changes the numbers did not show a large variation between freshman and sophomore year, however, there was some change. The percentage of students in low tracks showed a decrease from 78.87% to 74.65%, and the percentage of students in the higher tracks had an increase of 4.22%. This signifies there is some movement between freshman and sophomore years at the high school. Table 4.3 shows mean track level and standard deviation for the sample. The mean track level changed from 3.06 to 3.13. This may provide evidence that once a student leaves the elementary middle school intervention model, they may have more opportunity to access higher level courses.

Table 4.2: Average English Level Placement Freshman and Sophomore Years.

Track Level	Freshman English (%)	Sophomore English (%)
2	18.31	18.31
3	60.56	56.34
4	18.31	19.72
5	2.82	5.63

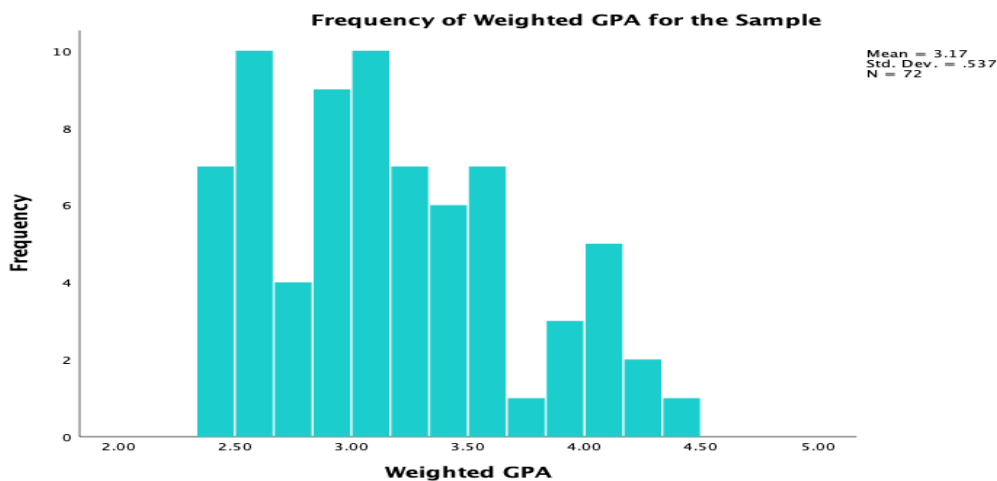
Table 4.3: The Descriptive Statistics for Freshman and Sophomore English Track Level

	n	M	SD
Freshman English Track	72	3.06	.695
Sophomore English Track	71	3.13	.773

Weighted GPA

The weighted GPA of students in the sample is displayed in Figure 4.1. In general, the GPAs are clustered below 3.5, but there are some higher GPAs in the sample. The data showed that the mean GPA was 3.17 with a median of 3.11. The overall above-average GPA for all students could indicate that student placement was not academically accurate for the level. Because weighted GPA and track level are closely associated, having a high GPA but low-track placement indicates that the curriculum may be less challenging in the low levels. Therefore, students produced higher grades, bringing up their weighted GPA. Because RTI and all interventions are intended to improve a student's academic capability, this initial observation makes us wonder if the placements may be based not on grades, but more on the circumstance they were in during intervention. In other words, are the placements accurate for the student's ability? The analysis will further be broken down by RTI vs non-RTI in subsequent sections.

Figure 4.1: Frequency and Distribution of Weighted GPA for the Sample



In summary, the descriptive statistics in this section were run in order to gain a stronger picture of the sample as a whole. This was an important step in the analysis as it highlighted the overall sample characteristics. These preliminary attributes will be important in discerning any statistical differences between their academic placements and any over-representations of under-resourced groups within RTI. In this next section, relational analysis will be done in order to examine how RTI and non-RTI students compared relative to demographic representations, track level placement, and weighted GPA. This next step brings us closer to answering the questions as to how RTI students compare to the non-RTI students.

RTI and Non-RTI Demographic Representations

Before hypothesis testing and fitting models, I examined the bivariate relationships between the RTI group and the non-RTI group for the key variables of gender, race, free and reduced lunch status, ELL, and special education placement. This initial analysis was used as a quick overview to compare the groups, seeking any initial differences. Chi-square analysis is presented later in this chapter on all demographic variables in order to answer whether there was a significant difference between the RTI and non-RTI group and whether there was a difference

between the elementary school's background percentages and RTI placement. This will be used to answer RQ3. Table 4.4 presents the demographic information for the RTI group, non-RTI group, and the school district percentages as a reference. A brief summary follows.

Table 4.4: Demographic Information for District, RTI and Non-RTI Participants (n=74)

	District	RTI		Non-RTI	
	percentage	Number	Percentage	Number	Percentage
Sample Size		53	71.6	21	28.4
Male	51	34	64.2	11	52.4
White	86.2	40	75.5	19	90.5
Black	2	2	3.8	0	0
Asian	5.4	4	7.5	0	0
Hispanic	5.8	2	3.8	2	9.5
Two or greater races	2.5	5	9.4	0	0
Total non-White	13.8	13	20	2	9.5
Free and reduced lunch	15.3	17	32.1	11	52.4
ELL	3.8	0	0	1	5
Special education	16.1	22	41.5	9	42.9

Initial examination of the comparative data between RTI and non-RTI students showed that there is a large representation of males in the RTI group. Nearly two-thirds of the students were male (64.2%), signifying that there may be over placement of males into the RTI program in this sample.

Within the RTI group, the percentage of non-White students was double the non-RTI group, and the representation of White students was slightly lower or under-represented as compared to the entire district percentage of 86.2%. For the non-RTI group, the White students are slightly overrepresented at 90.5%. For the other race categories, there is a slight over-representation of blacks, Asians, and two or greater races in the RTI group. The non-RTI group data showed an over-representation of Hispanics.

There does not appear to be over-representation in the sample for ELL students. In this study, there was only one student classified as ELL who was in the non-RTI group representing 4.8% of that group and 1.4% of the entire sample. The percentage of ELL students in the school district are 2.3%.

Percentages of free and reduced lunch for each group were found to be larger than the background district percentage. The percentage of free and reduced lunch for the non-RTI group of students is large at 52.4% as compared to the RTI student percentage of 32.1%. The RTI group was a little more than 20% lower than the non-RTI group. This could indicate that RTI may be doing a slightly better job at addressing differences in literacy due to SES differences versus true disability. However, initial numbers show that the percentage for both the RTI and non-RTI groups are far above the background level for free and reduced lunch as compared to the district percentage of 15.3%. This shows an initial over-representation of students on free and reduced lunch in both groups. However, the non-RTI school has a much higher percentage of free and reduced lunch as compared to the RTI groups.

The sample of RTI students showed a level of placement into special education higher than the RTI recommendation of 5% of the original pool of students, and higher than the district's background percentage of 16.1%. The sample showed that of the original 53 students

placed into RTI, 41.5% went on to special education. When comparing the RTI and non-RTI percentages of students who were placed into special education, RTI students and non-RTI students (42.9%) had very similar results. Although both groups show a similar percentage of placement, the concern is that with RTI, an estimated 5% should go on to special education placement (Bender & Shores, 2007; Gilbert, et al., 2013; Valero-Kerrick, 2015).

In summary, the analysis presented thus far showed that within the RTI group, there may be high representations in the percentage of males, free and reduced lunch, and special education placement. For the non-RTI group, there was a high representation of special education and free and reduced lunch placement. Chi-square testing will be presented to determine if the results represent statistically significant differences in the inferential analysis later in this chapter in order to answer research question 3.

Academic Indicators RTI and Non-RTI Exploratory Analysis

The academic outcomes measured in this study are English track level placement, average track level placement, and high school weighted GPA for freshman and sophomore years of high school. Exploratory analysis was run to compare the RTI and non-RTI groups to English track level placement, average track level placement, and high school weighted GPA. This initial analysis was essential to understanding if students were able to realize the promise of RTI the goal of which is to bring students up to the rest of their peers early on in their lives in order to avoid setbacks later on.

RTI Participation and English Track level placement Freshman and Sophomore Years

The categorical variable of track level has a ranking from level 2 (applied level) to level 5 (honors and AP): level 2 is considered to be the lowest academic track, followed by 3, 4, and 5. The three subjects that are tracked at the high school are English, science, and math. Cross-

tabulation tables were constructed in order to compare the bivariate relationship between freshman English track level of the RTI group as compared to the non-RTI group. Because English track placement is most closely associated with the research questions in this study, it is important to analyze the representations of students in freshman and sophomore English as a percentage by level for each group.

Tables 4.5 and 4.6 present high school tracking data for RTI and non-RTI students. This initial data analysis showed that the majority of students in the sample were in lower-level tracks for both freshman and sophomore English. The track analysis showed what might indicate an under-representation of RTI students in levels 4 and 5 and an over-representation in the lower levels of 2 and 3.

Table 4.5: Count and Percentage of Students in RTI and non-RTI as Compared to English Track Level Placement Freshman Year

		LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5
RTI	COUNT	12	32	7	1
	PERCENT	23.1	61.5	13.5	1.9
NON-RTI	COUNT	1	11	6	1
	PERCENT	5.3	57.9	31.6	5.3
RTI AND NON-RTI	COUNT	13	43	13	2
	PERCENT	19.4	61.1	16.7	2.8

Table 4.6: Count and Percentage of Students in RTI and Non-RTI as Compared to English Track level placement Sophomore Year

		LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5
RTI	COUNT	10	30	11	1
	PERCENT	19.2	57.1	21.2	1.9
NON-RTI	COUNT	3	10	3	3
	PERCENT	15.8	52.6	15.8	15.8
RTI AND NON-RTI	COUNT	13	40	14	4
	PERCENT	18.3	56.3	19.7	5.6

Table 4.7 presents the data in two divisions: upper track level (4 and 5); and lower track (2 and 3) for freshman and sophomore year English placement. When looked at by high / low track percentage, the RTI group has much higher percentages in the lower tracks as compared to the higher tracks, while the percentages of non-RTI students in the higher tracks were more than double the RTI group for freshman year. When compared in this manner, there is a considerable difference in the student levels. This will be tested for significance when examining the logistic regression output designed to answer question 2.

Table 4.7: High and Low Track Percentage for Freshman and Sophomore year English

	% Level 2 and 3 Freshman Year	% Level 4 and 5 Freshman Year	% Level 2 and 3 Sophomore Year	% Level 4 and 5 Sophomore year
RTI	84.6	15.4	76.3	23.1
Non-RTI	63.1	36.9	68.4	31.6

The track level placements for each subject are presented in Table 4.8 The results showed similar placement for math and science as compared to English placements. However, freshman math showed more students in lower-level classes as compared to freshman English. The two

track level placements of math and science were investigated in order to compare the student's overall track placement and gain a better understanding of differences between English and other subjects as well as to understand average track level.

Table 4.8: Percent Level Placement Freshman and Sophomore Year vs RTI and non-RTI Groups

Track level Freshman year	RTI and non-RTI Percentage	RTI Percentage	Non-RTI Percentage	Track level Sophomore year	RTI and non-RTI Percentage	RTI Percentage	Non-RTI Percentage
English L2	18.9	23	5.3	English L2	17.6	19.2	15.8
English L3	59.5	61.5	57.9	English L3	54.1	57.7	52.6
English L4	16.2	13.5	31.6	English L4	18.9	21.2	15.8
English L5	2.7	1.9	5.3	English L5	5.4	1.9	15.8
Math L2	23	21.2	30	Math L2	4.1	2	10
Math L3	66.2	73.1	55	Math L3	64.9	75.5	55
Math L4	0	N/A	N/A	Math L4	20.3	16.3	35
Math L5	8.1	5.8	15	Math L5	4.1	6.1	0
Science L2	12.2	13.7	10.5	Science L2	10.8	10	16.7
Science L3	58.12	66.7	47.4	Science L3	56.8	70	38.9
Science L4	17.6	13.7	31.6	Science L4	16.2	12	33.3
Science L5	6.8	5.9	10.5	Science L5	8.1	8	26.5

English Track Level Placement

Table 4.9 displays the mean track level for freshman English, sophomore English, and the average track for all required tracked subjects for both freshman and sophomore years per sending school. The data indicated that in general, students who are in RTI have a lower English track level placement as compared to those who did not participate in RTI regardless of sending school. In fact, the average was nearly the same for freshman year with a .07 difference. In terms of the average track level placement for all tracked subjects, school 2 has the highest track average. This may be due to the students who took higher level classes for math.

Table 4.9: Mean Track Level Placement by Sending Schools

School	Mean track level placement Freshman English	Median track level placement Freshman English	Mean track level placement sophomore English	Median track level placement sophomore English	Average track level placement all subjects and freshman and sophomore years
1(RTI)	2.90	3.00	2.95	3.00	2.97
2 (RTI)	2.97	3.00	3.13	3.00	3.24
3 (non-RTI)	3.37	3.00	3.32	3.00	3.11

RTI and High School Weighted GPA

In this preliminary look at the weighted GPA, the data showed a similarity of outcomes between the two groups of students in that the differences between their GPAs are extremely small, within .02 points of one another. Table 4.10 presents the weighted GPAs of the RTI and non-RTI group. High school weighted GPA is an indicator of upward mobility in this study and an essential component to assessing whether a student enrolled in RTI was able to access upward academic mobility as compared to non-RTI students. This preliminary look at the data shows

comparative academic outcomes with an average difference of .02 points. A t-test will be run in the next section to determine if the difference is significant.

Table 4.10: Comparison of the RTI Participation and Weighted GPA

	Mean	Median	SD	Range
RTI	3.16	3.12	.53	2.09
Non-RTI	3.18	3.08	.56	1.72

School and High School Weighted GPA

The comparative data between schools for high school weighted GPA are displayed in table 4.11. In general, all schools have similar GPAs indicating that there is little difference between the RTI group and the non-RTI group when sending school is compared. The difference will be tested for significance later in this study.

Table 4.11: High School Weighted GPA per Sending School

School	Minimum	Maximum	Mean	SD	Median
1 (RTI)	2.36	4.09	3.09	.46	3.12
2 (RTI)	2.36	4.45	3.21	.58	3.16
3 (non-RTI)	2.44	4.16	3.18	.57	3.08

In summary, the initial investigation into the academic indicators of English track level placement, average track level placement, and weighted GPA indicate that the track levels show a higher percentage of students from the non-RTI group in the higher English tracks, higher representation in the lower tracks for the RTI group, and extremely similar weighted GPAs.

This finding leads us to wonder if RTI has the effect necessary to provide academic mobility to students in their high school years.

Research Question One Analysis

In order to answer research question one, several levels of statistical analysis were conducted. Research question 1 asks, in what ways does the high school academic placement in English track level, average track level placement, and weighted GPA differ for students who were placed in RTI as compared to students from the same district who were not enrolled in RTI but had comparable benchmark literacy scores in grades 1-3 that would have placed them into the program had the school utilized one? In this section, results of the chi-square hypothesis testing and linear regression analysis are presented.

Chi-Square Hypothesis Tests

Chi-square tests were run using SPSS. A hypothesis was developed for each variable. The chi-square results, degrees of freedom, and significance are presented in this section. The general hypothesis was:

H₀: In the population of students there is no relationship between track placement and participation in RTI.

H_a: In the population of students there is a relationship between track placement and participation in RTI.

RTI and English Track Level Placement

To further uncover the association between English track level and RTI participation as compared to non-RTI students, two chi-square tests of independence were performed in order to determine if there was a significant association between RTI and freshman English track and RTI and sophomore English placement. The chi-square test of independence showed that there was

no statistically significant association between RTI participation and freshman English track placement ($3, N= 72) = .404, p > .05$, and sophomore English $\chi^2 (3, N= 71) = .511, p > .05$. The tests indicate that RTI students are no more likely than non-RTI students to be placed in English track levels 2-5.

A second set of chi-square tests were performed in order to discern if there was a difference between low track (tracks 2 and 3) and high-level tracks (track 4 and 5) for freshman and sophomore English. The chi-square test of independence showed that there was no significant relationship between RTI participation and freshman English high and low tracks, $\chi^2 (1, N= 72) = .160, p > .05$, and RTI participation and sophomore English high low tracks $\chi^2 (1, N= 72) = .532, p > .05$. This indicates that RTI students were no more likely than non-RTI students to be placed in higher or lower tracks.

Because the average track level placement and weighted GPA are continuous variables, SPSS was used to run an independent t-test to determine whether the average track level placement differs between students who participated in RTI compared with those who do not; and whether the average weighted GPA differs significantly between students who participated in RTI as compared to those who did not.

Results showed that for the students who receive RTI ($M= 3.06, SD = .59$) compared to the students who did not receive RTI ($M = 3.25, SD = .74$), there was no significant difference on average track level placement, $t (70) = 1.10, p = .147$. In this case we fail to reject the null hypothesis, concluding that in the population of students who participated in RTI in grades 1-3, there is no relationship between their high school average track level and participation in RTI as compared to a similar group that did not participate in RTI.

Results for the second hypothesis showed that for students who received RTI ($M = 3.16$, $SD = .53$) compared to students who did not receive RTI ($M = 3.18$, $SD = .57$), there was no significant difference on weighted GPA, $t(70) = .10$, $p = .45$. In this case we fail to reject the null hypothesis, concluding that within the population of students who participated in RTI in grades 1-3, there is no relationship between their high school weighted GPA and participation in RTI as compared to a similar group of students that did not participate in RTI.

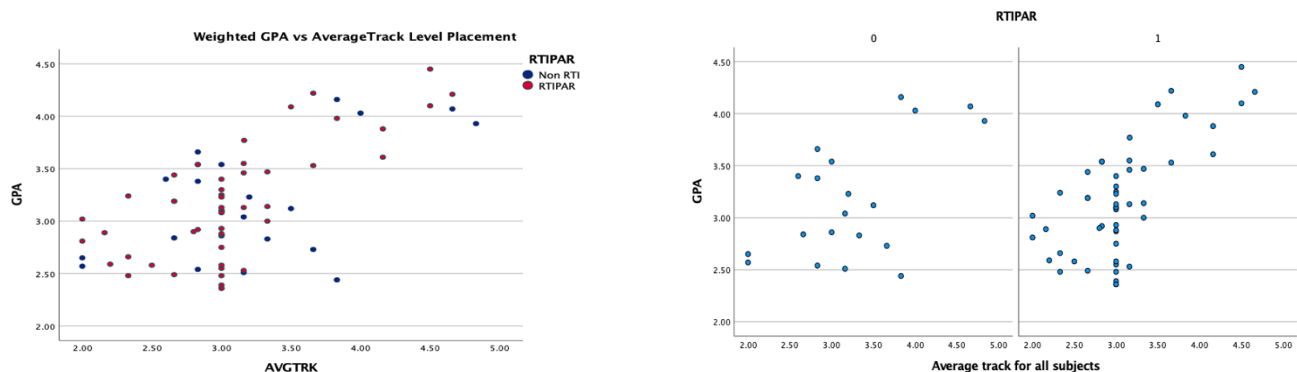
In summary, independent t-tests have indicated that there is no significant difference between RTI and non-RTI students' academic outcomes as measured by track level placement and weighted GPA. The students in the RTI group have experienced no greater nor lesser effect from the program, and in fact have similar academic outcomes to the students who did not receive RTI. In the next section, simple linear regression analysis will be used to model the relationship between outcomes of average track and weighted GPA and predictors RTI participation and demographic variables of gender, race, free and reduced lunch, and special education placement.

Regression Analysis

A preliminary investigation was done in order to identify the relationship between the predictor variable of track level and the outcome variable of weighted GPA. Figure 4.2 a and b shows the bivariate scatter plot that displays a positive linear relationship between weighted GPA as compared to average track level placement. The output indicates that on average, as high school track level goes up the weighted GPA also increases, i.e., if track level is low, average weighted GPA is low and vice-versa. This data also show that the distribution of students is clustered largely at the lower end of the x and y axis, which is consistent with the histogram displayed earlier showing the weighted GPA of the population being clustered below the mean of

3.16 and the median of 3.00. In general, all students in the sample are clustered in the lower region of the chart and fairly evenly distributed as you move toward the higher end of the chart. When RTI groups are separated as in Figure 4.2b, it shows that the RTI group has a stronger linear relationship than the non-RTI group. This could be because there are fewer students represented in the sample in the non-RTI group.

Figure 4.2a and b: Weighted GPA Versus Average Track Level Placement for RTI and Non-RTI



A simple linear regression was performed to predict weighted GPA based on track level placement. A significant relationship was found ($F(1,70) = 48.77, p < .001$), with an R^2 statistic of .411. This indicates that on average 41% of the variation in weighted GPA is explained by track level placement. The model indicated that for every one-unit change in average track, a student's weighed GPA changed by .543. This relationship is important as it indicates that students in higher tracks tend to have higher GPAs. When considering a student's access to upward mobility it therefore indicates that both variables are associated with each other and are important contributors to the analysis of the academic outcomes of the sample.

Two additional models were run to test the hypothesis that RTI and non-RTI students would have different average track outcomes and to test whether the RTI and non-RTI students would have different average weighted GPA. The results are presented in table 4.12. The

equations for the models were $AVGTRK = \beta_0 + \beta_1 RTI + \varepsilon$; and $GPA = \beta_0 + \beta_1 RTI + \varepsilon$.

In both cases we fail to reject the null hypothesis that the variation in average track level placement is associated with whether a student was placed into RTI, nor is it associated with a student's weighted GPA. These results are consistent with the independent t-test and other analysis done thus far.

By failing to reject the null hypothesis, we are able to state that the variation between the student groups is not predicted by RTI participation. Thus, RTI did not have any appreciable impact on student outcomes for the students in this study. In fact, 0% of the variation in weighted GPA can be attributed to whether they participated in RTI, and only 1.7% of track level placement was attributed to RTI placement. This analysis indicates that in answering RQ1, RTI students did not experience greater, nor lesser academic mobility than their non-RTI peers. In this case the students' outcomes do have a significant relationship with the intervention program.

Table 4.12: Variation in Average Track and Weighted GPA as Related to RTI Participation

Variable	β	f	R ²	Significance
Average Track	-.184	1.22	.017	.273
Weighted GPA	-.014	.01	.000	.920

Multiple Regression Model

The primary outcome variables of concern in the analysis of RQ1 are the student's average track level and weighted GPA, and the primary predictor is student participation in RTI. The simple linear regression model of average track by RTI participation showed no significance and an R² value of .017 or that on average 1.7% variation in track level could be attributed to a

student participation in RTI. This leaves 98.3% of the variation to some other cause. The second simple linear regression model of weighted GPA by RTI participation had an R^2 value of 0.00, which indicated that none of the variation in weighed GPA is explained by RTI participation.

An additional regression analysis was run in order to compare the predictor variable of average track level placement controlling for RTI participation on weighted GPA as the outcome variable. The original R^2 statistic for GPA and track level placement showed a high correlation of .641 with a significance of $<.001$. When controlling for RTIPAR, the correlation drops to .416, the effect of RTI is not statistically significant ($p > .05$). As demonstrated in the earlier regression, there is not an impact of RTI on average track level is not significant. The results of this preliminary analysis indicate that the only significant linear relationship is between average track level placement and high school weighted GPA. The introduction of RTI does not show a significant impact on the students' academic indicators of weighted GPA. This again confirms that when controlling for RTI, average track has less of an effect on weighted GPA.

In the next section, two separate analyses were conducted to identify 1) any significant relationship between average track level placement and RTI when controlling for the variables of gender, race, free and reduced lunch, and special education; and 2) any significant relationship between weighted GPA and RTI when controlling for variables of gender, race, free and reduced lunch, and special education. Simple correlation coefficients for each predictor variable and the response variable of average track level and simple correlation coefficient between the predictor variables and weighted GPA were run. Table 4.13 presents the simple correlations between average track level placement and all predictor variables. Table 4.14 presents the simple correlation coefficients between weighted GPA and all the predictor variables.

The estimated bivariate correlations between average track level and the predictor variables showed that two of the predictor variables were significantly correlated with average track level placement. The predictor variables of free and reduced lunch ($r^2=.132$, $p<.01$) and special education ($r^2=.165$, $p<.001$) were shown to have on average the largest influence on average track level placement. Participation in free and reduced lunch was shown on average to account for 13.2% of the variation in track level placement. Special education placement was shown on average to account for 16.5% of the average track placement. The predictor variables of RTI participation, gender, and race were not significant and showed a small impact on average track placement. This analysis is important to the overall success of RTI. 1) it continues to reinforce that RTI alone has little effect on upward mobility as indicated by track level placement; 2) that there is a significant relationship between lower-income students as indicated by free and reduced lunch status and track placement; and 3) special education placement is significantly related to average track level placement for the students in this study.

Table 4.13: Estimated Bivariate Correlations Between Average Track, RTI Participation, Gender, Free and Reduced Lunch, Race, and Special Education

	Average Track	RTI PAR	Gender	Free and Reduced Lunch	Race	Special Education
Average Track	1.00					
RTI PAR	.017	1.00				
Gender	.011	.000	1.00			
Free and Reduced Lunch	.132**	.036	.001	1.00		
Race	.018	.021	.029	.002	1.00	
Special Education	.165***	.001	.000	.016	.006	1.00

~P <.10, *p<.05, **p<.01, ***p<.001

The estimated bivariate correlations between weighted GPA and the predictor variables showed that none of the predictor variables were significant, with all p-values greater than .05. The predictor variables of free and reduced lunch ($R^2=.045$) and special education ($R^2=.039$) were shown to have the greatest influence on weighted GPA; however, their values were low, indicating that on average 4.5% of the variation in weighted GPA could be attributed to free and reduced lunch participation, and on average, 3.9% of the variation in weighted GPA could be attributed to special education placement. The predictor variables of gender and race showed no significant influence on weighted GPA.

Table 4.14: Estimated Bivariate Correlations Between Weighted GPA, RTI Participation, Gender, Free and Reduced Lunch, Race, and Special Education

	Weighted GPA	RTI PAR	Gender	Free and Reduced Lunch	Race	Special Education
Weighted GPA	1.00					
RTI PAR	.012	1.00				
Gender	.000	.000	1.00			
Free and Reduced Lunch	.045	.036	.000	1.00		
Race	.001	.021	.029	.002	1.00	
Special Education	.039	.000	.000	.016	.006	1.00

~P <.10, *p<.05, **p<.01, ***p<.001

This data indicates that the predictor variables of RTI, gender, and race on average have had no significant effect on weighed GPA nor track level placement for this group of students. In the next level of analysis, multiple linear regression analysis was performed using two separate models: one for the outcome variable of track level placement and one for the outcome variable of weighted GPA. The predictor variables of gender, race, free and reduced lunch, and special education were systematically entered into the models using the model taxonomy presented in table 4.15. The following equations were used to predict the interactions between the variables

$$GPA = \beta_0 + \beta_1 RTI + \beta_2 FANDR + \beta_3 SPED + \beta_4 WHT + \beta_5 GNDR + \varepsilon$$

$$AVGTRK = \beta_0 + \beta_1 RTI + \beta_2 FANDR + \beta_3 SPED + \beta_4 WHT + \beta_5 GNDR + \varepsilon$$

Multiple Regression Model Taxonomy

The correlations were used to prioritize and create an order of priority and taxonomy model. Table 4.15 presents the priority analysis based on the correlation and partial correlation results for both models. The highest priority predictor is participation in RTI as it gets to the question as to whether RTI has an effect on average track level placement or weighted GPA. Medium priority predictors include our highest correlation predictors of special education and free and reduced lunch. The final and lowest priority predictors include gender and race. These are the lowest priority as they were not significant in the bivariate correlations but were kept in the model as control predictors.

Table 4.15: Model Taxonomy

Class	Predictor	Comments
High Priority	RTIPAR	Addresses main question
Medium Priority	SPED	SPED showed a significant correlation with track level placement
	FRL	FRL showed a significant correlation with track level placement
Low Priority	GND	Was not significant and had no correlation with
	RACE	

Results for Track Level Placement

Table 4.16 presents the results of fitting a taxonomy of fitted regression models to the average track level placement. Model 1 tests the effects of the primary research predictor of RTI

on track level placement. Regressing RTI on average track level placement, it was found that RTI had no significant effect on average track level placement ($\beta_1 = -.184, p > .05$).

In model 2 the predictor variable of free and reduced lunch was added as an important control predictor. When controlling for free and reduced lunch participation, it was found that a stronger and significant relationship was produced between RTI and average track level placement ($\beta_1 = -.273, p < .10$). Specifically, when controlling for free and reduced lunch, if a child participates in RTI, they will on average have a track placement at -.273 levels lower than a non-RTI student. Controlling for RTI, students in a free and reduced lunch program will place .513 tracks on average lower than students who are not on free and reduced lunch (t-statistic = -3.54, $p < .001$). The data indicated that on average 16.9% of the variability in average track level placement can be explained by participation in free and reduced lunch and RTI together ($R^2 = .169$).

In model 3 the additional control variable of special education placement was added. When controlling for special education placement and free and reduced lunch, the average track level placement is on average .260 places lower ($\beta_1 = -.260, p < .10$). The effect of RTI on track level placement remained significant at the .10 level. The R^2 value indicated that 29.7% of the variation in track level placement can be explained by RTI, free and reduced lunch, and special education together.

In models 4 and 5, gender and race were added. None of these predictors were significant, indicating that gender and race have little interaction with the control variables of RTI, free and reduced lunch, and special education placement. This data indicates that in this study race and gender have little impact on average track level placement when controlling for RTI participation, free and reduced lunch, and special education placement.

In summary, this first multiple regression model demonstrated that RTI participation alone does not significantly predict track level placement. When adding free and reduced lunch to the model, the relationship became significant and showed a negative effect on average track level placement. When adding special education, that relationship improved again, showing a significant negative relationship between the control variables and average track level placement. In other words, a student who participates in RTI, free and reduced lunch, and who is enrolled in special education is on average more likely to be placed into a lower-level track. This information is important in answering research question 1 as to what effect RTI has on average track level placement. From this sample it was shown that on average RTI has very little effect alone, but when introducing free and reduced lunch and special education, the relationship is significant and negative: students are more likely to be in lower-level tracks on average if they are in RTI when controlling for free and reduced lunch and special education. Gender and race have no significant effect on average track level placement.

The results of this analysis reveal a key finding in that student's placement into lower-level tracks is more closely related to their socio-economic status and whether or not they were placed into special education as compared to intervention. This indicates that regardless of RTI, students from these demographics appear to be limited in upward mobility, and that RTI was not able to pull this particular group of students up to their peers who were involved in RTI. These findings are important to RQ1 and the over-arching question in this study.

Table 4.16: Nested Taxonomy of Fitted Multiple Regression Models in Which Average Track Level is Predicted by RTI Participation, Controlling for Free and Reduced Lunch, Special Education, Race, and Gender

Predictor	M1	M2	M3	M4	M5
Intercept	3.24***	3.50***	3.65***	3.61***	3.60***
<i>Question Predictor</i>	-.184	-.273 ~	-.260 ~	-.251 ~	-.249
RTI					
<i>Control Predictor</i>		-.513***	-.452***	-.451***	-.449**
Free and reduced lunch					
<i>Control Predictor</i>			-.465***	-.461***	-.461***
SPED					
<i>Control Predictors</i>					
<i>GNDR</i>				.089	.087
<i>WHT</i>					.015
R ²	.07	.169	.297	.302	.302
Error df	70	69	68	67	66
F	1.218	6.992	9.598	7.25	5.717

~P <.10, *p<.05, **p<.01, ***p< .001

Results for High School Weighted GPA

Table 4.17 presents the results of fitting a taxonomy of fitted regression models to weighted GPA. All models were run even though it was found that the majority of the p-values were not significant at the $p < .05$ level. The variable of free and reduced lunch was the only significant indicator of weighted GPA ($p < .01$). Model 1 tested the effects of RTI on weighted GPA, the primary research question predictor. Regressing RTI on weighted GPA we find that on

average, participation in RTI has an extremely small negative effect on weighted GPA. Without controlling for other variables, RTI explained none of the variation in weighted GPA. This indicates that RTI has virtually no effect on high school weighted GPA, as previously indicated.

In model 2, the predictor variable of free and reduced lunch was added as an important control predictor. Controlling for RTI, students in a free and reduced lunch program will have on average a weighted GPA .242 points lower than students who are not on free and reduced lunch (t-statistic = -1.845, $p < .10$). The data indicated that on average 2% of the variability in weighted GPA can be explained by participation in free and reduced lunch and RTI together ($R^2 = .020$) for this sample of students.

In model 3 the additional control variable of special education placement was added. The effect of RTI on weighted GPA was not significant when controlling for special education placement and free and reduced lunch ($\beta_1 = -.051$, $p > .05$).

In models 4 and 5, gender and race were added to the model. None of these predictors were significant. The R^2 of value of .077 remained unchanged from model 3 indicating that gender and race have little interaction with the control variables of RTI, free and reduced lunch, and special education placement.

In summary, the relationship between RTI and weighted GPA is again shown to be not statistically significant. When adding the control variables of gender, race, free and reduced lunch, and special education, the relationship becomes stronger, with free and reduced lunch and special education only but not with gender and race. This analysis provides the necessary information to answer research question 1 which asks in what ways does a student's GPA differ for students who were in RTI as compared to those who were not? None of the predictors were significant at the .05 level. The introduction of free and reduced lunch was significant at the $< .10$

level. The information is useful in understanding how a student who is in RTI compares to those who are not and how the variables are related to weighted GPA. In addition, it supports the results from the earlier analysis that there is no significant difference between the RTI and non-RTI groups weighted GPA, but the variable of free and reduced lunch had an association at the .10 significance level.

Table 4.17: Nested Taxonomy of Fitted Multiple Regression Models in Which Weighted GPA is Predicted by RTI Participation, Controlling for Free and Reduced Lunch, Special Education, Race, and Gender.

Predictor	M1	M2	M3	M4	M5
Intercept	3.177***	3.298***	3.361***	3.370***	3.377***
<i>Question Predictor</i>	-.014	-.056	-.051	-.053	-.054
RTI					
<i>Control Predictor</i>		-.242~	-.218	-.218	-.219
Free and reduced lunch					
<i>Control Predictor</i>			-.189	-.129	-.190
SPED					
<i>Control Predictors</i>					
<i>GNDR</i>				-.020	-.019
<i>WHT</i>					-.007
R ²	0.00	.047	.077	.077	.077
Error df	70	69	68	67	66
F	.010	1.708	1.887	1.401	1.104

~P <.10, *p<.05, **p<.01, ***p<.001

Research Question Two Analysis

Research question 2 asks what is the impact of RTI participation on the probability that a student enters a higher-level English track at the secondary level? How if at all does the effect of RTI change when controlling for gender, race, free and reduced lunch, and special education placement? Binary logistic regression was used in order to model the relationship between the predictor variable of RTI participation and the binary dependent variable of English track level placement. In this analysis, English track level was broken into two categories of high and low tracks, where high tracks include levels 4 and 5; and low track includes levels 2 and 3.

Table 4.18a and 4.18b presents a description of the data set used for the logistic regression analysis for freshman and sophomore English track levels.

Table 4.18 a: Description of Data Set for Logistic Regression of English Track Level Freshman Year

Freshman High Level Track placement	Total Sample (N)	Male (n ₁)	White (n ₂)	Non- White	Free and reduced lunch (n ₃)	Special Education (n ₄)	RTIPAR	NONRTI
Yes	14	8	12	2	4	2	8	6
No	58	37	46	12	23	27	44	14
Summary	72	45	58	14	27	29	52	20

Table 4.18b: Description of Data Set for Logistic Regression of English Track Level Sophomore Year

Sophomore High Level Track placement	Total Sample (N)	Male (n ₁)	White (n ₂)	Non- White	Free and reduced lunch (n ₃)	Special Education (n ₄)	RTIPAR	NONRTI
Yes	18	10	43	3	4	3	12	13
No	53	34	15	10	22	26	40	6
Summary	71	44	58	13	26	29	52	19

Logistic Regression Analysis

The probability of being in a specific English track level was modeled using the equation $\text{Logit } p = \ln\left(\frac{p(RTIPAR_{ij}=1)}{1-p(RTIPAR_{ij}=1)}\right) = \beta_0 + \beta_1 RTIPAR$, where the value of Y (logit p) is equal to the probability of being placed into a specific track where 1 = the higher levels of track 4 and 5 and 1- p is the probability of not being placed into a higher track. The research hypothesis regarding the relationship between the likelihood that a student participated in RTI is placed into a high-level track is as follows:

H_0 In the population of students who participated in RTI there is no difference in the probability of high and low English track level placement as compared to students who would have been in RTI if the school had offered it.

H_a In the population of students who participated in RTI there is a difference between the probability of high and low English track level placement as compared to students who would have been in RTI if the school had offered it.

Two different models were run for both freshman English track level and sophomore English track level. This analysis was done in order to determine the probability of an RTI student being assigned to a higher track and to determine if the probability changes when controlling for gender, race, free and reduced lunch, and special education. Both models were run in order to compare if there were any significant changes in placement between freshman and sophomore years.

Model 1 – Freshman English Track Placement

A logistic regression model was run using SPSS software having RTIPAR (1= yes, 0 = no) as the main predictor variable, and freshman track level placement as the dichotomous dependent variable (1= high level, 0= low level). Data was entered into the analysis as 0 or 1 coding for the dichotomous outcomes of higher English track level placement as the reference category (1) and lower English track level placement (0). The results showed that the relationship was not significant. The predicted logit of (FRSHENGHL) = $-.847 + (-.857 * RTIPAR)$. The predictor variable, RTIPAR, in the logistic regression analysis was found to not contribute significantly to the model. According to the model, the log of the odds of a student being placed into a higher-level class was negatively related to RTIPAR, showing that on average it is less likely they would be recommended for a higher-level class. In other words, students who participated in RTI were less likely to be placed in a higher track level. The results were not significant ($p > .05$).

Although not generalizable, the analysis showed that a student who participates in RTI is less likely to fall into a higher-level track for freshman English and the probability decreases as a result of placement. The estimated odds ratio was .42, indicating that the odds of a student being

placed in a high-level class versus a low-level class are 58% lower for RTI students as compared to non-RTI students.

These initial results reinforce what was found in the chi-square testing: students in RTI experience no greater or lesser significant mobility as compared to the non-RTI group.

Complex Model Analysis

In the complex model, the additional control variables of gender, race, free and reduced lunch, and special education were entered into the model. Note that none of the predictors were significant at the .05 level of significance.

Complex Model Adding the Effect of Gender

A two-predictor logistic model was fitted to the data to test the research hypothesis regarding the relationship between gender and the likelihood that an RTI student is placed into a higher-level freshman English track. According to the model the effects of gender on English track level placement, when controlling for RTI, are not significant ($p = .741$) and therefore not generalizable. The results showed that the predicted logit of (FRSHENGHL) = $-.941 + (-.838*RTIPAR) + (.204)*GNDR$. The log of the odds of a student being in a higher-level class was negatively related to RTIPAR ($p = .180$) and positively related to gender ($p = .741$). Given the same RTI placement, females were more likely to be in a higher-level class. The odds of a female being placed in a higher-level class versus a low-level class were 78% higher than for males. The effect of RTIPAR on freshman track level placement was similar whether or not the predictor of GNDR is controlled for .424 as compared to .433.

Complex Model Adding the Effect of Being White

A three-predictor logistic model was fitted to the data to test the research hypothesis regarding the relationship between the likelihood that an RTI student is placed into a higher-level freshman English track while controlling for gender and race. Race was coded as 1= White, and 0 = non-White. The results were not significant and are therefore not generalizable. The regression was carried out using SPSS, and according to the model the results showed that the predicted logit of (FRSHENGHL) = $-1.164 + (-.809*RTIPAR) + (.171*GNDR) + (.262*WHITE)$. Although not statistically significant the estimated odds of a student being in a higher-level class are negatively related to RTIPAR ($p = .2$) positively related to gender ($p = .784$) and positively related to being White ($p = .760$). Given the same RTI placement, females were more likely to be in a higher-level class than males (girls were coded 1 and boys were coded 0); and a White student was more likely to be in a high-level freshman English class (White was coded as 1). The estimated odds of a RTI student being placed into a higher-level class when controlling for gender and being White were 53% lower, but again, these results are not statistically significant so are only relevant for this sample.

Complex Model Adding the Effect of Free and Reduced Lunch Participation

A four-predictor logistic model was fitted to the data to test the research hypothesis regarding the relationship between the likelihood that an RTI student is placed into a higher-level freshman English track while controlling for gender, race, and free and reduced lunch enrollment. Free and reduced lunch was coded as 1= yes, and 0 = no. According to the model the results showed that the predicted logit of (FRSHENGHL) = $-.766 + (-.946*RTIPAR) + (.166*GNDR) + (.165*WHITE) + (-.658*FRL)$. According to the model, when controlling for GNDR, WHITE, and FRL, in the sample, the log of the odds of a student being in a higher-level

class was negatively related to RTIPAR ($p = .147$); positively related to gender ($p = .792$); positively related to being White ($p = .849$); and negatively related to being on free and reduced lunch ($p = .334$). However, none of these predictors are statistically significant, so the results cannot be generalized to the population.

Full Model Adding the Effect of Special Education Placement

The full model included the predictors of RTI participation, gender, race, free and reduced lunch, and special education. The only significant predictor at the $p < .05$ level was special education ($p < .047$). The predictor model was fitted to the data to test the research hypothesis regarding the relationship between the likelihood that an RTI student is placed into a higher-level freshman English track while controlling for gender, race, free and reduced lunch, and special education placement. Special education was coded as 1- yes, and 0 = no. According to the model the results showed that the predicted logit of (FRSHENGHL) = $-.265 + (-.994*RTIPAR) + (.173*GNDR) + (.087*WHITE) + (-.480*FRL) + (-1.638*SPED)$. According to the model, when controlling for GNDR, WHITE, FRL, and SPED the log of the odds of a student being in a higher-level class was negatively related to RTIPAR; positively related to gender; positively related to being White; negatively related to being on free and reduced lunch; and negatively related to being placed into special education ($p = .047$). Given the same RTI placement, females were more likely to be in a higher-level class than males because girls were coded 1 and boys were coded 0; a White student was more likely to be in a high-level freshman English class as being White was coded as 1, students on free and reduced lunch were less likely to be in a higher-level class as free and reduced lunch was coded as 1 for yes and 0 for not being on free and reduced lunch; and a special education student was less likely to be in a higher level class. The odds of an RTI student being placed into a higher-level class when controlling for

gender, being White, free and reduced lunch, and special education were 37% lower for students in RTI. However, as with other logistic regression models fitted, these fitted odds ratios cannot be generalized to the population; they represent the sample relationships.

Model Summary

The binary logistic regression model was used to examine whether a student who participated in RTI experienced any greater probability of being in an upper-level freshman English track. The control variables of gender, race, free and reduced lunch, and special education were evaluated to see if there was any association with the likelihood of having a higher-level English track placement during freshman year. Table 4.19 presents a summation of the logistic regression analysis.

The only significant finding was that in the full model special education showed a significance value of $p=.047$. This finding is important to understanding what variable had the greatest influence on a student's probability of being in a high-low English track.

Table 4.19: Logistic Regression Model Summary Freshman English

Predictor	M1	M2	M3	M4	M5
Intercept	-.857	-.941	-1.164	-.766	-.265
<i>Question Predictor</i>	-.847	-.838	-.809	-.946	-.994
RTI					
<i>Control Predictor</i>		.204	.171	.166	.173
Gender					
<i>Control Predictor</i>			.262	.165	.087
Race					
<i>Control Predictor</i>				-.658	-.480
Free and Reduced Lunch					
<i>Control Predictor</i>					-1.638*
Special Education					
<i>SE</i>	.621	.624	.631	.653	.681
<i>e^ß</i>	.424	.433	.445	.388	.370
(odds ratio)					
-2LL (Deviance)	69.084	68.976	68.879	67.891	62.843
Pseudo- R² Statistic (Nagelkerke)	.040	.043	.045	.066	.170

~P <.10, *p<.05, **p<.01, ***p<.001

A preliminary analysis suggested that the assumption of multicollinearity was met with a tolerance value ranging from .933- .982. An inspection of standard residuals showed that there were three outliers which were kept in the model (std. residual 2.22, 2.10, 2.06). The model was not significant with a χ^2 of 8.09 (5, N =72, p=.151) indicating that it could not distinguish between those in high- and low-level tracks and the predictors. The model summary showed a

percent of variance of 10.6% (Cox and Snell R^2) and 17% (Nagelkerke R^2), meaning that the model explained 10.6% and 17 % of the variance in the dependent variable and correctly classified 80.6% of the cases. This indicated that nearly 85% could be explained by some other variable. The Hosmer and Lemeshow goodness of fit test showed a non-significance value of .797, which indicates that the model is a good fit of the data.

Deviance as a Measure of Goodness-of- Fit Summary

The -2LL statistic was calculated in order to determine the goodness of fit of the model. In the models, all of the deviance was low. The variance between the models shows little change when adding predictors. This is because the predictors were not statistically significant. The pseudo- R^2 values were used to explain how well our model explains the variation in English track level placement for freshman year. All values were greater than 1, indicating that the model was an improvement over the null model. The only significant model was the relationship between English track level placement, RTIPAR, and special education. This model showed the highest pseudo- R^2 value of .117 when analysis was performed with just special education versus track level placement and in the final model. This indicates that although the model is an improvement over the null model, the interaction of special education placement on track level placement is stronger at explaining student outcomes. This finding supports the past analysis in that we are seeing over and over again that a student's access to upward mobility is limited by placement into special education. Table 4.20 presents a summary.

Table 4.20: Goodness of Fit Summary

Model	-2LL (Deviance)	Pseudo- R ² Statistic (Nagelkerke)
Model 1 (RTI)	69.084	.011
Model 2 (GNDR)	70.725	.009
Model 3 (WHITE)	70.622	.007
Model 4 (FRL)	70.326	.008
Model 5 (SPED)	65.474	.117
Model 6 (RTI, GNDR)	68.976	.043
Model 7 (RTI, GNDR, WHITE)	68.879	.045
Model 8 (RTI, GNDR, WHITE, FRL)	67.891	.066
Model 9 (RTI, GNDR, WHITE, FRL, SPED)	62.843	.170

Table 4.21: Logistic Regression Analysis of Students Placed in High / Low Freshman English Tracks in High School Full Model

Predictor	β	SE β	Wald's χ^2	df	p	e^{β} (odds ratio)
Constant	-.265	1.091	.059	1	.808	NA
RTI	-.994	.681	2.128	1	.145	.370
Gender (0=male, 1=female)	.173	.651	.070	1	.791	1.188
Race (0= non-White, 1= White)	.087	.899	.009	1	.923	1.091
Free and reduced lunch status (0= no, 1=yes)	-.480	.716	.449	1	.503	.619
Special Education Placement (0= no, 1 = yes)	-1.63	.824	3.946	1	.047*	.194
Test			χ^2	df	p	
Overall model evaluation						
Likelihood ratio test (multinomial)			8.092	5	.151	
Wald test			22.785	1	.001	
Goodness-of-fit test						
Hosmer & Lemeshow			3.85	7	.797	

~P <.10, *p<.05, **p<.01, ***p< .001

Model 1 – Sophomore English Track Placement

The second logistic regression model was run to compare sophomore English track level placement with RTIPAR (1= yes, 0 = no). In this model, RTI serves as the main predictor variable, and sophomore track level placement as the dichotomous dependent variable (1= high

level, 0= low level). Data were entered into the analysis as 0 or 1 coding for the dichotomous outcomes of higher English track level placement as the reference category (1) and lower English track level placement (0). The results showed that the predicted logit of (SOPHENGHL) = $-.773 + (-.431*RTIPAR)$. The results were not significant ($p > .05$) and not generalizable. According to the model, the log of the odds of a student being placed into a higher-level class was negatively related to RTI participation, showing that on average it is less likely they would be in a higher-level class as compared to a non-RTI student. The analysis showed that a student who participates in RTI is less likely to fall into a higher-level track for freshman English, and the probability decreases as a result of placement. The estimated odds ratio was .65, indicating that the estimated odds of a student being placed in a high-level class versus a low-level class are 35% ($1-.65$) lower for the RTI students as compared to the non-RTI students. This is consistent with the freshman English track analysis, and the results cannot be generalized to the population.

Complex Model Analysis

In the complex model, the additional predictor variables of gender, race, free and reduced lunch, and special education were entered. Note that none of the predictors were significant to the .05 level of significance. Table 4.22 presents a summary.

Complex Model Adding the Effect of Gender

A two-predictor logistic model was fitted to the data to test the research hypothesis regarding the relationship between the gender and likelihood that an RTI student is placed into a higher-level sophomore English track. Again, the results were not significant ($p > .05$). The results showed that the predicted logit of (SOPHENGHL) = $-.928 + (-.392*RTIPAR) + (.318*GNDR)$. The odds of a student being in a higher-level class were negatively related to

RTI participation and positively related to gender (1= female, 0= male). Given the same RTI placement, females were more likely to be in a higher-level class. The odds of a female being placed in a higher-level class vs a low-level class were higher than for males. The estimated odds ratio was .68 indicating that the estimated odds of a student being placed in a high-level class versus a low-level class are 32% (1-.68) lower for RTI students as compared to non-RTI students if the student is male. This value did not change much as compared to model 1. These results are not generalizable because they were found to be not significant.

Complex Model Adding the Effect of Being White

A three-predictor logistic model was fitted to the data to test the research hypothesis regarding the relationship between the likelihood that an RTI student is placed into a higher-level sophomore English track while controlling for gender and race. The results indicated that the significance level was $> .05$. Race was coded as 1= White, and 0 = non-White. The regression was carried out using SPSS and according to the model the results showed that the predicted logit of (SOPHENGHL) = $-.921 + (-.393*RTIPAR) + (.319*GNDR) + (.008*WHITE)$. According to the model, when controlling for GNDR and WHITE, the odds of a student being in a higher-level class were negatively related to RTIPAR, positively related to being female, and positively related to being White. Given the same RTI placement, females were more likely to be in a higher-level class than males because girls were coded 1 and boys were coded 0; and a White student was more likely to be in a high-level freshman English class as being White was coded as 1. The odds of a student being placed in a high-level class versus a low-level class were 36% (1-.64) lower for the RTI students as compared to the non-RTI students when controlling for gender and race. The results were not statistically significant ($p>.05$).

Complex Model Adding the Effect of Free and Reduced Lunch

A four-predictor logistic model was fitted to the data to test the research hypothesis regarding the relationship between the likelihood that an RTI student is placed into a higher-level sophomore English track while controlling for gender, race, and free and reduced lunch participation. The results were not significant ($p > .05$). Free and reduced lunch was coded as 1 = yes, and 0 = no. According to the model the results showed that the predicted logit of (SOPHENGHL) = $-.383 + (-.568 * RTIPAR) + (.329 * GNDR) + (.131 * WHITE) + (-1.01 * FRL)$. According to the model, when controlling for GNDR, WHITE, and FRL, the log of the odds of a student being in a higher-level class was negatively related to RTIPAR, positively related to gender; positively related to being White; and negatively related to being on free and reduced lunch. Given the same RTI participation, females were more likely to be in a higher-level class than males, a White student was more likely to be in a high-level sophomore English class, and students on free and reduced lunch were less likely to be in a higher-level class. The odds of a student being placed in a high-level class versus a low-level class are 43% (1-.57) lower for RTI students as compared to non-RTI students when controlling for gender, race, and free and reduced lunch status. The results were not statistically significant ($p > .05$).

Full Model Adding the Effect of Special Education Placement

The full model included the predictors of RTI participation, gender, race, free and reduced lunch, and special education. The predictor model was fitted to the data to test the research hypothesis regarding the relationship between the likelihood that an RTI student is placed into a higher-level sophomore English track while controlling for gender, race, free and reduced lunch, and special education placement. Special education was coded as 1- yes, and 0 = no. According to the model the results showed that the predicted logit of (SOPHENGHL) = .284

$$+ (-.657*RTIPAR) + (.271*GNDR) + (.308*WHITE) + (-.877*FRL) + (-1.52*SPED).$$

According to the model, when controlling for GNDR, WHITE, FRL, and SPED the log of the odds of a student being in a higher-level class was negatively related to RTIPAR, positively related to gender, positively related to being White ($p=.849$), negatively related to being on free and reduced lunch, and negatively related to being placed into special education. Given the same RTI placement, females were more likely to be in a higher-level class than males because girls were coded 1 and boys were coded 0; a White student was more likely to be in a high-level freshman English class as being White was coded as 1; students on free and reduced lunch were less likely to be in a higher-level class as free and reduced lunch was coded as 1 for yes, and 0 for not being on free and reduced lunch; and a special education student was less likely to be in a higher level class. The odds of a student being placed in a high-level class versus a low-level class are 48% ($1-.52$) lower for the RTI students as compared to the non-RTI students when controlling for gender, race, free and reduced lunch and special education ($p>.05$). In this model special education was the only predictor that was significant ($p = .031$). This indicates that when controlling for RTI, gender, race, and free and reduced lunch, a special education student is more likely to be in a lower-level class.

Model Summary

The binary logistic regression model was used to examine whether RTI participation, gender, race, free and reduced lunch, and special education were associated with the likelihood of having a higher-level English track placement during sophomore year. Table 4.23 presents a summation of the logistic regression analysis.

A preliminary analysis suggested that the assumption of multicollinearity was met with a tolerance value ranging from .933- .982. An inspection of standard residuals showed that there

were three outliers that were kept in the model (std. residual 2.22, 2.10, 2.06). The model was not significant with a χ^2 of 9.067 (5, N =72, p=.106) indicating that it could not distinguish between those in high- and low-level tracks and the predictors. The model summary showed a percent of variance of 12% (Cox and Snell R^2) and 17.7% (Nagelkerke R^2), meaning that the model explained 12% and 17 % of the variance in the dependent variable and correctly classified 74.6% of the cases. This indicated that nearly 74.6% could be explained by some other variable. The Hosmer and Lemeshow goodness-of-fit test showed a non-significance value of .935, which indicates that the model is a good fit of the data.

Deviance as a Measure of Goodness-of-Fit Summary

The -2LL statistic was calculated in order to determine the goodness of fit of the model. In the models, all of the deviance was low. The variance between the models shows little change when adding predictors. This is because the predictors were not statistically significant except for special education. The pseudo- R^2 values were used to explain how well our model explains the variation in English track level placement for sophomore year. All values were greater than 1 indicating that the model was an improvement over the null model. The only significant model was the relationship between English track level placement, RTIPAR, and special education. This model showed the highest pseudo- R^2 value of .177. This indicates that although the model is an improvement over the null model, the interaction of special education placement on track level placement is stronger at explaining the outcomes of students. Table 4.22 presents a summary of the of goodness of fit.

Table 4.22: Goodness of Fit Summary

Model	-2LL (Deviance)	Pseudo- R ² Statistic (Nagelkerke)
Model 0 (no predictors)	83.23	
Model 1 (RTI)	79.88	.011
Model 2 (RTI, GNDR)	79.56	.017
Model 3 (RTI, GNDR, WHITE)	79.56	.017
Model 4 (RTI, GNDR, WHITE, FRL)	76.89	.071
Model 5 (RTI, GNDR, WHITE, SPED)	71.33	.177

Table 4.23: Logistic Regression Analysis of Students Placed in High / Low Sophomore English Tracks in High School Full Model

Predictor	β	SE β	Wald's χ^2	df	p	e^{β} (odds ratio)
Constant	.284	1.038	.075	1	.785	NA
RTI	-.657	.666	.073	1	.324	.519
Gender (0=male, 1=female)	.271	.596	.206	1	.650	1.31
Race (0= non-White, 1= White)	-.308	.801	.148	1	.701	.735
Free and reduced lunch status (0= no, 1=yes)	-.877	.673	1.70	1	.193	.416
Special Education Placement (0= no, 1 = yes)	-1.52*	.707	4.36	1	.031	.218
Test			χ^2	df	p	
Overall model evaluation						
Likelihood ratio test (multinomial)			71.329	5	.151	
Wald test			15.670	1	.001	
Goodness-of-fit test						
Hosmer & Lemeshow			2.993	8	.935	

Summary of Research Question 2

The results of the logistic regression indicate that there was no significant statistical significance between RTI group placement in a high or low track as compared to non-RTI group placement for freshman and sophomore high/low track placement. These results are consistent with prior analysis. It was found that special education is a significant contributor to a lower track level placement in both the sophomore and freshman English tracks. This indicates that

special education placement as a variable is important to understanding track level placement for this sample of students. Since RTI is a part of a historical policy intended to reduce over placement into special education, this finding is an important outcome. In general, the findings indicate that there is no statistically significant probability of a student who has participated in RTI being in a higher or lower track compared to students who did not participate in RTI, except if they are also in special education. This finding is key to our understanding the long-term effects of RTI and whether it can produce the promise of bringing students up to their peers; and more importantly determining if the long-term academic outcomes of the students reflect placement due to other variables, such as free and reduced lunch and special education classification. These findings will be united with the theoretical frameworks in the discussion chapter.

Research Question 3

Research question 3 asks: to what degree do the demographic characteristics of gender, race, free and reduced lunch, and special education placement differ according to RTI placement and RTI eligible but non-participants? For this analysis, chi-square hypothesis testing was used to compare the demographic percentages for gender, race, free and reduced lunch, and special education of students who were placed into RTI as compared to non-RTI students; and to compare their placement to the elementary school's background percentages, looking for significant over-or-under representations. Bivariate correlational analysis was performed in order to assess the associations between the variables. Additional chi-square analysis was done to compare the demographic percentages of the sample to the background sending school demographics to see if there was initial over-representation as compared to the background for

the sending elementary school. The results are presented in table 4.24. The chi-square results are presented in this next section.

Chi-Squared Test of Independence

RTI and Gender

The χ^2 squared test of independence showed that there was no significant association between RTI participation and gender as compared to non-RTI students, $\chi^2 (1, N= 72) = .874$, $p = > .05$. The p value is greater than .05 so we fail to reject the null hypothesis, concluding that in the population of students there is no association between gender placement in the RTI group versus the non-RTI group.

RTI and Race

The χ^2 squared test of independence showed that there was a significant association between RTI participation and race of White and non-White, $\chi^2 (1, N= 72) = .57$, $p = < .05$. The p value is less than .05, so we reject the null hypothesis, concluding that in the population of students there is a relationship between race when the student is White as compared to non-White. This is to be expected due to the large percentage of White students in this sample.

RTI and Non-RTI Free and Reduced Lunch

The χ^2 squared test of independence showed that there was no significant association between RTI participation and free and reduced lunch, $\chi^2 (1, N= 72) = 2.64$, $p = > .05$. The p value is greater than .05, indicating that there is no significant relationship between RTI placement and non-RTI placement in relationship to free and reduced lunch status.

RTI and Non-RTI Special Education

The chi-square test of independence showed that there was no significant association between RTI participation and placement into special education, $\chi^2 (1, N= 72) = .011, p = .916$. The p value was greater than .05 indicating that there is no significant relationship between RTI placement and non-RTI placement in relationship to special education placement.

Summary of Chi Square Analysis for RTI and Non-RTI

Table 4.24 presents a summary of the chi-square testing. The results of this analysis show that RTI and non-RTI students show no significant difference in terms of gender and special education status. The race results show that there is a significant over-representation of White students in the non-RTI group. Although free and reduced lunch was not significant at the .1 level, it was close to having a significant value ($p = .104$), indicating that there was an over-representation of free and reduced in the non-RTI group. These results indicate that in general, regardless of an RTI program, gender and race are not significantly over placed in the program. However, the free and reduced lunch significance value does indicate that there is some over-representation for that demographic variable.

Table 4.24: Chi-square Values and Level of Significance for the Comparison of the Demographic variables of the RTI and Non-RTI students

Variable	χ^2 value	Df	Level of Significance
Gender	.874	1	.350
Race – White and Non-White	5.70	1	.017
Free and Reduced Lunch	2.64	1	.104
Special Education Placement	.011	1	.916

Analysis of Over-representation in Relationship to Sending Elementary School

As mentioned earlier, it is important to look at the makeup of each sending school before drawing conclusions about over-representation of specific genders, races, socio-economic status, special education placement, and ELL placement. In order to do this, it was important to look at each elementary school's demographic makeup compared to the students who were placed into intervention or not. To compare the three elementary schools, descriptive data was run for the elementary school attended by the percentage of gender; free and reduced lunch; race; special education placement, and ELL. Table 4.25 presents a comparison between the school's background demographic representations and the interventions placements.

Table 4.25: Baseline Characteristics by Treatment Status and Sending Elementary School

Demographic Variable	School 1 (RTI)		School 2 (RTI)		School 3 (non-RTI)	
	School %	Sample Group %	School %	Sample Group %	School %	Sample Group %
Male	50	71.4	50	59.4	50	52.4
White	70.9	71.4	75.0	78.1	80.4	90.5
Black	1.6	4.8	1.5	3.1	1.4	0
Asian	14.4	4.8	3.0	9.4	10.1	0
Hispanic	5.2	4.8	6.6	3.1	1.8	9.5
Two or greater	7.2	14.3	13	6.3	6.2	0
Free and Reduced Lunch	19.1	23.8	24.2	37.5	13.25	52.4
ELL	N/A	0	N/A	0	N/A	5
Special Education	12	52.4	16	34.4	10	42.9

~P <.10, *p<.05, **p<.01, ***p<.001

Chi-square tests were run to compare the sending elementary school's percentages of gender, race, free and reduced lunch, and special education to the percentage of students represented in the sample. This was done to see if the students who were placed into RTI were over-represented as compared to the school's background percentages. This is an important part of seeking to see if over-representation of under-resourced groups was statistically significant when the students were originally placed into intervention.

The hypothesis was as follows:

H_0 within the population of students enrolled in RTI, there is no difference between the percentage of gender, race, free and reduced lunch, and special education as compared to the elementary school's percentage.

H_a within the population of students enrolled in RTI, there is a difference between the percentage of gender, race, free and reduced lunch, and special education as compared to the elementary school's percentage.

Each of the variables was tested individually using chi-square analysis. Tables 4.25 – 4.30 present the findings per demographic category. For each variable the background percentage was compared to the elementary school's background percentage.

Sending Elementary School 1 (RTI)

For school 1 (RTI school) the chi-square test of independence showed that there was a significant relationship indicating over-representation for gender $\chi^2 (1, N= 21) = 9.15 p = <.05$; race for Black students $\chi^2 (1, N= 21) = 6.4, p = <.05$, and two or greater race $\chi^2 (1, N= 21) = 7.00 p = <.05$; and for special education $\chi^2 (1, N= 21) = 136.01, p = <.01$. Free and reduced lunch showed no over-representation $\chi^2 (1, N= 21) = 1.15 p = >.05$. In summation the variable of gender, being Black, or two or greater races showed an over-representation within the RTI students from school 1. All other races were not overrepresented, but there was a significant under representation of Asian students $\chi^2 (1, N= 21) = 6.4, p = <.05$. As with all schools in this study, special education placement once again proved to be significant $\chi^2 (1, N= 21) = 21.16 p = <.01$.

Sending Elementary School 2 (RTI)

For school 2 (RTI school) the chi-square test of independence showed that there was a significant relationship indicating over-representation for race if the student was Asian $\chi^2 (1, N= 32) = 13.65, p < .01$; under-representation if the student was 2 or greater races $\chi^2 (1, N= 32) = 28.65, p < .05$; over-representation if the student was on free and reduced lunch $\chi^2 (1, N= 32) = 7.3, p < .01$; and over-representation for special education placement $\chi^2 (1, N= 32) = 21.16, p < .01$. There was no significant over-representation for gender $\chi^2 (1, N= 32) = 1.76, p > .05$; Black $\chi^2 (1, N= 32) = 1.7, p > .05$; and Hispanic $\chi^2 (1, N= 32) = 1.85, p > .05$.

Summary RTI Schools 1 and 2

The RTI schools in general show over-representation of special education placement but have little comparative results in terms of the other variables. For gender only, school 1 showed over-representation of males, and for race school 1 showed under-representation of Asians, while school 2 showed over-representations of Asians. This was the same for free and reduced lunch students. School 1 showed no significant over-representation, while school two showed significant over-representation. The RTI groups shared only one similarity and that was the variable of special education. As has been shown before in this study, special education over-representation continues to be a problem both in initial placement and during high school track level placement.

Elementary School 3 (Non-RTI)

The non-RTI school showed over-representation for race in the category of Hispanic, $\chi^2 (1, N= 21) = 32.93, p < .01$; and under-representation for Asian students $\chi^2 (1, N= 21) = 10.1, p < .01$, and two or greater races $\chi^2 (1, N= 21) = 6.2, p < .05$; the results for Black students

were insignificant $\chi^2 (1, N= 21) = 1.4, p = > .05$; for free and reduced lunch the non-RTI group showed over-representation, $\chi^2 (1, N= 21) = 115.6, p < .001$; and for special education the results showed over-representation $\chi^2 (1, N= 21) = 108.24, p < .001$.

Summary of Findings for RTI and Non-RT Schools and Over-Representation

These results indicate mixed information showing that the RTI and non-RTI groups do not have consistent significant differences. In the category of gender, only one RTI school demonstrated over-representation of males as compared to the non-RTI school which showed no significant over-representation. For the category of race, the results were also mixed. The RTI schools showed an over-representation of Blacks in school 1; the non-RTI school shows no over-representation. In the category of race and being Asian, the results are again mixed in that the RTI schools, one had over-representation, and the other had under-representation; the non-RTI school also showed under-representation. In the case of being Hispanic, the RTI schools showed no over-representation, but the non-RTI school showed over-representation. In the case of two or greater races, only one RTI school showed over-representation. The non-RTI school did not.

The results for free and reduced lunch were also mixed results for RTI schools. School 1 showed no over-representation, but school 2 showed significant over-representation, as did the non-RTI school. When comparing chi-square results, it was observed that the non-RTI school had a very large over-representation of free and reduced lunch as compared to the other two schools. This could indicate that the RTI program is doing better (although still over representing) than the non-RTI school at preventing lower income communities from entering into the RTI program.

The one significant and consistent outcome between all schools was that of special education placement. This is an indicator that at first might seem intuitive, i.e., these were

intervention students and therefore they will have higher numbers of placements. However, for RTI schools the numbers are troubling because RTI's mission is to reduce placement through intervention. According to the IDEA (2004), the purpose is to intervene early and catch students who are not truly special education students. This high level of placement could indicate that the program is not working any better than a normal school program when it comes to alleviating over placement.

Table 4.26: Gender Representation as Compared to Sending School

Elementary School	School %	Sample %	Df	χ^2 value	Level of Significance	Over or under representation
1 (RTI)	50	71.4	1	9.15	<.001	Yes- over
2 (RTI)	50	59.4	1	1.76	>.05	No
3 (non-RTI)	50	52.4	1	.11	>.05	No

Table 4.27: Special Education Representation as Compared to Sending School

Elementary School	School %	Sample %	Df	χ^2 value	Level of Significance	Over-or-under representation
1 (RTI)	12	52.4	1	136.01	< .001	Yes, over
2 (RTI)	16	34.4	1	21.16	< .001	Yes, over
3 (non-RTI)	10	42.9	1	108.24	< .001	Yes, over

Table 4.28: Free and Reduced Lunch Representation as Compared to Sending School

School	School %	Sample %	Df	χ^2 value	Level of Significance	Over-or-under representation
1 (RTI)	19.1	23.8	1	1.15	> .05	No
2 (RTI)	24.2	37.5	1	7.3	< .01	Yes, over
3 (non-RTI)	13.25	42.9	1	115.6	< .001	Yes, over

Table 4.29: Race Representation as Compared to Sending School 1 (RTI School)

Elementary School 1 (RTI)	School %	Sample %	Df	χ^2 value	Level of Significance	Over-or-under representation
White	70.9	71.4	1	.004	>.05	No
Black	1.6	4.8	1	6.4	<.05	Yes, over
Asian	14.4	4.8	1	6.4	<.05	Yes, under
Hispanic	5.2	4.8	1	.03	>.05	No
2 or greater	7.2	14.3	1	7.00	<.05	Yes, over

Table 4.30: Race Representation as Compared to Sending School 2 (RTI School)

Elementary School	School %	Sample %	Df	χ^2 value	Level of Significance	Over-or-under representation
2 (RTI)						
White	75	78.1	1	.13	>.05	No
Black	1.5	3.1	1	1.71	>.05	No
Asian	3.0	9.4	1	13.65	<.001	Yes, over
Hispanic	6.6	3.1	1	1.85	>.05	No
2 or greater	13	6.3	1	28.65	<.001	Yes, under

Table 4.31: Race Representation as Compared to Sending School 3 (Non-RTI School)

Elementary School	School %	Sample %	Df	χ^2 value	Level of Significance	Over-or-under representation
3 (RTI)						
White	80.4	90.5	1	1.27	>.05	No
Black	1.4	0	1	1.4	>.05	No
Asian	10.1	0	1	10.1	<.01	Yes, under
Hispanic	1.8	9.5	1	32.93	< .01	Yes, over
2 or greater	6.2	0	1	6.2	<.05	Yes, over

Track level placement and Weighted GPA as Compared to High School Student Body

In order to conclude the RQ3 analysis, two additional chi-square tests were run to compare track level placement of the students in RTI to the background track levels of the students in the high school and to compare the weighted GPAs to the classes of 2023 and 2024 weighted GPA. This was done to compare their mobility within the community and with their peers. Although I did not find significant differences between the RTI and non-RTI group when it came to track placement or weighted GPA, I thought it was important to see how these students faired against their peers who were not tagged as needing intervention in grades 1-3. Bringing students up to their peers is the mission of RTI, comparing the background academic ranking of students in the high school to the intervention group is essential to understanding if there was upward mobility in the group.

Table 4.32 presents the data used to calculate if there was any significant difference between the RTI students’ track level placement and the high school track level placement.

Table 4.32: Percentage of Students in Each Level Compared to RTI, Non-RTI and High School

		LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5
RTI	Percent	23	61.5	13.5	1.9
NON-RTI	Percent	10	60	25	5
High School	Percent	4.5	43.8	32.8	18.6

The chi-square test of independence showed that there was a significant association between RTI participation and track level placement when the group was compared to the background high school percentages per track. The results are presented in table 4.33. Students in RTI were significantly over-represented in level 2 as compared to their peers, and

underrepresented in levels 4 and 5. For level 2 $\chi^2 (1, N=53) = 76.06, p = <.001$; for level 3 $\chi^2 (1, N=53) = 7.15, p = <.01$; for level 4 $\chi^2 (1, N=53) = 11.35, p = <.001$; and for level 5 $\chi^2 (1, N=53) = 14.99, p = <.001$. This indicates that although there was no significant difference between the RTI and non-RTI group when it was tested for track level placement, there is a difference in regard to what this high school has for placement in the general student body. When discerning if RTI has an effect on upward mobility, it is important to compare the intervention student's placement to the "normal" placement in this district. Here it becomes apparent that the students did not reach the same percentages as their peers in track level placement, indicating that there was no upward mobility.

Table 4.33: Chi-Square Values for Track Level of RTI Group as Compared to High School

Variable	χ^2 value	Df	Level of Significance
Track Level 2	76.06	1	< .001
Track Level 3	7.15	1	< .01
Track Level 4	11.35	1	< .001
Track Level 5	14.99	1	< .001

RTI Students Compared to High School Weighed GPA

Table 4.34 presents the data used to calculate if there was significant difference between the RTI students' weighted GPAs and their peers in the classes of 2023 and 2024.

Table 4.34: Weighted GPA for Class of 2023 and 2024 as Compared to RTI Weighted GPA Class of 2023 and 2024

	Class of 2023 Weighted GPA	Class of 2024 Weighted GPA
RTI Group	3.21	3.09
High School	3.63	3.40

The results of the chi-square test indicated that there was no significant difference between their peers’ weighted GPA and the RTI students’ GPA. For the class of 2023, the results showed $\chi^2 (1, N=53) = .04, p = >.05$; and for the class of 2024 $\chi^2 (1, N=53) = .03, p = >.05$. This indicates that although RTI students had significantly different track levels, their GPAs were comparable and there was no significant difference. Early in this study, we saw the same results for RTI and non-RTI students. Although in general this high school class of 2023 and 2024 on average have higher weighted GPAs, they are not proven to be significant.

Summation of Quantitative Findings

In summary, the results of the quantitative analysis indicate that within the sample of students, there is little difference between the RTI students’ English track level placement, average track level placement, nor weighted GPA. The only consistent significant finding for this sample was that in all cases, placement into special education was over-represented in both groups, and free and reduced lunch showed higher representations in some school programs.

In answering research question 1, the regression analysis showed a positive relationship between track level placement and weighted GPA. However, when adding RTI as a control variable, the relationship weakened. This indicated that RTI had very little to no relationship with the indicators of academic mobility in this study. In addition, when adding free and reduced lunch and special education to the average track level model, it was found that the relationship

between RTI and average track level became stronger and significant at the .10 level. This indicates that track level placement may be linked with economic standing and whether or not a student was placed into special education.

In answering research question 2, the results showed that for this sample, that participation in RTI had no significant effect on the probability of student being placed into a higher or lower track. In the logistic regression analysis, the only indicator that was significant was participation in special education. The results indicate that when RTI students are compared to non-RTI students, the probability of being in an upper or lower class is not statistically significant. The only significant predictor of being in a higher track was special education status. This shows that there does not seem to be an advantage or disadvantage for the RTI students. They all ended up in the same placement unless they were in special education.

When answering research question 3 as to the over-representation of under-resourced communities, the findings are that there was no consistent over-representation in the RTI student group as compared to the non-RTI group except for special education placement and free and reduced lunch. A key finding was that the non-RTI school had a greater over-representation of students on free and reduced lunch, which could indicate that the RTI program is doing a better job at not over-identifying students in a lower socio-economic bracket, although school 2 also showed over-representation of free and reduced. The chi-square results showed great variation as to which schools had over-and under-placement of gender and race, and the conclusion was drawn that there was no pattern of over-identifying students from those demographic backgrounds. For special education, each school regardless of RTI programming showed that there was a significant number of students placed into special education from both programs.

The combination of these results indicates that when comparing RTI and non-RTI groups, there is virtually no difference between their academic outcomes at the secondary level in relationship to academic mobility as indicated by English track, average track, and weighted GPA. Furthermore, it was discovered through multi-level modeling and logistic regression that when the variables of free and reduced lunch and special education are introduced, the track level placement becomes negative and significant. The chi-square testing also showed significance for special education placement. Students in this study are therefore more likely to be in lower-level tracks if they participated in RTI, free and reduced lunch, and special education. These findings will be discussed as related to past RTI research in Chapter 5.

Chapter 5: Discussion, Implications, and Conclusion

Purpose & Overview of the Study

Response to Intervention (RTI) is a curriculum-based management program designed to ameliorate student learning shortcomings in literacy via a multi-tiered level of instructional intensity. It is a general education preventative model aimed at improving the performance of students at risk for poor academic outcomes (Gilbert, et al., 2013; Hite & McGahey, 2015). All curriculum-based management programs are considered to increase our ability to identify students who are truly learning disabled as compared to a student who might need extra help to “catch-up” (Raben, Brogan, Dunham, & Bloomdahl, 2019). However, RTI has had mixed findings as to its effectiveness to: 1) improve literacy skills (Balu, et al., 2015; Gersten, Jayanthi, & Dimino, Too Much, Too Soon? Unanswered Questions From National Response to Intervention Evaluation, 2017; Gilbert, et al., 2013; King & Coughlin, 2016); and 2) target and decipher the differences between needing literacy skills and placement into special education (Finch, 2012; Fuch & Fuch, 2017). In addition, the program has been criticized for its ability to disproportionately place students from under-resourced communities into learning disabled categories (Abou-Rjaily & Stoddard, 2017; Artiles, Kozleski, Trent, Osher, & Ortiz, 2010; Sullivan, Artiles, & Hernandez-Saca, 2015; Tileston, 2011; Willis, Race, Response to Intervention, and Reading Research, 2019).

The policy of including RTI in the classroom curriculum began with the reauthorization of the IDEA in 2004. Prompted by over-placement of students from under-resourced communities into learning disabled categories, the program replaced the discrepancy model based on IQ and achievement differences (Cramer, 2015; Willis, Race, Response to Intervention, and Reading Research, 2019). The program as enacted policy is now included in all 50 states

(Savitz, Allington, & Wilkins, 2018). The stated goal of RTI is to “minimize the risk for long-term negative learning outcomes by responding quickly and efficiently to documented learning or behavioral problems and ensuring appropriate identification of students with disabilities” (United States Office of special Education , 2010, p. 4). Because the stated goal of the program is to appropriately intervene so that students will not experience long-term academic impacts, it is imperative to understand what the long-term academic outcomes are.

The purpose of this study is to expand upon the research on students who participated in RTI in grades 1-3 by identifying the long-term academic outcomes at the high school level. Past RTI research in general has focused on the connection between a students’ literacy scores after receiving intervention in grades 1-3, but no studies were found that evaluated long-term outcomes of RTI students as related to secondary school success. This study thus served to connect the early intervention program to the end point of high school track level placement and academic weighted GPA, seeking to understand if there was academic benefit for students in RTI. The study also gathered data on levels of disproportional placement as indicated by gender, race, free and reduced lunch, and special education placement. In addition to this over-arching goal was the desire to gain understanding of the student’s journey from intervention to secondary school and to acquire an insight into their remembered and current experiences and perceptions.

The over-arching question in this study was: What impact does RTI have on the academic outcomes of students at the secondary level? Specifically wondering, does RTI promote academic mobility or produce no or little effect? Thus, this dissertation provides an understanding of how a child’s participation in the early intervention program of Response to Intervention influences their ultimate academic outcomes at the secondary level. The results of this study will help us

understand the empirical outcomes and gain some preliminary information on the student's experiences.

The quantitative analysis in this study used a retrospective longitudinal design to analyze data collected from grades 1-3 in three different elementary schools within the same school district to answer the three main research questions:

RQ1: In what ways does the high school academic placement in English track level, average track level placement, and weighted GPA differ for the students who were placed in RTI as compared to students from the same district who were not enrolled in RTI but had comparable benchmark literacy scores in grades 1-3 that would have placed them into a program if the school utilized one?

RQ2: What is the impact of RTI participation on the probability that a student enters into a higher-level track at the secondary level? How if at all does the effect of RTI change when controlling for gender, race, free and reduced lunch status, and special education placement?

RQ3: What is the probability that a student from an under-resourced community as indicated by race, free and reduced lunch status, and special education are represented in the sample of students?

This first aspect of the study sought to identify differences in the academic placement in English track level, average track level, and weighted GPA for students who were placed in RTI compared to students from the same district who were not enrolled in RTI but had comparable scores in first grade that would have placed them in a RTI program if the school utilized one (RQ 1 and 2). Second, the data analysis addressed the probability that a student from an under-resourced community as indicated by gender, race, free and reduced lunch status, and special

education might end up in the RTI program as compared to their peers at the sending elementary school (RQ 3).

Post Hoc Analysis

A post hoc analysis of three selected students who were part of the RTI school sample was conducted. The post hoc analysis emerged from the data analysis and considerations of the theoretical frameworks. The analysis focused on student perceptions of their academic journey to gain a better perspective and a deeper understanding of an RTI participants perceptions. Further exploration is needed to draw definitive conclusions. Appendix B contains the methods. The results of the post hoc analysis are exploratory and is not intended for generalization. However, the preliminary findings may lead to future research.

Appendix B contains a discussion of the methods used in the analysis. The discussion is cast in the form of excerpted scenes. However, it is important to note that the formal method of scene construction as articulated by Deborah Tannen is not used. The concept informed but did not provide a guide for analysis. The transcripts of the three RTI students were used on a case-by-case basis to identify narrative scenes that are used specifically as an exploratory analysis. The responses of the students were used to develop individual narrative scene analysis in order to gain insight into what ways RTI students' memories, perceptions, and beliefs about their educational journey connect to the early intervention program and their current high school experiences.

The goal of this post hoc analysis was to gain additional student perspective on how the past and present may be connected. Although a narrow sample, it helped us gain some information on the RTI program and learning to read, and these particular students' perspectives on their current track placement and why they believe they are in that track. This aspect of the

study sought to understand how their experiences may have influenced their academic track, social interactions, perceptions of themselves as learners, perceptions of educators who may or may not have influenced their trajectory, and any other remembered experiences. And although small in scope and not generalizable, it may inspire researchers to think about a future, more in-depth study of student perspectives. The integration of some of the student responses is included in this chapter as supplemental support for the theoretical frameworks.

The quantitative findings in this study serve as the principal outcomes, while the qualitative explorations are used to improve our understanding of how RTI is experienced on the individual level in the “real world” context, both academically and theoretically. Because the interview pool was small, the results are used simply to start the process of understanding a student’s lived experiences within the program. Some of the student testimony is used in the conceptual framework section as a point of reflection.

The general hypothesis for this study is that in an attempt to improve literacy through the highly structured intervention program of RTI, schools ultimately create an invisible pathway for students, leading to a negative effect on a student’s academic trajectory, ultimately affecting their upward mobility into higher level classes at the secondary level. The hypothesis focuses on the construct of a perceived deficit within the child due to a long-standing socio-historical and sociocultural context of what is deemed important types of knowledge within society, curriculum, and school. Students who do not demonstrate the appropriate skills in the first few days of the K-12 experience are easily identified and placed into tiers via the use of benchmarks and proficiency scores. Once placed into these tiers, their opportunity to exit the program may be difficult due to the structure of the assessments and tests that place them there to begin with.

The analysis focused on whether RTI had the potential to provide any upward mobility or if it functioned as a method of stratification and social reproduction via a type of tracking, which leads to lower-leveled classes at the secondary level. Research on student literacy outcomes in the early years has shown mixed and non-conclusive results, while the lack of research on the long-term outcomes for students who have participated leaves us wondering if the program and policy brings any substantial changes for students, specifically students from under-resourced communities.

In this next section I will present a summary of the findings.

Summary of Findings

Research Question #1

The overall findings from research question 1 were that students who participated in RTI in the elementary school experienced no significant difference between their average track level placement and weighted GPA as compared to non-RTI students in high school. Linear regression modeling demonstrated that the variation between RTI and non-RTI students was 0% for weighted GPA and 1.7% for average track placement, when no other control variables were added to the model. The GPAs showed a difference of .02 points and the average track difference was .01. The results showed that when comparing English level track the average for freshman and sophomore years were not significantly different from each other for the level of 2-4, but level 5 (honors and AP) showed the greatest difference between the groups. Level 2 had a 0% difference, level 3 had a 9.3% difference, level 4 had a 1.41% difference and level 5 had a 50% difference. This preliminary finding indicated that the RTI and non-RTI groups did not appear to have a great deal of difference, except for level 5 English placement.

In the linear regression model for average track placement, the findings showed no significant difference for RTI students as compared to their non-RTI counterparts. However, when free and reduced lunch ($p = < .001$) and special education placement ($p = < .001$) were introduced to the model, it was discovered that the relationship became significant at the .10 level and negative. In the full multiple regression model, the results showed that when controlling for the demographic variables of gender, race, free and reduced lunch, and special education, both free and reduced lunch ($p < .01$) and special education ($p < .001$) were significant. This is an important finding because it indicates that students' placement into lower-level tracks was significantly connected to two variables associated with lower-resourced communities: low SES and special education. Because RTI was developed with the goal of improving outcomes for under-resourced communities, and to curb over-identification of students into special education, this finding indicates that the program may not be able to clearly distinguish between those who have true learning disabilities, and those who are emanating from under-resourced communities. In addition, the finding indicates that regardless of SES or special education services, these students have not only been placed into RTI, but they are also represented in higher numbers in lower tracks at the secondary level. This indicates that for this sample of students, RTI was unable to promote any upward academic mobility when key demographic variables of free and reduced lunch and special education were included.

The findings for weighted GPA showed no significant difference between RTI and non-RTI students. In fact, the difference between the two groups' average GPA was only .02 points (3.16 and 3.18). This indicates that there was no greater nor lesser effect of RTI on the academic indicator of weighted GPA. The only significant finding in the multilinear model was the addition of free and reduced lunch. When free and reduced lunch was added to the model the

relationship showed that students in RTI were more likely to have lower GPAs on average by -.242 if they were on free and reduced lunch ($p < .10$). This finding indicates that RTI appears to on average have little effect on a student's academic standing as indicated by weighted GPA, unless they are in a lower-resourced community, and then it has a significant negative effect.

In summary the results of the analysis for research question 1 present two important findings. One, when comparing students who were identified as needing intervention in the primary grades, we find that RTI had virtually no effect on any upward mobility as indicated by average track level at the high school and weighted GPA as compared to the non-RTI students. Two, students in RTI who were originating from lower SES backgrounds were more likely to be in lower-level tracks, as were students identified for special education. This supports earlier results which showed that economic disadvantage has a large impact on participation in special education (Finch, 2012; Sharp, Sanders, Noltemeyer, Hoffman, & Boone, 2016; Schifter, Grindal, Schwartz, & Hehir, 2019).

Research Question #2

The findings from research question 2 showed that when looking at the probability of a student in RTI being placed into a lower-level English track during freshman and sophomore years as compared to their non-RTI counterparts, students in RTI had no significant probability of being placed in a lower track as compared to the non-RTI group. However, when adding special education to the logistic regression model, the relationship became significant ($p < .01$) and negative for both freshman and sophomore students. The logistic regression showed that a freshman in RTI and special education, while controlling for gender, race, and free and reduced lunch had a 37% lower probability of being in a higher track than a non-RTI student. The logistic regression showed that a sophomore student who was in RTI and special education, while

controlling for gender, race, and free and reduced lunch, had a 48% lower probability of being in a higher track than a non-RTI student. This model shows the impact special education is having on the comparative groups. Students who were both in RTI and special education on average have a higher probability of lower-level English class placement for their sophomore year.

These outcomes are consistent with our question 1 findings. Students have not gained academic advantage or disadvantage from participating in RTI and consequently have not experienced significant upward mobility due to the program. Furthermore, the implications for special education and free and reduced lunch status are alarming and consistent. Students who have been not only placed into intervention, but also special education appear to have the least mobility. In addition, free and reduced lunch demonstrated an impact on both average track and weighted GPA. This is in contrast to the goal of the program which is to bring students up to their peers early on and to prevent over-identification. In this study these two variables appear to be statistically linked to lower-level tracks.

Research Question #3

Research question 3 asked if there was disproportional representation of gender, race, socioeconomic status, and special education in the RTI group of students compared to the non-RTI students. Chi-square tests of independence showed that for race, gender, and special education, there was no significant difference between the groups. However, for free and reduced lunch, the significance level was .104 which is above the level of significance identified for this study, but close to being significant at the .10 level. This level of significance was caused by the non-RTI group having 52.4% as compared to 32.1 % of its students on free and reduced lunch. This finding indicates that RTI may be doing a better job at limiting students from low SES families entering into intervention. One of the primary incentives for including

RTI policy in the IDEA (2004) was to lessen the odds of under-resourced students being placed into special education (Cramer, 2015; Willis, Race, Response to Intervention, and Reading Research, 2019). This finding shows that in this sample, the non-RTI school had a higher representation. This runs counter to the linear regression which showed that a student in RTI, and on free and reduced lunch would be placed into a lower average track. This is because the level of free and reduced lunch is only 13% for the non-RTI school and in the RTI group the percentage was also high.

The second part of question 3 compared the demographic representations of the sending elementary schools to the sample of students. The results showed some racial groups being overrepresented in some schools but not in others. No clear pattern in terms of RTI and non-RTI was identified. This indicates that although there were some over-representations, there was not enough to draw a conclusion about which groups if any were overrepresented. For gender there was an equal representation at the non-RTI school, but for school 1 there was significant over-representation of males ($p < .05$). The results are varied, and no conclusion could be made in relationship to gender between the RTI and non-RTI group.

Special education was a significant factor for all schools, showing a large over-representation at $p < .001$ for all schools. This finding is consistent across all findings in this study. Students in special education are overrepresented in the sample as compared to their peers. For the RTI group, this poses a special problem. Students in RTI are supposed to be receiving intervention as a way to identify a “lack of knowledge” as compared to a true learning disability. According to the RTI model, this percentage should be at around 5% of the original placement (Bender & Shores, 2007). The data show that the RTI student percentage is significantly above the sending school’s background percentage.

Free and reduced lunch was another variable that had implications for over-representation when compared to background values for the elementary schools. It was observed that in this sample the non-RTI students' level of placement accounted for over 50% of the group as compared to a 13% background rate. This indicates that in this sample of students there is an over-representation by quite a lot in the non-RTI group, as compared to the background level at the sending elementary school. The difference between the two is important and leads to a question of whether the over-representation could be the result of not having an RTI program. For the RTI group, school 2 also showed a significant level of over placement of free and reduced lunch students as compared to the background level. In this school the difference was not nearly as large at 24.2% to 37.5% ($p = < .01$). Again, this could indicate that the RTI program is able to limit socio-economic status as a literacy indicator better than not having a program. However, the regression analysis indicated that when the entire sample is looked at the impact of free and reduced lunch on track level was significant when controlling for RTI.

Discussion of Findings

RTI and the Game of “Catch-Up”

The stated goal of RTI is to “minimize the risk for long-term negative learning outcomes by responding quickly and efficiently to documented learning or behavioral problems and ensuring appropriate identification” (United States Office of special Education , 2010, p. 4). It is considered to be a preventative model that works through research-based instruction that includes universal screenings, benchmarks, and the development of tier-based intervention strategies (Valero-Kerrick, 2015). The assessments used in RTI serve as a monitoring tool to “catch up” students and identify who is truly learning disabled (Raben, Brogan, Dunham, & Bloomdahl, 2019). The goal is to avoid problems down the road through early intervention (Hite

& McGahey, 2015). The complexity and uncertainty of the Response to Intervention program however has led many to wonder what effect the program is has on students' academic outcomes in the long term, and whether it is able to overcome the problems associated with special education over-identification.

This study did not show that students were able to “catch up” to their high school peers when it comes to academic track level placement. The data show that track level placement for the RTI students was significantly different for the average track levels of 2, 4, and 5, finding that on average students in RTI placed significantly lower than their peers at the high school. Furthermore, the study found that RTI students seemed to have experienced little to no academic mobility as compared to their non-RTI counterparts. For all students in this study, regardless of intervention, the average track, English track, and weighted GPA were found to be similar and not significantly different from each other.

Findings as Compared to Response to Intervention Empirical Outcomes

The findings in this study have indicated neither a significant positive nor negative effect on the students' academic indicators of track or weighted GPA for the RTI students as compared to the non-RTI students except when free and reduced lunch and special education are part of the model. These academic findings mirror the research on RTI as compared to changes in literacy scores in the early years when the studies are conducted in a non-experimental setting. For example, the findings of Balu et al. (2015) were that across schools, when RTI was looked at in the natural classroom setting, the influence of RTI was that 81 schools (15 significant) had negative effect sizes and 38 (4 significant) had positive effect sizes. The results showed that for the tier 1 students who were close to the cut point the effect was -0.17 standard deviations which the authors state is equivalent to “approximately one-tenth of a year less learning than what they

would have achieved had they not been assigned” to intervention (p.13). These findings also reflect Wanzek et al.’s (2016) findings in their meta-analysis in which the findings indicated a moderate to positive effect of the less extensive interventions on both standard and non-standard measures, such as phonics awareness, word identification, and decoding fluency; and smaller effects were found in the areas of language and reading comprehension.

These studies suggests that RTI is not a perfect solution to improving a student’s opportunity for upward mobility and “catching up” to their peers. Furthermore, Gilbert et al., showed in their comparison of students that of the students in tier 2 only 40% were reading at the normal range, and at tier 3 only 53% were reading at that point. This finding indicating that the students did show some improvement, but a limited percentage of movement. These findings are consistent with the mobility of the students in this study. Students who were in RTI were no more likely nor less likely to be in a higher track than the non-RTI group. The difference in weighted GPA was .02 points of separation, for average track it was .01 levels, and the probability of high versus low track level placement for English in sophomore and freshman years was shown to be negative, but not significant, indicating that the probability of placement into a high track was not influenced by RTI. As connected to the key findings in this study it reinforces the notion that students in RTI had very little difference between the students who were targeted as low performers in the non-RTI school.

However, in studies conducted which looked at the empirical outcomes of students reading scores in a more experimental setting it has been shown to have positive effects. It is important to merit these studies which have shown that RTI can have a positive effect when implementation protocols are strictly adhered to. The What Works Clearinghouse (2013) intervention report showed that of the studies that met their criterion for inclusion, two studies of

which included the impact on reading fluency and reading comprehension, both had statistically significant positive effects. The study concluded by stating the effectiveness of the program. Additionally, in 2015 Hite and James McGahey investigated the effects of the program using an experimental design with convenience sampling to discern whether scores on the Georgia Criterion-Referenced Competency Test were positively correlated with RTI. The findings were that the scores improved by 14.72 points in reading and that 100% of the students met standards in reading with 37.5% exceeding the standards, a total score increase of 20.2%. The results were not statistically significant, but the implications are that with a larger sample size, results could show significant effect size on state tests. Mellard, Frey, and Woods, (2012) investigated the school-wide effects of RTI on student achievement. The analysis revealed that between fall and spring assessments, the following changes occurred for each of the five schools: one school that had lower than average scores at the beginning of the year closed the performance gap; of the four schools that began the year with grade-average skills, three gained advantage and one diminished its scores. The study concluded that RTI can improve literacy and bring students up to their peers.

The research has indicated that although there are mixed empirical findings on RTI success, the one clear indication of success that has been demonstrated is that with strong adherence to protocols RTI can produce a positive impact on reading scores (Fuchs & Fuchs, 2017). Mellard, Frey, and Woods (2012) explain that one of the strongest implications of their study is that with strict implementation, positive results appear to be possible. The authors caution that finding true implementation fidelity is a problem. Even within their guidelines, the best of the five schools had 72% fidelity, and the other schools were between 39% and 42%. These variations in positive and negative results have been attributed to several factors but the one key

variable of importance that is referenced in the literature is the implementation protocols (Balu, et al., 2015; Chandler, 2014; Finch, 2012; Klinger & Edwards, 2006). Scholars have argued that when initiated with fidelity, reading outcomes can be predicted by interventions (Burns, Appleton, & Stehouwer, 2004; Kovaleski, 2007; Sharp, Sanders, Noltemeyer, Hoffman, & Boone, 2016).

In this study teachers followed the problem solving approach (PSA). This protocol does not utilize the strict implementation strategies used by some of the referenced studies that have shown success. The implementation strategies used in the problem solving approach are varied and designed around the student by a team of teachers and professionals, thus making adherence to specific interventions difficult. For the PSA to be implemented effectively, it “requires a teacher to have broad-based understanding of student skill need, mastery of instructional decision making, use of evidence, deep and critical analysis, and appraisal of the effect of pedagogy on performance” (King & Coughlin, 2016, p. 246). Sharp et al. (2016) concluded that fidelity significantly predicted student reading outcomes when controlling for other demographic factors. The results suggested that if used with fidelity and controlling for demographic factors, data-based decision making, significantly predicted student reading outcomes and concluded that implementation quality may affect student outcomes.

Furthermore, this study found that 13.2% and 16.5% of variation in average track of the students were more closely connected to their participation in free and reduced lunch and special education. In the multiple regression model, it was shown that free and reduced lunch had a negative impact of $-.449$ ($p < .01$) and special education had an impact of $-.461$ ($p > .01$). In the logistic regression the effects were not significant until introducing special education to the model (-1.63 ; $p < .01$). This finding mirrors earlier studies that looked at how lower-resourced

communities are affected RTI. For example, Sharp et al. (2016) showed evidence of this assertion when examining the relationship between RTI implementation, demographic variables, and reading scores in that they concluded “the percentage of economically disadvantaged and number of disciplinary referrals accounted for 36% of the variation in reading scores” (p. 156). Goodman and Webb (2006) investigated the potential for bias that could lead to over-identification in a community in Texas with a population of students who were 86% economically disadvantaged. The purpose of the study was to examine the CBM data of students who were referred for special education evaluation based on a presumed reading disability. Of the 66 students referred for learning disability by teachers, only 21 qualified. Forty passed the minimum competency test; of the 40 who passed, 11 qualified as having a reading disability. The authors concluded the teachers’ identification of students for RTI were biased and led to learning disability over-identification (Goodman & Webb, 2006).

The relationship between implementation and lower-resourced communities is an important relationship to consider when reviewing the results of this study. Students who participate in the PSA of RTI do not seem to experience the same scholastic boost as the controlled studies have produced, this finding may shed light on why students did not end up in the higher levels as compared to the non-RTI group. Strict adherence to protocols has been found to be difficult in the “natural setting.” This creates room for students from lower-resourced communities to be targeted for the intervention program and maintain continued intervention due to the outcomes not strongly supporting upward mobility in the early years. This could lead to over placement into special education. As students move through the K-8 program they are “handed-off” to the next grade and presented with their scores. This creates a ceiling effect where students are caught in lower placement due to the effects of not having

gained enough to pull them out of the intervention tiers, and eventually the correlation we see in this study between RTI, free and reduced lunch, and special education.

What does this mean for RTI policy? If RTI is designed to “catch” students up, then they should have experienced at least some upward mobility compared to the similar students who did not participate in RTI. However, this was not the case, leaving us to conclude that for this particular group of students the program created no better long-term outcomes for the students, than not having RTI. This is worrisome for several reasons: 1) The policy of RTI is a federally mandated policy that is active in all 50 states across America with the hopes of improving student outcomes in the long term (Valero-Kerrick, 2015); 2) Numerous tax dollars are dedicated each year to intervention specialist salaries, materials, and assessments with uncertain benefits (Hollands, et al., 2016; Valero-Kerrick, 2015); 3) students are experiencing the program without any added upward mobility benefit for the instructional time; and 4) the program is tied to special education placement with the hopes of alleviating “false positives” and over-placement of under-resourced populations, an important aspect of K-12 education (Fuchs & Vaughn, 2012).

Impact of RTI on Special Education Placement and Connections to Past Findings

The analyses performed in this study found that special education placement was statistically associated with track placement for all students in this study. These findings are mirrored in the historical concerns expressed in the literature. The RTI mission is tightly tied to Special Education law and the advancement of the IDEA reauthorization in 2004. The history of RTI is closely tethered to early research on special education identification misplacement and over-identification especially for CLD students (Dunn L. M., 1968; Garcia & Ortiz, 2008; Sullivan, Artiles, & Hernandez-Saca, 2015). During the late 1960s and through the early 2000s, data showed numerous over placements (Dunn L. M., 1968; Gresham, 2002; Ysseldyke,

Algozzine, & Epps, 1983). Many scholars have continued to criticize RTI for its disproportional and over-placement of students (Abou-Rjaily & Stoddard, 2017; Artiles, Kozleski, Trent, Osher, & Ortiz, 2010; Artiles A. J., 2011 & 2019; Hartlep & Ellis, 2012; Artiles 2011, 2019; Sullivan, Artiles, & Hernandez-Saca, 2015; Tileston, 2011; Willis, 2019). In this study students in RTI were not only placed into special education at a high level (41.9% in total), but were unable to advance to higher levels of academic tracks as compared to their high school peers. Over-placement is a serious concern because, as shown in this study, it can lead to a continued placement into lower-tracked environments.

Because the over-placement of students into special education is so tightly tied to the inception of RTI, these findings are concerning. According to the RTI model, the reduction in tier intervention numbers should follow a 20%; 15%; 5% pathway, whereby the 5% is in tier 3 headed for possible special education identification (Bender & Shores, 2007). In this model, as students move through the intervention tiers, receiving the necessary supports, they ought to return to the “normal” classroom. However, in this study the special education representations were high at 41.5% for the sample of RTI students. For the sample of non-RTI students, the percentage was 42.9%, a very small difference. This finding indicates that there was no greater advantage to the program compared to similar students when it comes to reducing placement. In fact the program seemed to create no advantage to remedying the problem of over-placement. This brings forth the question of why the program was unable to alleviate the over placement of students as designed.

The proposed reasons for continued over-placement are based on two underlying factors of student identification: 1) student identification is connected to a specific way of being identified through assessments and teacher identification that may be biased toward a specific

cultural way of knowing (Artiles & Trent, 1994; Artiles, Aydin, & Thorius, 2010; Delpit, 1995); and 2) research has shown that once a student is identified into a track or reading group, it is very difficult to escape, leaving a student in the tiers to be an easy mark for special education placement (Oakes, 1985).

Special education labels are a form of social stratification with certain attributes of tracking tied to them. Once a student enters into the program, it is difficult to escape. According to Tileston (2012), a great deal of disproportion in special education is due to race, gender, and language leading to false positives. The problem is that the assessments are designed with arbitrary cut points and focus on identification and not reduction, based on scales related more to cultural literacy markers and readers than ability (Johnston, 2011; McDermott & Varenne, 1995 and 2006). Other studies have also suggested that the fundamental assumptions about assessment data conclusion drawing are flawed, i.e., that there is an assumption of RTI that the variance between the pre-and post-test should be reduced. But it has been shown that those scores are connected and do not bring students up to peers (Tran, Sanchez, Arellano, & Swanson, 2011). Because the data analysis is specifically referenced as part of the IDEA and RTI program, understanding the problems with data implications could be a troublesome part of misplacement.

Tracking data has shown that for students placed into early reading programs, the ability to move into higher-level reading groups is almost impossible. By fourth grade they can be nearly four grades behind (Goodlad, 2004). This difficulty to move into groups with peers due to the instructional differences you receive can have lasting implications for special education identification. As students move through, they are caught in a game of catch-up that doesn't end. Instructional differences between the level of placements also imposes a problem for upward mobility as the information presented in each tier or track limits the types of information that a

student is exposed to, which can create a long-term disadvantage limiting academic advancement (Legette, 2018; Sacerdote, 2011).

RTI has been accused of being the “watch to fail” model because of the time-consuming process of tiered interventions and the effects of being in different tiers (Artiles, Kozleski, Trent, Osher, & Ortiz, 2010; Finch, 2012). According to Bernadette Baker, the program seeks disability and leads to separation and track perpetuity. Special education placement is a form of what she terms the “new eugenics” that identifies students due to cultural differences early, then limits their mobility due to the methods used in the program. Often used without clear guidelines (Hudson and McKenzie) and with the knowledge that only 10% return to the “normal” classroom (Tileston, 2011), special education has its challenges. While the results of this study are limited to a small school district, the results on special education placement do seem to support prior research, implications of which will be discussed later in this chapter.

Impact of RTI on Lower SES Students

The results of this study have shown that there was a significant association between free and reduced lunch and lower track level placement this supports prior research. In the multiple linear regression model it was also shown that free and reduced lunch had a significant and negative contribution to whether or not a student was in an average lower track in that the average track placement was shown to be $-.449$ ($p < .01$). For the free and reduced lunch students it also showed that it was significantly connected to a negative impact on weighted GPA of $-.242$ ($p < .10$). Prior research mirrors these findings. Past research has indicated that literacy scores have a connection to socioeconomic status. According to Sharp (2016) 36% of the variability in reading scores were accounted for by economic disadvantage; Finch (2021) asserts that socioeconomic status is a better determinant of gap than race; and Shifter et. al (2019) found that the diagnosis of

learning disabled was higher for low SES students. Since literacy scores are connected to economic status it is not surprising that more students from low SES families would be in the intervention program,

In addition, when trying to tease out the difference between the free and reduced representations per group it was found that the non-RTI school had the largest over-representation of free and reduced lunch students in the comparative groups (52.4% as compared to 32.1%). The chi square results showed there was a significant overrepresentation in school 2 and school 3. These findings also support past research findings.

Several reasons have been proposed for this disparity including the types of assessments given, teacher biases; and cultural differences. Understanding how lower-income students are affected by intervention is important to understanding if the program has been effective at the goal of “closing the gap” for under-resourced communities. The RTI mission is closely connected to ameliorating prior over placement of under-resourced communities. In this study the data showed that there continues to be some overrepresentation for all the students in the study, yet the RTI students are doing slightly better in general.

Summary of Findings

These quantitative findings are important and add to and mirror the mixed data on RTI success rates. The impact of RTI on the long-term outcomes of students are essential to understanding whether students were able to use interventions to leverage success at the secondary level. The results presented showed that the goal of bringing students up to their peers and providing long-term academic benefits through RTI was not significantly better nor worse than not having an RTI program. Because all students in the sample had low proficiency scores to begin with in grades 1-3, the results present an important finding: students who start low,

regardless of intervention, may stay low, and be placed into special education regardless of programming. These findings will be explored as related to the conceptual frameworks presented next.

Preliminary Interview Investigation

In order to further enhance my understanding, I conducted a post hoc exploratory qualitative investigation. This added look is presented as an added layer of understanding is presented in Appendix B. The narrative themes that were developed from the three student interviews are presented as preliminary findings for this group of students only and is intended to shed some light on how the students experienced the program. Student responses are included in the discussion of the theoretical frameworks as a supplemental piece to the empirical findings from this study.

The Chalkboard Ceiling Effect: The Trilogy of Sociocultural Barriers to Upward Academic Mobility

This study assessed the long-term academic outcomes of students who were placed in RTI. The study ultimately sought to interpret the results of the students' journey through three different conceptual frameworks: 1) The use of RTI as a connected strand to the socio-historical and sociocultural influences of eugenics and tracking, which are systemically embedded in school policy; 2) the student outcomes as related to social and cultural capital as translated through Pierre Bourdieu, in which students are placed into RTI due to different forms of cultural capital and may continue in these tracks in perpetuity; and 3) student outcomes are connected to a cultural deficit model in that students with different success rates are perceived as "lacking" something and therefore are placed in RTI in order to remedy the perceived "lacking," but end up continuing the journey in lower levels in high school due to early placements. In this next

section I use the quantitative analysis along with some student perspective to highlight how the three theoretical frameworks work in unison to limit a student's access to upward mobility, thus creating the chalkboard ceiling effect.

Utilizing the three conceptual frameworks of eugenics, cultural capital, and deficit perspective, the empirical results of this study are used in this section to understand if RTI is able to break through the chalkboard ceiling and support students from under-resourced communities, or if the program is ineffective in creating upward mobility. In addition, the excerpts from the student interviews are used to explore how their perspective may be connected to the RTI program.

Eugenics and Tracking

As discussed in the literature review, the policy of tracking is historically connected to eugenics history in American public schools. In this study tracks were used as an indicator of upward academic mobility and access to higher-level classes. In addition, RTI, which is a tiered model of placement, also served as a tracking mechanism in the early elementary years. Because RTI has the ability to segregate early in the elementary years, understanding the impacts on students' progression is extremely important. The results of this study have shown that students in RTI show very little variation in their track placement as compared to non-RTI students. This leads us to wonder if RTI is able to break the barriers of educational stratification by creating legitimate interventions that limit educational stratification.

The key findings in this study are that a student who started in a lower achievement level, regardless of intervention strategy, appears to stay in that lower achievement level. The percentage of students in the average tracks was 78.9% for the RTI students and 74.7% for the non-RTI students, creating no significant difference between the two. In regard to their peers, the

RTI students were significantly overrepresented in the lowest track level in that in level 2 there were 23% of the RTI students as compared to 4.5% of the general student body ($p < .001$). In addition, nearly half of both groups of students (42.9% for RTI and 41.5% for non-RTI) were placed into special education, a placement that is considered to be a form of tracking, and has been referred to as the “new eugenics” (Baker, 2002). These findings also mirror prior research which showed reading groups stay the same and are predictors of track level in high school (Goodman & Webb, 2006). Moreover, the regression analysis showed a significant impact of the demographic variables of free and reduced lunch and special education on track level placement. As viewed through eugenics, the separation of students into lower settings due to an inability to perform actions set by the academic community. This process serves as a form of eugenics as it separates students and classifies them according to ability which has been shown to be associated with cultural differences (Artiles A. J., 2015).

One of the key determinants of ability level tracking are the assessments used to make decisions early on. The historical inclusion of testing as a method of segregation has been blamed for academic stratification that exists in schools (Loveless, 1999; Oakes, 1985). The use of testing is justified as a need to serve students in an efficient manner, to gain scientifically supported data needed to interpret a student’s proficiency and is required by the IDEA. From this policy which legitimizes testing comes the ultimate determination of ability through legal channels, which lead to educational stratification (Artiles, 2015, 2011; Kohlman, 2013; Oakes, 1985; Selden, 1987; Thomson, 2000; Thomson, 2000). In RTI tests serve to make cuts based on proficiency scores on the first few days of school. Determination of placement thus follows the test. As discussed by Catts, Petscher, Schatschneider, Bridges, & Mendoza, (2009) posttest scores are limited by the pretest that creates a floor effect whereby the child who starts low tends

to stay low. Students who start low may gain, but do not necessarily “catchup” to the benchmarks. As shown by Balu et al. (2015), the students at and around the “cut score” showed little progress and actually lost some ground.

The test’s ability to understand cultural learning differences in diverse settings such as schools has been questioned (Artiles, 2011; Delpit, 1995; Oakes, 1985). It is argued that tests can limit the upward mobility of a student by assuming that the knowledge they are asking for is relative to a student’s knowledge or interests. Placing an emphasis on a specific type of understanding can limit other ways of knowing. In one of the narratives a student reflects on the idea that she was asked to perform and did not understand the reasoning behind the task. As a testament to this, one of the students, Darla, explained how her interests were not aligned with the assessment’s interests, so she continued to not take their requests seriously. She states:

*I remember choosing not to learn how to read because I thought it was stupid.
When we were learning how to read and write,
When we were practicing how to spell, I didn't care about like tracing the little like CS.
I was like, this is stupid and a waste of my time.
I would just pretend like I was doing the work, but I wasn't.
I just thought that it was like stupid that I had to write, like just trace a bunch of letters,
um, and like show my work for it.
So, I, I still did the work, but I just lightly traced it instead.
So it was like backwards thinking, I guess.
I still ended up doing it, but like not with full effort and I didn't really even do still do it.
I would like hover my pencil above the page and look busy, going in C motions.
Like I was like, I think as a kid, I thought that I deserved like something
I wanna go to ice cream shop or something like that.*

In this excerpt a student’s perspective on the assessments is shown that are not aligned with the student goals yet are used for high stakes decisions. This is important because the determinations are made through the teacher interpretations of the assessments and student

growth patterns. If a student is unable to perform for whatever reason, the placement into intervention can happen. In these cases, we see a level of control that is located within the school and educational system to make a judgement that can have a lifetime of consequences. When Darla was headed into 9th grade, she reported that the teachers and counselors placed her into the level 3 track she was in, even though she felt she had more ability. She stated:

*I was so surprised by how stupid everyone was.
I was like, this is a way too low of a class for me,
But it felt good though.
Cause I never had a class that I was like good at.
So, I was like, eh it's fine.*

The outcomes of the decisions that get made in terms of intervention have been shown in this study to have significant negative academic outcomes for students who wind up in lower-level tracks and have been noted in past literature. The lower level trajectories have been explained by others as limits to academic success; self-perception (Boynton, 2008; Jeager, 2009; Legette, 2018; Johnston, 2011; Oakes, 1985; Sacerdote, 2011); inability to escape lower-level placement (Goodlad, 2004); and bias in placement for lower-resourced communities (Artiles, Kozleski, Trent, Osher, & Ortiz, 2010; Finch, 2012; Gamoran, The Stratification of High School Learning Opportunities, 1987). The quantitative results of this study have shown little mobility in relationship to RTI as a method for improving upward mobility. The quantitative findings show that the students stayed in lower average tracks than their peers at the high school level, and regardless of intervention there was no significant difference. This may indicate a type of social stratification that is maintained as a student progress from elementary to secondary school. In Darla's interview she makes note of struggling to get out of the reading intervention track stating:

*I think it's just that it was like they,
No matter what I did,
they were just still kind of like, oh, you still need the reading,
The reading thing, even though I was still confused back then.
Cause I liked books, like advanced.
I think it was at like the very end mostly because
I did say like lot, like I'd be like, like, and then like I went like to like the park, like, and
then. And so,*

The power of the school to make decisions for students is woven into RTI policy through the determinations that get made. Students seem to have little control in the situation because RTI emphasizes identification not reduction by creating arbitrary cut point scales related to cultural knowledge. RTI acts as a gatekeeper and students become trapped. All three students shared how the locus of control was with teachers, counselors, and specialists to determine their track level outcomes, indicating they had little control over where they were placed in the high school. Grace stated: *That was just them putting me in like all level three classes. Cause I did like horrible in middle school.* In another segment, the way RTI can segregate was hinted at:

*It's just like embarrassing getting like pulled out classes,
I guess like if you had to do it,
Cause like, even now,
I have like that study block,
I don't like people seeing me in there I guess, but.
Even now, like when I'm in those classes (study block),
like there's like, it is helpful.
And there is like some kids who I feel like, I mean, like.
I don't need like any help in there at all.
Like I just go and do my work.
Like it's a good.*

Although the responses are from a small group of students, these comments may reflect the theme of students' limited mobility once enrolled in the program. These findings reflect the

quantitative findings that regardless of intervention, students on average stayed in lower leveled classrooms. As part of the chalkboard ceiling effect, this conceptual framework lends itself to limited mobility as compared to upward mobility. This was represented in the quantitative findings and hinted at in the interviews. The relationship seems to boil down to: we have a set of standards that you must demonstrate competence, they may not align with how you can show me your competence, but regardless, our intervention or tracking decisions are made based on your demonstration using our assessment. This creates a barrier for students who have different ways or ideas and places the locus of control with the school. This limits access via the test and creates a form of tracking.

In this next section the importance of cultural capital as a gatekeeper is presented.

Cultural Capital and Linguistic Capital as Gatekeeper

This study is based on literacy proficiency as predicted by the Developmental Reading Assessment. Students in this study were selected due to their scores placing them into a category of students who were perceived as needing intervention. The results presented show that regardless of intervention programs, in general there was no significant differences between the groups. This finding mirrors the literature on cultural capital: students who are perceived as not possessing the right form of capital are less likely to succeed or be in higher tracks (Andersen & Jaeger, 2015; Horvat, Weininger, & Lareau, 2003; Jaeger & Holm, 2006; Jaeger, 2009, 2011; Lareau, 2011). In this study the use of cultural capital can also be used to explain how RTI students who were enrolled in free and reduced lunch and special education were shown to be more likely to be on average in a lower track at the high school. The students identified in these groups have less cultural capital and influence on the system that would help them gain upward mobility. The multiple regression analysis showed that on average, average track differences

were significantly connected to special education placement ($p < .001$) and free and reduced lunch ($p < .01$) in that there was a significant and negative relationship. This finding connects to the linguistic marker of literacy being a type of divider for lower-resourced communities, that can lead in perpetuity to lower tracking results.

The use of cultural capital to explain how students may experience public education differently has been presented as a theoretical framework since Pierre Bourdieu first suggested the theory of cultural capital in the 1960s. The impact of cultural capital on students from different backgrounds is theorized to impact how they interact with their peers and teachers, what knowledge they bring into the classroom, and how they present that knowledge to teachers. Cultural capital attempts to explain how social class impacts perceptions of each other and our response to class relationships.

The amount of cultural capital you possess is associated with your individual resources and is comparable to IQ when it comes to educational advancement (Kraup & Munk, 2016). The study indicated that lower income and special education were more likely to have lower average track placement. More specifically, in this study the students who experienced lower-level placement where students perceived to have less social capital due to those reasons. This may emanate from two important cultural factors: 1) linguistic capital is connected to the literacy markers in texts and assessments creating an easy deficit mark on students from lower-resourced communities; and 2) the differences between the students and teacher's cultural capital could influence expectations for those who learn differently. If identified as a student without the proper capital, it may become difficult for that student to make progress. The continued misalignment of capital influences how the student progresses in each grade, which results in a lower track placement in high school.

Linguistic capital is the use of language to demarcate your ability as compared to a standard that is considered appropriate. The problem with linguistic capital is that it can be used to sanction and censor those who do not have the “proper” literacy background. The way we present and interpret language in assessments is typically aligned with the school’s programs and curriculum. For some students, the presentation will match and help students demonstrate success. For others, it may not align at all, limiting their chances to demonstrate ability. Students entering school come from different social class backgrounds and therefore have varying degrees of knowing literacy or having the “right” literacy capital. Due to the importance of literacy in RTI, books, readers, and assessments serve as a linguistic benchmark for showing skills, vocabulary, and phoneme awareness; whereby literacy has the potential to become the benchmark for deficit and success, and the test becomes proof that intervention is needed (Alim, et al., 2017; Cole, 2013; Delpit, 1995; Paris & Alim, 2017).

It has been stated that literacy as a pedagogical tool creates exclusion (Waitoller & King Thorius, 2016) and can be used as a word gap identifier that screens class more than intelligence (McDermott & Varenne, 1995). The link between RTI and the assessments used may serve in just this way: the tests screen cultural capital as compared to academic ability, putting students from different class backgrounds into vulnerable positions.

Teacher and student relationships are also important to the cultural capital exchange that goes on in the classroom. In the student interviews one of the representations of these findings that emerged was the way students experienced the educational programs through the teacher’s importance in deciding their placement and success. Each student had explanations for whether the teacher was “good” or “bad”; liked or not liked; helpful or not helpful. This identification with the teacher as a gatekeeper of success shows how a student had to navigate with the right

capital in order to succeed in the system. All three students were aware of the importance of specific items or skills signifying they had the right capital for the system, for example, Darla, explained that she enjoyed books and liked to read (a sign she understood educational capital) but was uncertain why she was in the reading program. Grace explained her relationship between books and reading as:

*Like first grade I remember like actually I remember my mom like taking a photo of me,
like sitting outside,
just like I had this like book series that I was like obsessed with.
I just like kind of fell out of it,
I don't, I don't think I ever like fell behind too much in reading, I guess.
I mean, I reading's never really been my favorite thing.
I don't really think I ever really pick up a book and just read it, I guess.
Cause it doesn't intrigue me that much*

From this description of her book and photo she shared her understanding of what was symbolic of the right capital to succeed. Another interesting remark in regard to linguistic capital occurred when Darla explained to me how she “surprised” her teacher during a vocabulary test by knowing the word non-Newtonian. An announcement that seemed to say, ‘I do know what it means to have linguistic capital if I could just show you.’

The use of cultural capital is complex, and further investigation of how it impacts reading programs is needed. In this next section, the use of deficit perspective can further help us understand how the trilogy works to create the chalkboard ceiling.

Deficit Pedagogies Reflective on Literacy Interventions

The final conceptual framework presented as part of the trilogy is the use of deficit pedagogies to explain children’s differences in learning. Deficit pedagogy refers to the conception that students are lacking in some ability and that the way to improve their success is

by instilling specific skills in them. In deficit thinking, there is a standard to which you are compared; if you are below the standard, there is a deficit. This thinking is pervasive in schools: in assessments, language used to discuss students, and policy. The challenges presented through deficit pedagogies are that students from lower-resourced communities are easy targets for being in lack, especially when it comes to literacy. Because RTI works through a scope of finding deficits in literacy skills, the connection between different ways of knowing and understanding those literacy difference is crucial to understanding if the program is working to promote student access or keeping students from channels of upward mobility.

The results of this study indicated that in general, all students in the sample were placed into lower tracks as compared to their peers at the high school. The percentage of students in the lower-level tracks for each group were 84.5% for the RTI students and 70% for the non-RTI students. Furthermore, it was discovered that over half of the non-RTI students (52.4%) and over a third of the RTI students (32.1%) were from lower-resourced communities of free and reduced lunch. Together the sample had a representation of 37.8% as compared to the school districts 15.3%. Each of these findings were significant and support the idea of a deficit pedagogy at work within the placement system. The placement within the program thus becomes a key determinant as to how the child progresses in the school. Because the DRA is reliant on early testing and determinations, it may be serving to place students

These findings are supportive of the use of deficit pedagogies: lower-resourced communities tend to stay in lower tracks as the deficits get reinforced via proficient based standards. Both of the groups of students were placed initially into the “below proficient” categories for literacy. The use of literacy as a determination of success via a testing approach to skills creates a label of “needing help” to catch up that is set by a national standard and ignores

cultural differences. By ignoring the challenges of students in poverty or from lower-resourced communities, the students are held accountable and presumed to have the deficit within them, making them placed more often into special education (Klinger & Edwards, 2006). The competence the student brings to the school does not necessarily count. Students outside of the dominant literacy may have ability, but because of the standard and way of the school, they are limited in their demonstration of it (Sperry, Sperry, & Miller, 2019). To further enhance this idea of differences being confused as deficits, two student reflections were captured.

Two students expressed this idea by stating that they “just learned differently” and showing frustration with the school and its inability to understand differences. Darla stated she felt she learned differently; Grace says the same. *I just feel like I could, I do like learn a lot like far and like differently than other people. Like I feel like I don't know. Everyone learns differently.*

Deficits also create isolation with remediation and the intervention process. Research has shown that students in intervention may spend up to 60% away from the normal classroom. (Bender & Shores, 2007; Tileston, 2011). When removed from the classroom, a student is unable to access the full educational program, leading to a continued track placement and equity ramifications (Artiles A. J., 2019). All students in the interviews remembered being separated from their classrooms, and Darla even indicated she still felt the stigma at high school because she had a study skills block where others could see her. Darla also shared descriptive memories of sitting in the back of the school and being left alone for up to 20 minutes.

I was, I got taken out of class a lot.

Um, but I didn't really like that because I was like a little lonely.

Um, so they just like pulled me to the back of the school.

And I remember one time they just popped me in like an empty room and I sat there for like, like 20 minutes, just like sitting there.

They, I think they forgot about me or something like that.

The separation experienced due to intervention is concerning and can lead to a stigma of being in need of help that lasts into high school.

Deficit pedagogy also plays a large role in under-resourced communities being too often the recipient of intervention and special education labels, when it may not be necessary. Besides the use of testing to linguistically separate students, assumptions made within the classroom in relationship to socio-economic status and culturally and linguistically diverse youth have an influence. Teacher's beliefs about poverty influence the placement of students into intervention programs. Chandler (2014) found that teachers believe that the flaw is with the student, and that with hard work they could overcome the obstacles.

Teacher knowledge of diversity in learning is also a problem that has been shown to create large rates of false positives (Fuchs & Vaughn, 2012). Orosco and Klingner express concern that our belief in "one size fits all" approach in RTI cannot be sufficient for meeting needs of CLD youth, claiming there are no generic approaches to properly assess students. Goodman and Webb (2006) found that in a study with 86% economic disadvantaged students there was an overplacement rate of 66% in that of the 66 students who referred for disability only 21 qualified. The authors concluded the teachers' identification of students for special education were biased and led to learning disability overidentification.

We have a long history of cultural discrimination in education due to socio-economic status. Dating back to the war on poverty and the connection to gap closure and the 30-million-word gap study (Sperry, Sperry, & Miller, 2019). RTI has been presented an alternative method to over placement and misplacement. However, in this study it was not shown to be able to overcome the chalkboard ceiling effect. Students who were placed into intervention showed no

real academic upward mobility in relationship to the high school academic indicators of English track, average track, and weighted GPA.

Recommendations for Policy and Implications

The central policy contribution for this study is that the students in the RTI group showed no academic upward mobility when compared to a similar group of students. The average track level placement and average weighted GPAs of the sample were similar in value. The implications of this are that the RTI policy as designed may not be pulling students up to their peers any better than non-RTI programs. In addition, because RTI has the specific goal of bringing students up to their peers, the finding that the RTI group's track levels are significantly below their high school peers, but have no significant GPA difference, could indicate that students are being placed into lower-level tracks while maintaining high grades: a form of social stratification. This also correlates with the high number of special education placements for the students in RTI and lower-level tracks.

In addition, the percentage of placement into special education is alarming in this study. Nearly half of the original students were placed into special education after receiving intervention. This indicates that more study is needed on how we place students. Identified as the "watch to fail" model, RTI seems to be continuing the same patterns as the "wait to fail" model, in that regardless of the time or method of special education decision making students are still being identified at a very high rate. This implies that perhaps the problem of over-identification is connected more to the procedure of identification as compared to the timing (be it early or later). Special education is a complex program with numerous roots in history, politics, and legislation. Creating change in this program will take a cultural revolution in education and a shift into an accepting policy as compared to an excepting policy for differences.

These findings are significant and serve as a preliminary conclusion from an exploratory study on the long-term effects of RTI. As the RTI students in America are making their way into high school, a large-scale evaluation may be needed to number one, uncover the long-term results on a national scale, and two, to make ensure that the resources used for RTI are being used in a way that allows for the goal to be realized. Policy changes and targeted professional development may be needed in the early grades that allow teachers the ability to capture learning differences as compared to a true learning disability.

Furthermore, as cultural diversity increases it will become more important to understand how incoming students' cultural differences affect literacy scores and placements. Because of the history of tracking policies in our public-school development, this work will involve numerous stakeholders in K-12 education. Many of which may unwittingly hold a deficit view of students who emanate from lower-resourced communities. In this section I address the key areas that will need to be leveraged in order to create a positive change. These activities emerge from the literature review and the data.

In this study, teacher control of student success was presented as a theme through the student interviews as well as through the process of identification through the PLC work presented in Appendix A. In addition, empirical data in the literature review indicated students from lower-resourced communities are easy targets for intervention due to cultural capital misalignments. Teachers therefore are one of the most important determinants of how students are received and placed into the system.

Following up on the importance of the teacher, most teacher education programs do not require culture-based courses such as anthropology or sociology, which can help teachers understand unique differences in ways of experiencing literacy (Ladson-Billings, 2014).

Because of this lack of cultural course work there can be misunderstandings of what it means to have “culture.” Teachers should be required to gain a deeper understanding of culture before entering the classroom. Teacher education programs should consequently include classes that provide education on the sociocultural differences between students, considering the differences as assets not deficits. Teacher education on diversity and equity are just now making their way into universities but should also be part of educational programs in all school districts and all states. Implications from this study are that teachers, as the closest allies for the student need to have professional education courses that assist them in understanding differences as compared to deficits, and a theoretical understanding of how cultural differences impact literacy expression.

As discussed in the literature review, the use of culturally relevant and sustaining pedagogies are necessary in order to truly impact the system of special education over-identification and misidentification. Culturally sustaining pedagogy “seeks to sustain linguistics, literate, and cultural pluralism as part of schooling for positive transformation” (Paris & Alim, 2017, pg. 1). Looking at learning through multiple lenses and creating understanding that learning can happen regardless of a specific type of literacy are important for the “remix” of early education and being culturally sustaining. Paris and Alim argue that the next iteration of asset pedagogy should move away from “the pervasiveness of pedagogies that are too aligned with linguistic, literate, and cultural hegemony” (p.86). Valentine (2016) suggests we consider the relational nature of groups and dialogues as a way to negotiate and reconstruct belief systems. These scholars’ suggestions are basically reaching for the core of understanding how the process of identification begins and the importance of teacher education in addressing the changes needed to help all students succeed, not just the ones who know the rules of the game.

The final policy implication stems from the findings in the literature review about the problems RTI has with implementation. Because of the way the program was rolled out at the national level, there is a great deal of variety in how RTI is used in American schools. Appendix A presents the ways in which RTI was done in school 1 and 2. Although both schools followed the problem-solving approach, the interpretations and placements of students is done within the PLC, using the teachers' assessments of what they see in the student and the scores. The PSA is more attuned to the individual learner but is not replicated easily across schools. This ambiguity makes it extremely difficult to discern what programs are having the greatest effects. Future policy for reading interventions ought to include a true evaluation of our national programs and how we as educators are experiencing them. In addition, teacher professional development in this study was expressed by the reading interventionists as lacking. Data driven decision making was simply expected of elementary teachers who may be missing the kind of knowledge necessary to make decisions for students that have long-term academic consequences.

Theoretical Implications for Practice

The three conceptual frameworks in this study have been used to show how the culture and built-in belief systems of K-12 education can put a ceiling on student access to upward mobility. As an alternative to the current policy sociocultural theory can be used to view learning and development as a culturally, historically, and socially mediated process (Orosco & Klingner, 2010): "When applied to the implementation of RTI, sociocultural theory suggests that educators should become familiar with beliefs, values, and cultural linguistic practices" (Garcia & Ortiz, 2008, p. 272). Rogoff, Dahl & Callanan (2018) suggest that we must understand the three levels of a student's identity: individual, interpersonal, and community. These scholars remind us that it is the whole student who comes to us, not just a representative of "yes" you can or "no" you

can't. Too often teachers take decision making as an essential part of the craft of teaching: assessments equal the job. This takes away from the actual art of teaching and from the time needed to learn and understand the children in front of you.

The value of creating a different curriculum based on theoretical perspective in the classroom is that students from all backgrounds will have a chance to highlight and advantage their ways of knowing literacy. Teachers who are able to connect at varying levels of understanding will be able to make appropriate decisions for the student. Whereby, dismantling as Valentine, (1969) explained the culture of discrimination.

Further Study is Needed

Based on the quantitative analysis, it is recommended that further study on the long-term academic outcomes of students be done at a state and national level. The RTI program has now been in school policy long enough to start examining its impact at the secondary level. This study, which used a small sample size, in a small urban school district provides some preliminary guidance on the need to undertake such a large-scale study. The preliminary look of the impact of RTI on the student voices is also an important aspect of understanding how early intervention programs are viewed through a student lens. Although just a small sampling of voices, there were themes that emerged. A larger more comprehensive study on student perceptions and experiences should be done in order to identify if these themes are indeed ubiquitous in our students.

Additional recommendations, include the reduction of pedagogically induced learning deficits within the classroom through teacher education and culturally sustaining programs. This will include the use of professional development to help teachers understand the cultural influences that are at work in our classrooms and effect how we approach literacy; and to

surrender the notion that literacy can only be assessed through specific skills. Letting children evolve into the school setting as equal learners, who demonstrate success from multiple vantage points will be important to identifying, as Klinger and Edwards (2006) remark, what works and with whom?

Limitations

This study, although informative has important limitations. It is important to note that the study location is located in a state with low levels of diversity, and within a setting that also has low levels of diversity. It is hard to draw any firm conclusions as to how RTI is working in a different setting or population of students with high levels of diversity. Furthermore, the school district in this study had one school (the non-RTI school) with an extremely low free and reduced lunch population. This difference could impact the results in a different setting.

The RTI programs used by the schools in this study are described in Appendix A. From the descriptions it can be seen that although all schools had some forms of intervention the RTI schools were the most consistent with each other and followed a true PSA model. However, the PSA is a program that is built on teacher knowledge and intervention planning. The two RTI school reading interventionists stated that they had very little professional development for how to assess the data and relied on a “team” approach. It is hard to know in retrospect how closely aligned the classroom interpretations of RTI were carried out. This could impact the fidelity of the program for each school.

The student interviews are considered to be a preliminary investigation and should not be considered at the same level of assessment as the quantitative investigation. In this study only three interviews were conducted, which is simply too small to draw any over-arching conclusions.

The final limitation is the fact that this was a retrospective longitudinal study. As mentioned in the methods section, the consequential validity of the study is difficult to prove. The main concern in this study is the amount time that has elapsed between the original RTI program and the student's secondary school attendance; the natural variations and experiences that each student may have had in that time; and the program variations. According Shadish, Cook, and Campbell (2002), this may lead to three types of validity threat known as selection, maturation, and unreliability of treatment manner (Shadish, Cook, & Campbell, 2002). In this study the average student who received the RTI treatment may already differ from the student who did not receive RTI even though they qualified for services. This is important to consider when interpreting these results.

Conclusion

This study investigated the outcomes of students at the secondary level who were enrolled in RTI in order to understand how they fared in relationship to a similar group who did not receive RTI. The findings indicated that there was no real difference academically for the RTI students as compared to the non-RTI group. The study did show that special education and free and reduced lunch played a role in the lower track placement of students. Further study has been recommended on the qualitative aspects of the study in order to truly gain access to the cultural narratives presented in this small study of student experiences. In addition, it is recommended that a national study be done in order to further understand the long-term outcomes for student who were placed into RTI.

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APPENDICES

Appendix A: Comparative Reading Intervention Protocols Between RTI and Non-RTI

Schools and Interventionist Interview Questions

Comparative Reading Intervention Protocols Between RTI and Non-RTI Schools

The elementary schools in this study are divided into two categories: RTI and non-RTI. The specific programs for each elementary school were evaluated for similarities and differences for the years the students would have been in grades 1-3 (fall 2011- spring 2015). In order to identify the differences past administrators and reading specialists who were working in the schools at that time were contacted and interviewed. This step was done in an effort to clarify the differences between the schools and to identify the specific RTI protocols used during this time.

Faculty were given a copy of the RTI protocols and asked to identify which protocols their program was most closely aligned with. Additional questions were asked to identify how a student would progress through the program if in need of intervention, what assessments were conducted, and who the students would be working with during the interventions. The questions were designed to understand how a student would progress through intervention and what they would be doing at the different tiers. Table A1 explains the differences.

The similarities between elementary schools are the use of the DRA as an indicator of literacy performance. All schools use the same benchmarks for deciding if there is a need for intervention. All schools administer the test in the fall and spring, and if an intervention is going on they will administer the DRA again in the middle of the year as well. In addition, the DRA is administered by the classroom teachers at all schools and used by the teacher to interpret a student's literacy level.

In general, the identifiers show that all the RTI schools are using intervention specialists and tutors at a higher level of service for both push ins, push outs, and determining courses of action through PLC work and a specific intervention block. The non-RTI school had a very clear focus on classroom-based teacher instruction and made that clear in the interviews. The non-RTI school did not have reading tutors, intervention blocks, or a true PLC model at the time. An additional difference is that the students in the RTI schools receive the DRA starting on the first of second day of school, whereas the non-RTI school waited several weeks before administering. Another important point of difference is the fact that both the RTI schools are Title I schools. This is the reason that the schools started RTI as program to intervene with low literacy scores.

Table A1-Description of Reading Intervention Programs by Elementary School

Identifier	School 1 (RTI)	School 2 (RTI)	School 3 (non-RTI)
RTI Protocols used	Problem Solving with tiers 1-3	Problem Solving with tiers 1-3	No RTI
Initial Assessment Tool	Developmental Reading Assessment (DRA)	Developmental Reading Assessment (DRA)	Developmental Reading Assessment (DRA)
Initial Assessment	First week of school within first few days or first day.	First week of school within first few days or first day.	Two to three weeks into the school year.
Frequency of DRA Assessment	<ul style="list-style-type: none"> Fall and spring for above benchmark Fall, midyear, spring for below benchmark. 	<ul style="list-style-type: none"> Fall and spring for above benchmark Fall, midyear, spring for below benchmark. 	<ul style="list-style-type: none"> Fall and spring for above benchmark Fall, midyear, spring for below benchmark.
Benchmark Used to Trigger Intervention	Below grade level according to DRA	Below grade level according to DRA	Below grade level according to DRA
Tier 1 School	Yes	Yes	No

PLC Model	<p>Yes- Team meetings weekly with different grade level teachers.</p> <ul style="list-style-type: none"> • Team members: teachers, specialist, tutors, special education, and ELL. • PLC determined course of action by reviewing data and assessments • Data driven decisions 	<p>Yes- (Student Support Intervention, SSI), protocol was to meet every week with the different grade level teachers for one hour. In the meeting they would discuss two students for 30 minutes; plan forward; meet with again with same teachers every four weeks.</p> <ul style="list-style-type: none"> • Team members: teachers, specialist, tutors, special education, and ELL • Interventionist was in the PLC for all grades. • Data driven decisions 	<p>No, not PLC based at the time.</p>
Intervention Block	<p>Yes – daily, (What I Need, WIN) all students go to either enrichment if on grade or above, if in need of intervention go with specialist.</p>	<p>Yes – daily, all students go to either enrichment if on grade or above, if in need of intervention go with specialist.</p>	<p>No – No intervention block</p>
Push in or Push Out	<ul style="list-style-type: none"> • Dependent on benchmark, if severely below then work in small group with reading specialist. • Some push in during the intervention block (WIN). • Tier 2 and 3 mostly pushout during WIN. 	<ul style="list-style-type: none"> • Goal is to push in, but dependent on DRA score. • Pull out -If severely below grade level student would be pulled out immediately for individual work, and sent to tier 3. • Pull out- small groups if just below grade level in small groups 	<ul style="list-style-type: none"> • Very little time outside of classroom. • Teachers wanted students in the classroom and felt it was best for them. • In second grade would possibly start pushing out or pushing in to a specialist. • If far below grade level at January assessment would consult with

			specialist for next steps.
Classroom Teacher Role	<ul style="list-style-type: none"> Teacher is on PLC team Teacher administers DRA Teacher runs formative assessments when in classroom Teacher works with specialist to determine course of action Time with teacher is dictated by level below benchmark. The greater below benchmark the more time with interventionist. 	<ul style="list-style-type: none"> Teacher is on PLC team Teacher administers DRA Teacher runs formative assessments when in classroom Teacher works with specialist to determine course of action Time with teacher is dictated by level below benchmark. The greater below benchmark the more time with interventionist. 	<ul style="list-style-type: none"> Large percentage of time with teacher in classroom. Teacher worked alongside reading team and met often with them. Teacher provides support in small groups. Teacher focus on improving instruction.
Literacy Tutors	Yes, work with team	Yes, work with team	No literacy tutors
Tier Use and Placement	<ul style="list-style-type: none"> Tier 1- Intervention in classroom -4 days per week in 6–8-week cycle Tier 2-worked with title 1 specialist during WIN; some push in for tier 2. Tier 3- with reading specialist and special education teacher. 	<ul style="list-style-type: none"> Tier 1 – classroom teacher based-reading groups with spin-off groups who are working on specific skills. Tier 2- specialist in class two times per week (push in). Tier 3- Out of classroom everyday (push out). 	No Tiers – mostly in classroom-based instruction.
Interventionist’s Role	<ul style="list-style-type: none"> Reading Specialist – in charge of planning with teacher, data collection, data interpretation. Reading tutors-work on specific skills both in and out of the classroom. ELL- worked with English language 	<ul style="list-style-type: none"> Reading Specialist – in charge of planning with teacher, data collection, data interpretation. Reading tutors-work on specific skills both in and out of the classroom. ELL- worked with English language 	<ul style="list-style-type: none"> Reading specialist (3 in the school)– worked with classroom teacher to provide support. If far below grade level by 2nd grade would start to work with student individually or in groups of two.

	<p>learners and are on PLC team.</p> <ul style="list-style-type: none"> Students who do not need intervention are in enrichment with classroom teacher, students who do need intervention are with para or specialist-these can rotate. 	<p>learners and are on PLC team.</p> <ul style="list-style-type: none"> Students who do not need intervention are in enrichment with classroom teacher, students who do need intervention are with para or specialist-these can rotate. 	<ul style="list-style-type: none"> School did not have reading tutors Special education placement considered during this time
Process for identifying student need and procedure followed once intervention was triggered	<ul style="list-style-type: none"> If student is below benchmark by a half year, work within classroom. If significantly below grade level, run daily intervention for 30 minutes on a 6–8-week cycle. If still below then another cycle of 6-8 weeks was run looking for improvement on running records. DRA is administered in January 	<ul style="list-style-type: none"> If student is below benchmarking the PLC team looks at student information and makes decision. If significantly below right to tier 3. Reading specialist dictates what happens. If just below pulled out to groups with similar needs during intervention block. Use formative and PLC model to make adjustments. Run 6–8-week cycles looking for improvement on running records. DRA is administered again in January. 	<ul style="list-style-type: none"> If student is below benchmark by a half a year, then classroom teacher works with student, remeasures in January. If student is one year or greater below grade level, teacher works with specialist to decide course of action. Specialist can work inside or outside the classroom - dependent on what they thought would work.
Formative assessments and progress monitoring	<ul style="list-style-type: none"> Running records Fountas and Pinnell Lucy Calkin PLC designed 	<ul style="list-style-type: none"> Running records Classroom designed formative assessments PLC designed 	<ul style="list-style-type: none"> Teacher designed assessments Reading specialist designed assessments
Special education placement	<ul style="list-style-type: none"> Tier 3 placement No discrepancy model 	<ul style="list-style-type: none"> Tier 3 placement No discrepancy model 	<ul style="list-style-type: none"> Mid second grade consider possible

			referral to special education
			<ul style="list-style-type: none"> • No discrepancy model
ELL Accommodations	Yes, part of PLC team and in meetings.	Yes, part of PLC team and in meetings.	Yes, worked with reading specialist and teacher.
Professional Development Provided	Limited- watched videos for Lucy Calkin's inhouse. No DRA results training.	No	One session on data collection

Interview Questions for Reading Specialist and Administration

Section 1- General school overviews as related to the different intervention programs:

1. Which of the RTI programs does your school most align with (standard, problem-solving, hybrid, or none)?
2. What do you see as the main intervention differences between the three different schools? -
 - A. School 1
 - B. School 2
 - C. School 3
3. What do you see as the main similarities between schools? Example: screenings, Professional development, cut scores, tier levels, etc.
 - A. School 1
 - B. School 2
 - C. School 3

Section 2

1. What are the tools/assessments/ each school used to screen students upon entry?
2. At what grade level and time of year is the first screening done?
3. What are the scores that are used to target a student for intervention? Are there benchmarks and are they in each category of the DRA?
4. How is progress monitoring done? What types of data are used? Additional WCPM or other daily, weekly, monthly data points? What are the cycles of learning and assessment?
5. What are the mechanisms used to monitor progress? Running record and benchmarks
6. What is the frequency of progress monitoring?

Section 3 -Instructional Planning

1. What is the process for planning interventions? Who is involved?
2. What is a typical timeline for a student who has low screening scores? How often are PLC meetings?
3. What types of data are used to plan instruction?
4. Who makes the decision about the delivery of instruction?
5. What is a typical timeline for a student who needs a lot of intervention - how is tier progression done?
6. During intervention where are students (small reading groups; pull-outs; in the heterogeneous environment; etc.)
7. What are the students who are at grade level doing? Classroom teacher
8. What are the students who are above grade level doing?

Section 4 -Teacher Preparedness

1. What types of professional development related to intervention have teachers taken part in?
2. Do you believe teachers are able to make appropriate data-driven decisions?
3. Do you believe your teachers are prepared to make appropriate data-driven decisions?

Section 5 Summations

1. What additional information should be included?

Appendix B: Post Hoc Interviews

Student Interview Script as Approved by IRB

Part 1 introduction time span 3-4 minutes

Hello _____, thank you so much for taking the time to be a part of this study.

Asks some general questions here to help student relax and be less formal:

1. How was your day?
2. How is school going this year with all the COVID changes we've had?
4. What are you looking forward to this summer?

Before we start the interview, I wanted to thank you so much for helping because understanding a student's perspectives on their educational journey is very important and can help all teachers and principals do better job. For this study I am really concerned with your classes right now, how you chose them, and a bit about your past school experiences in elementary school. I want to assure you that whatever you say will be private and your name will never be mentioned as part of the final analysis, and no identifiable characteristics will not be part of the final product. All of the information that I collect will be completely stripped of your name and anything that might tell people about who you are. The information will be stored on the UNH cloud storage. Before we get started, do you have any questions? Pause to take any questions.

Part 2 Questions on current classes, track level, and associated ideas about the placement

Interview Script

This first part of the interview is going to focus on where you are now, so for example what classes you are in and what have the different classes been like thus far in your high school career.

1. Can you tell me about the classes you are currently enrolled in? Do they mention any track level? If so: looking at your level choice, can you describe the process to make that choice when

selecting classes? Dig into who helped them make the choice, what were their feelings about it? If they didn't feel like they had a choice, wonder about how they might do it if they understood more about the process.

2. Can you pick about any one of those classes, for example _____, and tell me how it's been going? Do they explain a bad class or good class? If the class was boring, was it because it's too easy? If it was hard do, they explain why? Do they mention anything about the teacher, classmates etc. If so, add depth by asking them to tell me more. What's been interesting? Are their friends in the class? Ask them to describe the good or bad things the mention by asking them to tell me a bit more.

3. Can you describe a time when you were motivated during class to show your best and fullest potential? How about a time when you just said, "good enough?" What might make you want to show your best potential? What are some things that might make you say, "good enough?"

4. Thinking back to when your originally picked your classes, can you tell me more about how you went about picking your class? Can I hear more, or can you describe about that selection process? Did you have to get permission to take the class? Did you ever want to take a class and were told you couldn't?

5. If students are aware of tracking: can you tell me about a time when you wondered if you picked the right level course? Seek examples of their thoughts and observations, are they connected to friendships, beliefs, or ideas about school and their history? Seek to understand their understanding of the tracks.

6. Have you chosen your courses for next year? How did you decide which courses to take? If tracking is part of the answer, how did they decide that level.

7. What are you goals for post high school life?

Part 3 In this part of the interview I am seeking to answer: How the enrollment in RTI versus the students who were not in RTI may have experienced the schooling process in the early grades differently or the same.

We are going to shift focus here and talk about way back in elementary school during first through third grade.

1. What elementary school did you go to? Do you remember any of your first – third grade teachers? Have students expand on special teachers, counselors, principals etc.
2. Can you share any memories you might have of the early grades and learning to read? Expand on their answer-favorite books? Successes? Reading teachers?
3. Can you describe what any teachers did to help you improve? How did they feel about the help –can they give an example of the help.
4. When working on reading, what specific things can you remember if any about the process of learning to read? Were you in class, out of class, taking tests, with friends, alone etc.? Try to gain access to this through having them expand on any thoughts, feelings, ideas, examples, etc.
5. If you were going to tell someone about how you learned to read, what might you tell them? Have the student explain more about the positives and negatives they may mention.

Part 4 Round up of the interview

Thank you so much for participating in the interview today. I was wondering if after thinking about this, there were any other thoughts you had or additional comments that might be important to my study.

Closing: Again, thank you so much for helping with this study. Again, I plan to keep the information confidential, kept in a secure location, where only researchers associated with the project can view it.

Student Interview Procedures

Approval from the Institutional Review Board (IRB) from the University of New Hampshire was sought in June 2021. Once approval was granted, the invitation process began. Students invited for interview were identified from the Infinite Campus data base as described in the earlier portion of this chapter. Once identified, the assistant superintendent sent an email to the parents of the identified students (N=74). The email included the IRB approved email correspondence, parental consent form, and a link to an IRB approved Google form. The parent was able to respond to me directly through a Google form, acknowledging permission for me to contact the student (see appendix C for IRB approval). The email was sent a total of three times on August 29, September 22, and November 22. A total of five parental responses representing 6.7% of the total sample was received acknowledging permission for their child to be interviewed. Four total interviews were done, three from the RTI schools and one from the non-RTI school. Interviews were conducted in a consistent manner following the protocols. However, only three of the RTI student's responses are used in this study.

1. Interviews were conducted at the high school in a common location out of the classroom.
2. Each interview was 20 - 30 minutes long.
3. Digital recordings were made using voice memo.
4. Handwritten notes were taken on a secure laptop.
5. Digital recordings of the interview were transcribed using Temi.com
6. All data were stored securely.
7. Memos were written on general reflections after each interview and served to create an index of over-arching themes and preliminary jottings for tentative codes. All original notes, reflections, memos, and jottings were kept in a secure locked file.

8. Interview results were de-identified and do not contain any information with which to identify students.
9. All field notes and memos did not reference a students' identity but used a numbered coding system in the order students were interviewed.
10. Students were identified as an RTI school student.
11. Pseudonyms were used for student transcript analysis.

Interview Process and Design

A semi-structured interview guide was used in order to explore student perspective. Participants and their parents were provided IRB approved letters of consent and once approved, the interviews were conducted. The three interviews consisted of a semi-structured series of questions with a total timeframe of 20-30 minutes each. All interviews were conducted at the high school in a remote location.

Interview Guide Development

According to Castillo-Montoya 2016, the development of the interview guide should consider four phases of construction: 1) assure interview questions are aligned with research questions; 2) construct an inquiry-based conversation; 3) receive feedback on interview protocols; and 4) pilot the interview protocols (Castillo-Montoya, 2016). Following Castillo-Montoya's advice, each phase of the interview guide was developed to ensure an inquiry-based conversation is focused on the research question. In addition, the guide utilized Roberts (2020) suggestion to develop a sequence of questions that start with easy inquiries which are less sensitive, and then use key questions, probes, expansive listening, and transitions to gain insight into the experiences and perceptions that surround the key research question (Roberts, 2020).

Castillo-Montoya also makes reference to the types of questions to design, stating that there are three types: introductory, transition, and key questions. Keeping their recommendations in sight, interview questions were developed that were as open and broad as possible without wandering too far from the research question while allowing for expansive conversations that may explain the student's experiences within the RTI and tracking programs.

Carspecken (1996) suggests that interview questions should follow a protocol that includes 2-5 topic domains and associated covert categories. Covert categories are described as "items for each topic domain that you wish your subject to address during their talk but that you don't want to ask explicitly" (Carspecken, 1996, p. 157). The research question in the qualitative phase asks: In what ways do the RTI students discuss their perceptions and beliefs about their educational standing, their connections to intervention program, and their current perceptions of their track level placement? In this question there are two key domains: academic perceptions and beliefs about themselves as learners; and remembered experiences of RTI placement. Table 3.8 presents the topic domains and corresponding covert categories. In addition to covert categories, Carspecken also suggests that the interviewer should have possible follow-up questions and anticipate how to gain greater detail from the interviewee. Possible follow-up questions are integrated into interview script.

Table B1: Topic Domain Questions and Covert Categories.

Topic domain	Covert categories
<p>1. Academic perceptions and beliefs about themselves as a student both current and past:</p> <ul style="list-style-type: none"> • What are their current experiences within the different track levels? Do they feel they are appropriately placed? • What are their current perceptions of their academic placement? Do they think it represents their ability? • What have their academic experiences been within the different track levels? • What influenced what track they selected in 8th grade or after entering high school? • What are their future academic goals? • Do they remember any of the RTI program, if so, what are the associated academic connections? Do they believe it helped them? 	<p>a. Self-perceptions of academic ability.</p> <p>b. Beliefs about who they are as a student and why they may feel that way.</p> <p>c. Beliefs about academic placement and how it fits with their schooling experiences. Key words that may describe feelings of success or frustration. Were there any past challenges that they bring up such as intervention or “pull outs” for instruction?</p> <p>d. The influence / locus of control teachers, peers, and parents may have had on their track placement. Key words or phrases to describe positive situations or frustration, being left out, or motivations etc.</p> <p>e. Perceptions of where they are and how it will help them with their future goals. Are their goals aligned with their ideas? Are their ideas influenced by current academic experiences or past academic experiences?</p> <p>f. Influences of early intervention on their beliefs about themselves as learners. What are their memories of early reading and literacy programs? How was learning to read for them?</p>
<p>2. Perceived social and institutional influences of their track and early tiers (if remembered). Both current and past experiences:</p> <ul style="list-style-type: none"> • What have their social experiences been within the different track levels and tier levels? This includes peer relationships, teacher relationships, and interventionist relationships. • What influence have teachers, peers, parents, and other staff members had on their ideas about who they are as a student? • What have their remembered social experiences concerning the process of learning to read? 	<p>a. The influence of being in a track or tier on social connections and relationships.</p> <p>b. The influence teachers, peers, and parents may have had on their track placement, memories of intervention, daily activities etc.</p> <p>c. The influence of early intervention on self-perceptions, if there are any memories. Key words or phrases could include struggling, worked hard, enjoyed getting help, found it difficult, was rewarding, etc.</p> <p>d. What are their memories of peer relationships within the classroom and outside of the classroom?</p> <p>e. The influence of being in a tier on social connections.</p>

Each of the domains was designed to gain access to both the students' current experiences, perceptions, and beliefs about their track level placement and past experiences, perceptions, and beliefs as related to early literacy experiences grades 1-3. In this format, the high school placement interview questions were presented first in order to stimulate and bring forward their thoughts on academic placement in the present and perhaps lead to a more accurate memory of the past. Recognizing that current experiences and beliefs about school can influence their past memories, the analysis focused more on their current experiences and beliefs as a way to look for narrative themes.

Once the interviews were completed the voice memos were uploaded to Temi.com for transcription. Each transcript was subsequently reviewed in a preliminary step where student's responses were studied and themes that emerged from the transcripts were identified. Once reviewed for key themes, the interviews were examined individually for the student's perspectives, interpretations, and understandings of RTI and their current track level placement. The final step was to experiment with a narrative approach to the student interview utilizing "scenes."

Three Student Interviews

The preliminary look at the interviews experimented with a method of analysis developed by Deborah Tannen (2008). Tannen's method uses three levels of analysis, but the focus in this study was on "scenes," and the rich stories and details they provide. Their perspectives were a way to capture their experiences in the early literacy RTI and their current experiences at the high school level. As an exploratory piece, my analysis was not intended to fully represent Tannen's methods but to explore the ideas she uses.

Exploratory Analysis

In this section, I present a brief overview of the narrative scenes I saw in the three interviews. My question was "In what ways do the RTI students' memories, perceptions, and beliefs about their educational journey connect to the early intervention program and their current high school experiences?" This question sought to gain an added layer of understanding of the K-12 experience for students who were placed in RTI. This involved interview questions that were designed to access what students remembered of their experiences in RTI and how they currently experience the tracking system at the high school. Interview questions were designed to draw a better understanding of the personal journey of the student, their unique memories, and the stories they shared. Each interview was approached as an individual narrative, and although some themes were common, the focus was on the individual "story" or "scene" developed during the interview. The findings were then used in the theoretical frameworks as way to add a layer of understanding and depth to the quantitative findings.

Analysis of Student Interviews

In this section I present three individual narratives of students who were placed into RTI in elementary school and are currently juniors and sophomores at the high school. These narratives are presented as individual cases and utilize a short story analysis as a way to understand their perspective, vantage point, and understanding of how they interact with an overarching cultural narrative. Unique pictures emerged from the transcript analysis that told stories of how these students experienced the educational system of intervention.

The next section provides examples from interviews with the three students.

Darla's Story

Darla's interview began with a bright and cheerful conversation about getting her driver's license. Darla was very conversational and shared many scenes of a system that left her outside of the normal elementary classroom due a conflict between what she thought was important to know and show about her reading ability; and what her teachers thought she should demonstrate. Even in high school she explained she should be in higher levels, but she just never "pushed" it. As she tells her stories the theme of a system just pushing her along a track in which she had little control emerges. I present two different scenes Darla created to explain her experience in RTI and in the high school track levels as related to the master narrative.

Darla's story: A Perspective on Early Interventions

Darla expressed her confusion as to why she had to perform certain tasks such as drawing a "c." She shares her frustration with the tasks she was asked to do by explaining that they were "stupid," and at one-point states she didn't do work because she wasn't getting any rewards. Her scene showed a unique individual with her own perspective and reasons for doing specific things; while the system used a different approach to judge her performance. She described the educators in her story as wanting to help her, but she did not understand what they were trying to do as she pushed against their requests to complete specific tasks. The master narrative in the belief that the educational system can properly place students while not accepting their requirement to perform certain tasks in retrospect she should have given them what they wanted. These scenes demonstrate her thinking process. At one point she calls it "backwards thinking" indicating she knows that she should have "played the game" and acceded to the tasks as expected. Darla highlights how expectations to do your best is a cultural theme yet is not always

displayed through classroom performance: the ability can be disguised by personal choices and student perspective on the value of the activity requested. She stated,

*I remember choosing not to learn how to read because I thought it was stupid.
When we were learning how to read and write,
When we were practicing how to spell, I didn't care about like tracing the little like CS.
I was like, this is stupid and a waste of my time.
I would just pretend like I was doing the work, but I wasn't.
I just thought that it was like stupid that I had to write, like just trace a bunch of letters,
um, and like show my work for it.
So, I, I still did the work, but I just lightly traced it instead.
So it was like backwards thinking, I guess.
I still ended up doing it, but like not with full effort and I didn't really even do still do it.
I would like hover my pencil above the page and look busy, going in C motions.
Like I was like, I think as a kid, I thought that I deserved like something
I wanna go to ice cream shop or something like that.*

In this response Darla is able to express the idea that educators are not always able to make sound academic ability decisions because students have their own minds and agendas. Ability can be disguised by unique personal thoughts and actions not always recognized as legitimate by the educators. If we don't ask students the right questions, we make decisions based on external assessments as compared to understanding the perspectives they bring to school with them. This imbalance can lead to interventions that are not necessarily productive. For example, Darla, explains that the teachers tried to help by providing a large pencil which she refers to as "fat." The use of fat here was said in a derogatory sense, as though she thought it emblematic of her belief that it was stupid and unnecessary.

*Um, my teachers are like, you can't do that (draw and trace letters).
And they gave me like a "big fat" pencil.
They're like maybe she has pencil problems.
I got one of those like big fat ones in a writing thing
and I was just, I just straight up didn't wanna write.*

Darla explained her desire to show them that she was smart and had ability, in this case, using the system's values of large vocabulary representing ability. During one response she shares a story of her impressing her teacher with the word non-Newtonian. This impression of her ability came through as if to say "don't judge me, when you don't know my whole story." The system may think it is capable, but I also have some knowledge you don't know about. She took great pride in wowing them. This again, helps us see the story of how the big narratives of valid assessments of true aptitude through personal choices creates other options for what students know. Her boastful words in reference to her use of the upper-level word showed how she knew she should be impressing them in order to be considered "smart," and that the judgement system was based on the showing of specific knowledge.

*But then, um, they were testing my vocabulary.
I do remember they were testing me.
Like not like knowing like different words.
Like non-Newtonian like,
I was like a second grader and she threw that one out for fun,
and I knew what it was
I watched slime videos on YouTube <laugh> so she was like, wow.*

Darla's expressions about being pulled out of class to work on reading further shows her confusion with why she was in the program and her questioning of whether she should have been placed in an intervention program. Her view of the intervention tells a story of social separation and the search for why. She explains that she was confused, by their interventions, because she liked to read. To explain this dichotomy of system competence and personally perceived competency she thinks they kept her in the program explaining that she used the word "like" a lot. This is not a true demonstration of her competency; is it just a difference in style?

I think it's just that it was like they,

*No matter what I did,
they were just still kind of like, oh, you still need the reading,
The reading thing, even though I was still confused back then.
Cause I liked books, like advanced.
I think it was at like the very end mostly because
I did say like lot, like I'd be like, like, and then like I went like to like the park, like, and
then. And so,
Then they got me a speech person and I was like, okay.
But I don't even remember saying like a lot, so,"*

In the next section Darla hints at the actual reality of being judged by the school and the consequences of being isolated and mistreated by the decisions being made by the school. Her tone was one of confusion when she talked about the experience. Again, the narrative of the school providing optimum help, yet making mistakes that she confirms in her separation is important to the tension students feel between what our culture says about schools and what the reality can be.

*I was, I got taken out of class a lot.
Um, but I didn't really like that because I was like a little lonely.
Um, so they just like pulled me to the back of the school.
And I remember one time they just popped me in like an empty room and I sat there for
like, like 20 minutes, just like sitting there.
They, I think they forgot about me or something like that.*

During the interview Darla was able to share how her being pulled out of class stayed with her until middle school. In her response to whether or not she thought the program helped her, she answered by explaining how she thought it may have helped but influenced her self-perception. In her description she explains her thoughts of herself as being the “extra help” kid and how the pulling out may have changed her friends or made it hard to have friends.

*“I think it kind of helped, but honestly, I think it hurt,
it hurt a little more just cuz I didn't get to socialize with anyone*

*like a solid like two hours of the day in like several grades.
So, I didn't really get to make many like good, like I guess I got,
I made friends, but like it was a little weird sometimes,
I mean it definitely made me more socially awkward,
so that was that's something that's definitely stayed
I've been able to like make friends,
but I think for solid while I'd still kind, even in middle school,
I thought of myself as like the extra help kid,*

In reflecting on why she thought the program didn't really work for her, she explained that no one understood her perspective or how she was thinking. She explained, *"I think just people didn't understand what I was thinking. So, they just thought that I was like really learning slow, but I was just like learning differently."* This statement could be connected to the narrative that the school was unable to truly understand her, and although there is a cultural belief that schools are designed for appropriate interventions, in this case Darla's story shows a different scenario and she does not see it that way.

Darla's story of her early reading tells of a student who is in a situation where the educational system has the power and has been given that power to decide on interventions due to a student's performance ability to accomplish specific tasks. The power comes from the cultural theme in that the system makes use of specific ways to identify students who need help, but in actuality they may actually miss information by not looking at the ways in which students are unique individuals with unique actions and motivations. The narrative of student ability being disguised by personal choice comes up again and again, she is driven by her own beliefs and motivations, thinking things are stupid and wanting rewards for her accomplishments: without which she chooses not to work. Her vantage point in the story reflects the disjunct between beliefs in a system, and actual existence in the system.

In this interview the idea is exposed that there is a tension between the student expressing that they have greater ability and can do quite a bit, but this is what the school asks me to do and that is not important to me-but yet it should be because the system values a certain way. The cultural belief in the system, knowledge of the system as a cultural belief, and acceptance of the system as a way to access success is hinted at through the responses, she shared with me.

Darla's Story: Academic Reflections During High School

Darla's experiences at the high school still reflect a theme that the school is in charge and has the power to determine where and how you learn. I asked Darla several questions about her current grades and track placement in order to gain insight into how she saw her ability now and if she was in proper placement. Her answers reflected: 1) how the locus of control was still with the school; and 2) that school is pretty easy for her. These two themes were also expressed in her early scene, but now she seems to be gaining a different relationship with her teachers who have placed her into level 4 sophomore year (level 4 is advanced college prep and considered an upper-level tracking selection). In the next segment I extracted two pieces that represent the student perspective on track placement and ability, and how she got to where she is.

During middle school Darla had very poor grades and ended up in level 3, but at the high school she excels thinking classes are easy and others in her level are "stupid." When she moves from freshman to sophomore year, she is placed into level 4 classes by her teachers. In this scene she explains how she came to be where she is, indicating that most of her academic movement is controlled by the school and or teachers, not with her choices. The school retains the authority to define and act upon track placement: students are excluded from the process even if their narrative of their skills abilities differs from the school's assessment. In this next

scene the mechanisms of choice, grades, and self-concept all emerge; merging the big narrative of choice mixed with school judgement that limits choice.

*That was just them putting me in like all level three classes.
Cause I did like horrible in middle school.
I was getting like D's and C's
maybe like an, a in like art or, or gym or something.
And then like all Ds
Um, but then I got to high school and I just started doing really well.
I tried to go up, I was gonna go up to level four,
Like more level four, try out honors classes,
I didn't really think about choosing that much when I went to the next year,
So, I didn't really choose any honors or anything.
That one was just kind of outta my control.
I just graduated like freshman year to sophomore year
Then I guess somebody, somebody was like,
She could do well in level four classes and I just was put in level four classes.
I felt like, well, a little bit in one of my classes, I was like, everyone.
I was so surprised by how stupid everyone was.
I was like, this is a way too low of a class for me,
But it felt good though.
Cause I never had a class that I was like good at.
So, I was like, eh it's fine.
But yeah, other, the other classes felt pretty good.
Yeah, it was all still pretty easy.
I'm still just getting A's and stuff, except for French.
I've only done one honors, even though I'm like a really good student
I might do like an AP or two.*

The scene created by the use of “somebody just put me there” and “out of my control” communicates her perspective on how the system works. Her final comments remark on now the years are winding down, with only two years to participate in upper-level classes. She shares the

ways in which her ability seems to meet the mark and considers herself smart, yet the school is still making choices for her “placing” or “putting” her into certain tracks, and now with little time left she still feels uncertain.

The scenes described from Darla’s interview relate to the master narrative of student ability identification being a school responsibility and her belief, even though there’s doubt, that they can get it right. In other words, she expresses where she is and where she wants to be as two separate forces at work. This leads to the power imbalance between those in the decision-making seats, and those who are the recipient of the decisions. The power is vested in the school as a cultural narrative, which although Darla shares her struggles and tries to assert her ability, she sees the school as in charge of her academic journey and she is left to follow their lead.

Grace’s Story

Grace was a student in RTI at school 2. She is a sophomore at the high school. Grace’s interview added to the themes developed in Darla’s interview through the smaller stories and scenes. Her interview also added a new perspective to the big-N narrative of how students build relationships with teachers as providers of academic guidance. This narrative showed how several teachers in Grace’s life supported her, but at the same time may have helped her develop a certain belief about her ability. The master narrative of educational systems being able to identify student ability and provide appropriate "help" and intervention is interwoven through her reflections on where she is now, how teachers influenced that trajectory, and her ideas of her current academic ability and placement.

Grace's Story: A Perspective on the Locus of Control for Success

Grace's story begins with her assessment of her current high school classes. Whenever she describes a class she mentions the teacher as part of her answer, stating that they were "new" or had certain ways of teaching she either liked or did not like. When asked how her classes were going, she described the teacher as someone who can determine her grades by their teaching style. Grace consistently used the teacher to express whether she did well or did not. She shares a scene in which the teacher did not allow her to show her full potential because of the "way" teacher taught. When sharing these ideas, she is able to communicate that the teacher, as a symbol of the school, has control and power over how she does. The similarity between Darla's big narrative of assessments and types of assignments used to describe the difference between her self-assessment and school assessment is similar to Grace's explanation, but Grace has shifted the focus to the teachers. In either case the school does not seem to see things the way they do, while Grace states that the problem is with the teaching and not the assessment: both question the validity of the school's decision making. Grace explains both "good" and "bad" teachers as they relate to her current grades and ability.

*I had Mr. Dame for my English teacher and
The main reason it was hard for me was, cuz
I didn't really do well with like,
how he taught like his method of teaching.*

*Bios. Good.
The teacher is good.
And I mean the, like some of the, like it's not, it's not like super easy.
It's just like it's in the middle.*

*Sometimes there's like some stuff that is like too like easy, like right now,
like I guess in my American studies class,*

*like last quarter was like a little bit harder,
maybe for the new teacher or something.
But, um, now it's like, we it's like our kind of like a substitute kind of.
She just gives us like stuff on the computer and
we just have to look on online stuff and just write it down.
And it's just like typing all the time.*

*I had um, Mr. Childs and um,
I think it was also the way that he taught too
He was like really consistent and very like good for me.
So, it was kind of like fast paced too.
I felt like comfortable in it.*

In these scenes a picture of a student who believes her success is influenced by the teacher as a locus of control stands out. The relationships she forms are part of the big narrative and are used to explain how the school supports or hinders her ability to demonstrate what the educational system wants her to show, for example grades. She shares with me the belief that “yes” I need to demonstrate what the school asks me to in order to succeed, but I can’t always do that if the teachers are not able to support me and my learning style.

Grace’s stories from her earlier years are filled with memories of teacher relationships and how they influenced her educational experiences. The stories share her belief in teachers as supportive players who can help her, but also can influence her academic self-concept and success. In one exchange she replies that a special education teacher told her to “not worry” about doing well on a test that was going to help her decide her high school levels, and that she should just “guess” on her answers. She describes it as more of a positive relationship and trust between them. She trusts the school to guide her in the right direction, toward an appropriate level and outcome, indicating a reliance and belief in the master narrative.

I think we did like tests in like different classes maybe like in English and math.

*And I remember,
my skills teacher,
my IEP teacher was just like, just it's. Okay.
Just like guess on it.
Because it was like the levels that I'm in now are fine and
I wasn't like gonna do super good on that.
Like I'm not really good at doing tests,
I'm not like meant for higher levels.*

In this scene Grace indicates that she also doesn't feel like she should be in a higher level, saying she is not "meant" for higher levels indicating a high level of trust and belief that the school was able to appropriately identify her ability, even though the teacher was telling her to underperform through guessing.

After this exchange Grace reveals that she did like to read in an earlier time. She remembers a picture her mother took of her reading under a tree and mentions how she really wanted to get math help because she could already read, but just wasn't interested in reading. However, she thought she was pretty good at reading but wanted to work on math. She feels she was "smarter" than the others in her elementary reading group. Again, it is revealed that the power of education places students in places they may not necessarily need to be, yet in this case the trust for the school's ability to place her properly, overrides any change in her position. Grace struggles with the idea that she wanted to get math help and she felt she needed it more, but she was placed in the reading classroom.

*Like first grade I remember like actually I remember my mom like taking a photo of me,
like sitting outside,
just like I had this like book series that I was like obsessed with.
I just like kind of fell out of it,
I don't, I don't think I ever like fell behind too much in reading, I guess.
I mean, I reading's never really been my favorite thing.*

*I don't really think I ever really pick up a book and just read it, I guess.
Cause it doesn't intrigue me that much*

*Yeah. It was more reading.
I always like I was in that class.
I always would need help with math more.
And I'd be in the reading class.
It was like sometimes like spelling too
And like they (other kids) just like, wouldn't really know how to spell."
I was like kind of mad that I was in there.
Cause I didn't really like being in there.
Cause I felt like I was like kind of smarter than the other kids in there, with reading...*

These exchanges reveal the relationships she has with her teachers as guides, but also the idea that in the early years she saw her ability differently than the teachers did. Even now Grace reflects on her study hall and how she feels like she needs it, but is embarrassed to be in it, because the other students are disorganized. In this scene she explains her study hall is connected to her memory of getting pulled out of class. She seems to want it, but at the same time questions whether she fits the model of a student who needs help. She expresses the tension between being considered a student in need as compared to a student who is competent and could do ok without the interventions. This story reflects her way of explaining the placement decisions of the school authorities that indicate that she is being controlled by an outside force for what she needs, as compared to how she sees herself as capable and competent. For example, she states,

*It's just like embarrassing getting like pulled out classes,
I guess like if you had to do it,
Cause like, even now,
I have like that study block,
I don't like people seeing me in there I guess, but.
Even now, like when I'm in those classes (study block),*

*like there's like, it is helpful.
And there is like some kids who I feel like, I mean, like.
I don't need like any help in there at all.
Like I just go and do my work.
Like it's a good.
It's convenient for me.
But then there's some other kids who just like,
don't know how to keep themselves organized.
And need constant reminders and stuff like that.*

Grace told another story about her experience with the development of her IEP. She explained that there was a “new teacher” in second grade, and she couldn’t remember the whole story, but the teacher and her parent had a disagreement. Then in 4th grade a different teacher talked the parent into an IEP for her. This scene captures Grace’s attempt to understand how she was moving around the system through relationships between teachers and her mom. As she moved from second to fourth grade the positive and negative relationships with her teachers were a way in which the system placed her into special education. Her relationship with teachers and who has power to place is told in these two scenes.

*Mrs. Roe, I remember she was like trying to put me in the IEP.
Which wasn't a bad thing.
Like my mom really liked her then and
then we ended up doing that.*

*My mom, I remember her being like upset
with this like one second grade teacher
it was like her first few years of teaching.
I was too young to even know what was happening and then like,
They just wanted to like start testing me for an IEP.
Ever since I had that teacher.*

The peer relationships that grace has during her help sessions in elementary school were experienced as positive; she said she had friends who were in the help group and that they

sometimes ate lunch in the room with the teachers. She seemed to enjoy the reading group expressing that “they helped me in like a group of like my friends, like go in and read.” This is in contrast to her original desire to be in math as compared to reading. In these two opposing reflections Grace is sharing that it wasn’t really the help that was beneficial, but the fact that she had social relationships with other students and the teacher in the intervention. Again, the teacher plays a large role in her stories of success or not.

Grace has used her words to share a picture of her journey from elementary to high school, as she developed an image of herself as learner through the program and the relationships that either formed or didn’t form. She sometimes feels she is more able than others in the program yet does say “upper levels” aren’t for me and that she does like the study hall and extra help. Grace leads us in a direction where we are left wondering if the educational system was actually able to accurately identify her abilities. It is evident that Grace’s relationships with teachers influenced her decisions and are a strong part of her belief system as to whether she is “good” at a class. Her 8th grade teacher scene where she was told to just “guess” and that it was “ok” to not do well leads us to wonder how the teachers’ perceptions may have influenced her self-concept of what she can do. It may be asserted that Grace came to believe or at least accept that the decisions of the school were made in her best interest. She again seems to be torn between I am smarter than the others in this program; and the teacher’s beliefs and opinions of her ability, sometimes accepting it and other times not. This manifests as a teetering between the belief in the narrative of school placement and success as dictated by the school and the individual differences of the person who is attempting to navigate the system.

This relationship between her and her teachers is important as it helps us to understand the cultural narrative of a strong belief that the educational system is able to identify student

ability accurately. Teachers seem to be trying to help throughout her school career, but she tends to think she is misplaced or is capable or “smarter” than the others. This begs the question as to how educators make decisions based on assessments without actually trying to understand learning differently or interests. Or the belief that they can make appropriate decisions based on the requirements of the system.

Just as Darla stated she felt she learned differently; Grace also says the same thing. *“I just feel like I could, I do like learn a lot like far and like differently than other people. Like I feel like I don't know. Everyone learns differently.”* This commonality between the two may hint at the idea that the students understand the system gives them one choice in a way to express success, and that “learning differently” doesn’t necessarily let them be accepted at full value. Learning differently, they seem to understand is a way to express the idea that they have ability, but just have a different way to learn.

Macy’s Story

Macy is Junior who is preparing to graduate early and through her short scenes shares a story of perseverance and determination to do well and demonstrate her ability. Her desire to graduate early and start college her senior year reflects her strong desire to move ahead. During her interview she explains scenes where she is determined to demonstrate her ability by attempting math problems on the board, and when fails tries again. She is also a student who pinpoints her weakness as a “specific skill” problem, sharing that spelling and words counts give her stress when writing. I have chosen two scenes from her interview that help us see the narrative of school placement as related to student self-belief and perceptions. In this case Macy seems to seek control and by showing teachers she can do it. Her concern/complaint about the

school in not understanding may be different than Grace and Darla who say that it is out of their control. Macy seems to say that I seek to control it.

Macy's Story: A Response to Set Backs and Obstacles in Two Different Subjects

In Macy's case she sees the school experience differently depending on the subject, relying on perseverance to rise above expectations that may have slowed her down in math, but in writing she sees no way out of her challenge except to accept it as something she will need to work around. In the following scene Macy explains a math problem she did, telling me about how she overcame the failure to get it right, by doing three more. She shared how important it was to her to try and prove herself to a system that is designed in a way that highlights success and failure. Macy's scene exposes the belief in herself, but at the same time the major narrative of the school having the final judgement on "if" it is correct. The determination to prove she is capable shifts the locus of control to her, but still adheres to the master narrative.

*Good, I'm usually good with math,
Last week in math, I tried to do a problem on the board and got it wrong.
So, then I did like the other problems.
Yeah. And I did that one, right.
And three more on the board*

On the other hand, when it comes to English, there is a different story to share. English has been a struggle and she indicates it is spelling that slows her down and the act of "getting started" is a challenge. When she talks about her experiences there is some tension in her voice as though she is feeling the worry of writing. Macy shared with me that she just doesn't like to write and has a hard time with the restrictions of writing counts. She struggles getting started, as if there was a barrier she needed to overcome. Macy is able to share how little perseverance she has when it comes to English and the skills, she believes are necessary being a good writer.

*For English, I usually do more like level three, cuz I don't like writing.
I just don't like to start a piece, but once I get into it, it's okay.
I'm really like, not that great with spelling and like the commas and stuff.
I've definitely done that in English before (said good enough) when we were writing.
If I didn't have to do a certain amount of words,
you always have to like make it same kind of boring and long.
So, I kind of just put it into Grammarly and go over it.*

This story was connected to her elementary work on literacy. Macy remembered when she was in the “program.”

*Yeah, I did like that extra thing.
In that classroom, I know, I don't know what it was actually called, the thing.
And like I was in a classroom with the teacher.
She was always like teaching letters.
And do that kind of spelling stuff.
And in class we would've do like spelling quizzes and stuff,
but I was never good at those.
Not bad. I mean, reading I'm fine it's just
when I'm trying to actually spell something.
That's when I struggle
I do remember that I could not like differentiate my letters and stuff very well.*

In this case Macy's doesn't express any perseverance, but an almost opposite view of herself when it comes to writing. Her beliefs and memories are focused on a negative perception of her ability to spell and write letters, although she does confide she likes to read. The connection between high school and elementary English skills is not surprising. The hesitation to write and the consequential fear of not being able to get it right seems to have stayed with her from elementary school to high school. Her story shows us a glimpse at the narrative that schools have specific ways of wanting students to show “you can” and that somewhere along the line, her spirit and enthusiasm to show that she “can” has been overridden by the fear of getting a particular skill wrong (i.e., spelling). Unlike, Darla and Grace, who wanted to tell us that they

learn differently and have potential, Macy appears to have relinquished control to the system. Her personal perseverance and determination that she expressed so clearly about math and college, is replaced with an acceptance of the school's judgement of her ability in English.

Summary of Narratives

The three students told a story about their journey as participants in RTI in the K-12 educational system and presented a look at how students may experience RTI. Each of the students had their own way of interpreting the master narrative: educational systems are able to properly identify student academic ability and provide appropriate "help" and intervention to those who need it. Each of the students in this study have experienced a form of RTI, and although coming from two different elementary schools these students share a common story of navigating the judgements placed upon them by a system that has a history of recognizing very specific ways of being successful. They all recalled the "classroom" they went to and what they did in that classroom, who helped them, and how that person influenced their secondary decisions.

The stories in this preliminary look at the lived experiences of students are important for helping us gain better understanding of how early intervention may not have the full capability to place students into proper academic settings, but instead may cause them separation, anxiety, and in Darla's case confusion. The methods used in intervention are based on assessments which are based on literacy skills. If a student cannot demonstrate the skills for whatever reasons, be it disinterest, or cultural differences, then the program is not reaching all students who know "differently." The academic value of other ways of knowing is easily ignored with a skills-based approach as based on benchmarks and cut scores. In this case, decisions are made, and students attended to, leading students into a k-12 track. The belief in the systems' ability to

make appropriate decisions is encapsulated in the entire design; the trust in assessments, the trust in a teacher's ability to make decisions, and the trust from the student that the school is able to discern ability through whatever measures used.

The short excerpts from the three RTI students shed light on the programs use of a "skills" based recognition of talent, as compared to understanding the unique individual. When the students shared their stories with me, they shared their desire to present to me the theme that they are unique and view the interventions placed on them in uniquely different ways: relationships, misunderstandings of potential, and relinquishing control to others.

Appendix C: IRB APPROVAL

Date: 4-1-2022

IRB #: IRB-FY2021-29

Title: The Chalkboard Ceiling: The Impact of Early Intervention Models on Social and Academic Stratification in High School

Creation Date: 6-1-2021

End Date:

Status: **Approved**

Principal Investigator: Kimberly McGlinchey

Review Board: UNH IRB

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Study History

Submission Type	Initial	Review Type	Expedited	Decision	Approved
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