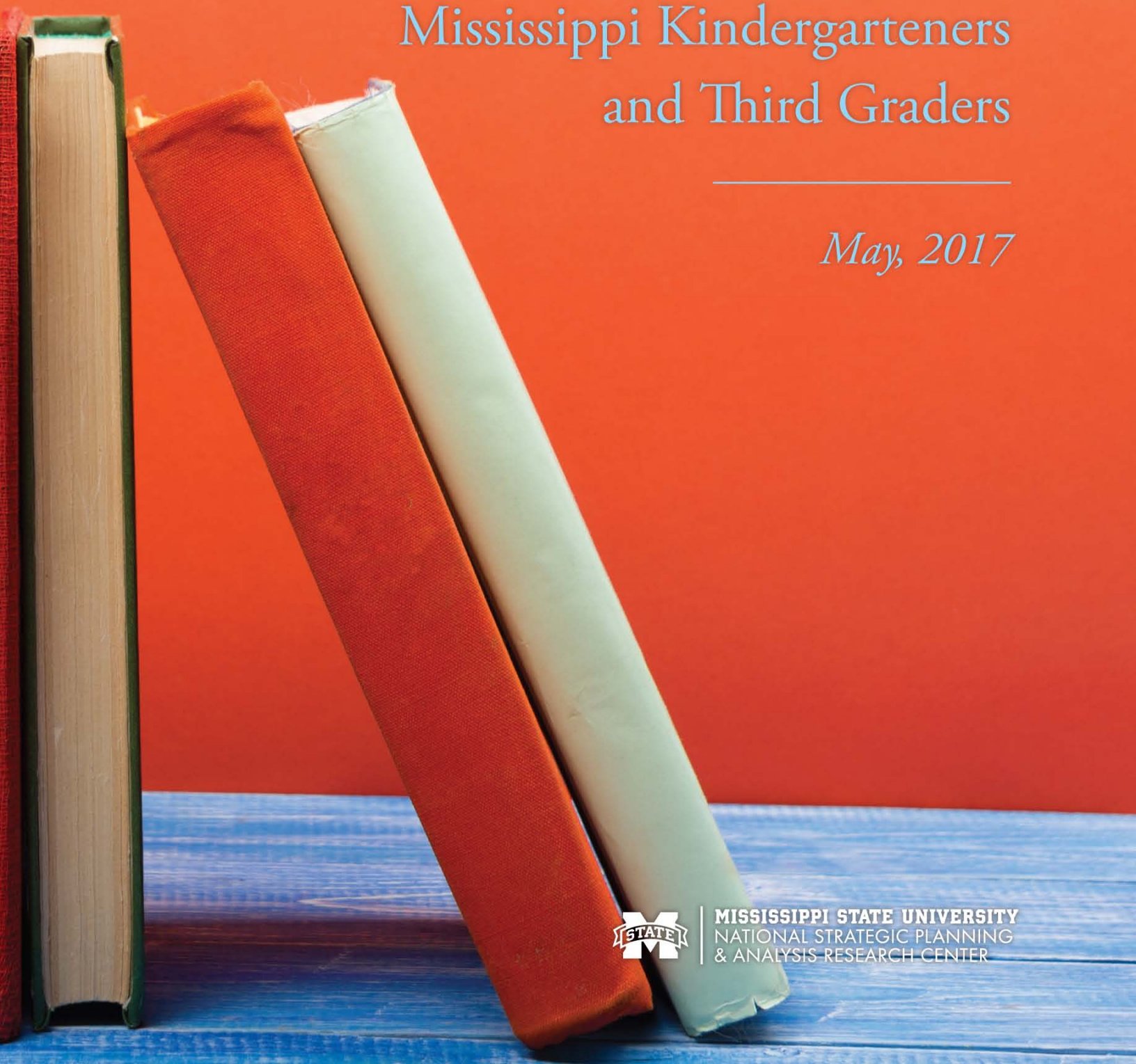
THE IMPACT OF

National Board Certified Teachers on the Literacy Outcomes of Mississippi Kindergarteners and Third Graders

May, 2017



MISSISSIPPI STATE UNIVERSITY
NATIONAL STRATEGIC PLANNING
& ANALYSIS RESEARCH CENTER

About NSPARC

For more than 15 years, NSPARC has used smart data and analytical techniques to connect academic research to public policy, economic development, and social issues. An interdisciplinary unit at Mississippi State University (MSU), NSPARC is No. 1 in external research funding at MSU. Dr. Domenico "Mimmo" Parisi is the director. For more information, visit www.nsparc.msstate.edu. Any questions about this report should be directed to Dr. Parisi at 662-325-9242.

Disclaimer

This report was developed by NSPARC, a research unit of Mississippi State University (MSU), for use by all stakeholders in the state of Mississippi and elsewhere. The information in this report does not necessarily reflect the views and opinions of NSPARC or MSU. NSPARC makes no warranties, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information contained in this report. Users of this report should apply their own discretion to determine whether to rely on any of the information contained herein.

nsparc
NATIONAL STRATEGIC PLANNING & ANALYSIS RESEARCH CENTER

STATE | MISSISSIPPI STATE UNIVERSITY™

TABLE OF CONTENTS

Executive Summary 1

Introduction 2

Background 2

Current Study 4

Methodology 4

- Data 4
- Measuring Literacy Outcomes 5
- Analysis 5

Results 7

- Descriptive Analysis 7
- Multivariate Analysis 9

Summary 13

References 14

EXECUTIVE SUMMARY

The recent passage of the Literacy-Based Promotion Act has drawn greater attention to the need for promoting the reading abilities of K-3 Mississippi public school students. In this context, the National Board for Professional Teaching Standards (NBPTS) has launched an initiative to improve the literacy skills of K-3 Mississippi public school students through expanded utilization of National Board Certified Teachers (NBCT). National Board Certification (NBC) is a voluntary certification program established by NBPTS with the goal of distinguishing effective teachers. The NBPTS project seeks to improve literacy outcomes in Mississippi by having NBCTs mentor K-3 reading teachers on instructional methods, expanding the number of NBCTs serving as Mississippi Department of Education (MDE) Literacy Coaches and summer literacy instructors, and increasing the overall number of K-3 NBCTs working in Mississippi. This new emphasis on leveraging the capacities of NBCTs to enhance the reading skills of Mississippi public school students raises the question of whether teachers with National Board Certification typically make a greater contribution to student literacy achievement than other teachers in practice.

To address this issue, the current study examines the association between early-grade Mississippi public school students receiving reading instruction from a National Board Certified Teacher and their performance on standardized literacy assessments. The analysis focuses on kindergarten and third grade students in academic year 2015-2016. Descriptive and multivariate statistics on literacy outcomes were generated using a combination of data from the Mississippi Department of Education and information on Mississippi NBCTs from NBPTS. The results indicate that students with a National Board Certified reading teacher perform at a significantly higher level on literacy assessments than peers on average. The key findings are as follows:

- Overall, 35.8 percent of kindergarteners with an NBC reading teacher achieved a proficient literacy assessment score, compared to 30.7 percent of other kindergarteners. In addition, 88.2 percent of kindergarteners with an NBC reading teacher achieved growth in literacy assessment performance, while 86.4 percent of their peers did the same (see Figures 1 and 2).

- In total, 42.9 percent of third graders with an NBC reading teacher obtained a proficient literacy assessment score, compared to 32.2 percent of third graders without an NBC reading teacher (see Figure 3).

- The multivariate analysis shows that kindergarteners with an NBC reading teacher had 30.7 percent higher odds than kindergarteners without an NBC reading teacher of achieving a proficient literacy assessment score, after controlling for other factors (see Table 3). In addition, kindergarteners with an NBC reading teacher had 18.6 percent higher odds than peers of achieving growth in literacy assessment performance, holding other factors constant (see Table 4).

- The multivariate analysis shows that third graders with an NBC reading teacher had 10.7 percent higher odds than third graders without an NBC reading teacher of achieving a proficient literacy assessment score, after controlling for other factors (see Table 5).

INTRODUCTION

Mississippi's Literacy-Based Promotion Act (2013) established new statewide academic performance requirements designed to ensure that Mississippi public school students meet reading ability standards by the end of third grade. The LBPA's stipulations have focused the attention of the educational community on how to improve the reading skills of early-grade Mississippi public school students. Reflecting this development, the National Board for Professional Teaching Standards (NBPTS) recently launched an initiative to enhance the literacy outcomes of K-3 students in Mississippi by more fully utilizing the instructional abilities of National Board Certified Teachers (NBCTs). National Board Certification (NBC) is a voluntary certification program established by NBPTS to distinguish educators who meet defined standards for accomplished teaching. The new NBPTS effort in Mississippi raises the question of whether reading teachers possessing National Board Certification provide higher quality instruction and improve student literacy skills more than other reading teachers within the early grades.

To examine this issue, the current study compares the performance on literacy assessments of Mississippi public school students taught by a National Board Certified reading teacher with that of peers not taught by an NBC reading teacher. The focus is on kindergarteners and third graders attending Mississippi public schools during academic year 2015-2016. To preview findings, the results provide evidence that students receiving reading instruction from a National Board Certified Teacher is associated with more favorable literacy outcomes on their part. Kindergarteners with an NBC reading teacher were approximately five percentage points more likely than other kindergarteners to achieve a proficient score on the MKAS2 reading assessment and around two percentage points more likely to achieve performance growth on the test. Likewise, third graders with an NBC reading teacher were nearly 11 percentage points more likely than other third graders to score proficiently on the Mississippi Assessment Program (MAP) English test. The students of National Board Certified Teachers continued to display these advantages in literacy skills after various student-, teacher-, and school-level factors were controlled for.

BACKGROUND

In 2013, the Mississippi Legislature passed the Literacy-Based Promotion Act (LBPA). The LBPA's goal is to enhance the literacy skills of K-3 Mississippi public school students so that they are capable of reading at or above grade level by the end of the third grade. The law mandates (beginning with academic year 2014-2015) that reading screeners be administered to Mississippi public school students in each of these grades and that remediation resources be directed to those students identified as possessing a reading deficiency. Furthermore, the LBPA requires that third graders score above the lowest achievement category on the reading component of the state annual accountability assessment, or qualify for an approved exemption, in order to be promoted to the fourth grade (Ciurczak 2016).

The Literacy-Based Promotion Act has drawn greater attention to the need for improving the reading skills of early-grade Mississippi public school students. It is in this context that the National Board for Professional Teaching Standards (NBPTS) has proposed a strategy to boost the literacy abilities of K-3 Mississippi public school students by means of National Board Certified Teachers (NBCTs). The NBPTS plan involves more broadly harnessing the teaching capacities of NBCTs with the goal of increasing the overall quality of literacy instruction provided to students.

National Board Certification is a voluntary, professional certification program that NBPTS created to distinguish and cultivate effective teachers (National Board for Professional Teaching Standards 2017a). An educator's acquisition of

National Board Certification is an indication that they meet NBPTS-defined standards for accomplished teaching, which are grounded in the organization's Five Core Propositions:

1) Teachers are committed to students and their learning.

2) Teachers know the subjects they teach and how to teach those subjects to students.

3) Teachers are responsible for managing and monitoring student learning.

4) Teachers think systematically about their practice and learn from experience.

5) Teachers are members of learning communities. (National Board for Professional Teaching Standards 2017b:1)

The National Board Certification process requires candidates to take a computer-based test of their knowledge and teaching practices regarding their subject area. Candidates are also required to submit three portfolios. The first portfolio consists of student work samples that provide evidence for academic progress along with commentary from the candidate discussing their pedagogical decisions. The second portfolio includes videos showing classroom interactions between the candidate and their students in addition to two commentaries from the candidate on their teaching practices and interactions with students. The final portfolio requires candidates to utilize information on a class of their students along with their knowledge of assessment practices to plan and improve the educational process. Certification is available in 25 areas distinguished both by student developmental level and subject. The certification process can last from one to five years. Under a recently-established policy, maintenance of certification requires teachers to complete a renewal process every five years (National Board for Professional Teaching Standards 2017b).

The NBPTS strategy to utilize National Board Certified Teachers to improve the literacy outcomes of Mississippi public school students has multiple objectives. One is to train NBCTs in Literacy Essentials for Teachers of Reading and Spelling (LETRS)–a methodology endorsed by the Mississippi Department of Education (MDE)–and subsequently have them mentor Mississippi K-3 reading teachers on instructional approaches. Another goal is to expand the deployment of NBCTs as MDE Literacy Coaches - officials who work to advance the agenda of the Literacy-Based Promotion Act by providing professional support and guidance to school-based literacy coaches and teachers (Mississippi Department of Education 2015). The plan also aims to boost the number of NBCTs serving as summer literacy instructors, thus increasing the amount of reading instruction provided by NBCTs to Mississippi students. An additional component of the NBPTS strategy is to increase the number of K-3 National Board Certified Teachers in the state.

This literacy-promotion effort centered on National Board Certified Teachers directs attention to whether NBCTs advance the reading skills of Mississippi public school students in early grades more than other teachers on average. A body of research has developed in recent years that examines the effectiveness of NBCTs in fostering student achievement within particular states and regions. This literature tends to show that having a National Board Certified Teacher is positively associated with student literacy outcomes even after controlling for other factors (Cantrell, Fullerton, Kane, and Staiger 2008; Clotfelter, Ladd, and Vigdor 2006, 2007; Cowan and Goldhaber 2015; Goldhaber and Anthony 2007; Harris and Sass 2009; Vandevoort, Amrein-Beardsley, and Berliner 2004). For example, Goldhaber and Anthony (2007), examining third through fifth graders attending North Carolina public schools during 1997-1999, report that the reading ability gains achieved by students of NBCTs significantly exceeded the corresponding gains achieved by peers, holding constant student demographic characteristics; teacher demographic

and professional characteristics; and school/community attributes. Likewise, Cowan and Goldhaber (2015) find that fourth through eighth grade Washington students taught by an NBCT displayed significantly higher levels of reading achievement during 2006-2013 than their counterparts lacking an NBCT after accounting for student demographics and prior academic performance.

Although an appreciable amount of research has been conducted on the effectiveness of National Board Certified Teachers, existing studies are of limited value in assessing the viability of the NBPTS strategy to improve the literacy outcomes of K-3 students in Mississippi. There are two reasons for this. First, it appears that none of the NBCT analyses carried out up to this point examine the outcomes of students in the earliest grades (i.e., before 3rd grade) or 3rd grade outcomes separately from outcomes for higher grade levels. Second, no previous studies analyze the effect of NBCTs on the achievement of Mississippi students in particular. These gaps point to the need for research that specifically examines the impact of National Board Certified Teachers on the literacy outcomes of early-grade Mississippi public school students.

CURRENT STUDY

The current study seeks to expand the body of knowledge concerning NBCT effectiveness by examining whether National Board Certified Teachers promote the literacy abilities of kindergarten and third grade students attending Mississippi public schools. The outcomes of first and second grade students are also of interest, but there is not sufficient data to examine these grades. The analysis focuses on whether kindergarten and third grade students taught by a National Board Certified reading teacher tend score higher on standardized literacy assessments than same-grade counterparts not provided reading instruction by an NBCT. The results are intended to provide insight on whether NBCTs could serve as an important component of efforts to enhance the literacy skills of Mississippi public school students in early grades.

METHODOLOGY

Data

The analysis relies on data from the Mississippi Department of Education (MDE) and the National Board for Professional Teaching Standards (NBPTS). The MDE data consists of de-identified individual-level records for kindergarten and third grade students attending Mississippi public schools during academic year 2015-2016. These records contain information on students' demographic characteristics, school of attendance, grade level, teachers, and academic performance, among other characteristics. The NBPTS data consists of a file containing information on individuals residing in Mississippi who have achieved National Board Certification. The MDE and NBPTS data were merged so that kindergarten and third grade Mississippi public school students with an NBC reading teacher could be distinguished from their peers without an NBC reading teacher.

Table 1 presents summary figures on the students included in the analysis. The dataset encompasses 29,170 kindergarteners–1,702 of whom (5.83 percent) had an NBC reading teacher–and 37,929 third graders–2,842 of whom (7.49 percent) had an NBC reading teacher.

Table 1: Mississippi Public School Students with a National Board Certified English Teacher, by Grade Level (2015-2016)

Grade level	Total # of students	Students receiving English Instruction from an NBCT	
		N	%[1]
Kindergarten	29,170	1,702	5.83
Third	37,929	2,842	7.49

[1]*Denominator is the total number of students in the grade level.*

Measuring Literacy Outcomes

Kindergarten students. Kindergartener literacy outcomes are measured using the MKAS2-Kindergarten Readiness Assessment. The MKAS2 is a reading assessment taken twice during the kindergarten year, first in the fall semester (pre-test) and then in the spring semester (post-test). The MKAS2 has four official score categories: early emergent (lowest), late emergent, transitional, and probable reader (highest). Two literacy outcome measures based on these categories are utilized in the analysis. The first measure is whether the kindergartener achieved a proficient score on the MKAS2 post-test. A proficient score is defined as a score within the highest, "probable reader" category since attainment of this category indicates that a student has developed the ability to read words smoothly and without the aid of contextual information. The second literacy outcome measure is whether a student achieved growth in performance on the MKAS2 between the pre-test and post-test. A student is categorized as achieving growth if they either (a) achieved a higher score category on the post-test than on the pre-test or (b) achieved a proficient score on the both the pre-test and the post-test.

Third grade students. The literacy outcomes of third grade students are measured using the third grade Mississippi Assessment Program (MAP) test in English Language Arts. The MAP English test is taken in the spring of the third grade year. The test has five official score categories: minimal (lowest), basic, pass, proficient, and advanced (highest). The measure of literacy used in the analysis is whether the student achieved a proficient score on the MAP English test, defined here as scoring in either the official "proficient" or "advanced" categories. Score growth is not examined because the MAP test is only administered once per year.

Analysis

Kindergarten students. The relationship between kindergarten students having a National Board Certified reading teacher and their literacy performance is examined using both descriptive and multivariate statistics. Regarding the descriptive analysis, the percentage of students achieving a proficient score on the spring MKAS2-Kindergarten Readiness Assessment, disaggregated by the NBC status of their reading teacher, is calculated. Additionally, the percentage of students achieving growth in performance on the MKAS2 between the fall and spring, disaggregated by their reading teacher's NBC status, is calculated as well.

Regarding the kindergarten multivariate analysis, two multilevel hierarchical regressions are performed to measure the relationship between a student having an NBC reading teacher and their literacy ability after controlling for other characteristics. The outcome variable for the first regression is a binary term coded 1 if the student achieved a proficient score on the spring MKAS2-Kindergarten Readiness Assessment and coded 0 otherwise. The outcome variable for the second regression is a binary variable coded 1 if the student achieved growth in performance on the MKAS2 between the fall and spring and coded 0 otherwise. For both regressions, the key explanatory variable is a binary term coded 1 for students with an NBC reading teacher and coded 0 for other students. Among the factors included in the regressions as control variables are student's race, gender, school absenteeism record, grade retention history, and pre-test performance level; teacher's teaching experience; and the school's performance level as determined by the Mississippi State Board of Education (see Table 2 for the definitions of the control variables). The hierarchical design

of both regressions assumes that the data possesses three levels: students (Level 1) are nested within teachers (Level 2), who in turn are nested within schools (Level 3).

Third grade students. The relationship between third grade students having a National Board Certified reading teacher and their literacy performance is also examined using both descriptive and multivariate statistics. Regarding the descriptive analysis, the percentage of students achieving a proficient score on the third grade MAP test in English Language Arts, disaggregated by the NBCT status of their reading teacher, is calculated.

Regarding the third grade multivariate analysis, a multilevel hierarchical regression is performed to identify the relationship between a student having an NBC reading teacher and their literacy ability, after controlling for other characteristics. The outcome variable for the regression is a binary variable coded 1 if the student achieved a proficient test score on the third grade MAP English test and code 0 otherwise. The key explanatory variable is a binary term in which students with an NBC reading teacher are coded 1 and other students are coded 0. Among the factors included in the regressions as control variables are student's race, gender, school absenteeism record, and grade retention history; teacher's teaching experience; and school's performance level as determined by the Mississippi State Board of Education (see Table 2 for the definitions of the control variables). The hierarchical design of the regression assumes that the data possesses three levels: students (Level 1) are nested within teachers (Level 2), who in turn are nested within schools (Level 3).

Table 2. Definitions of the Control Variables: Academic Year 2015-2016

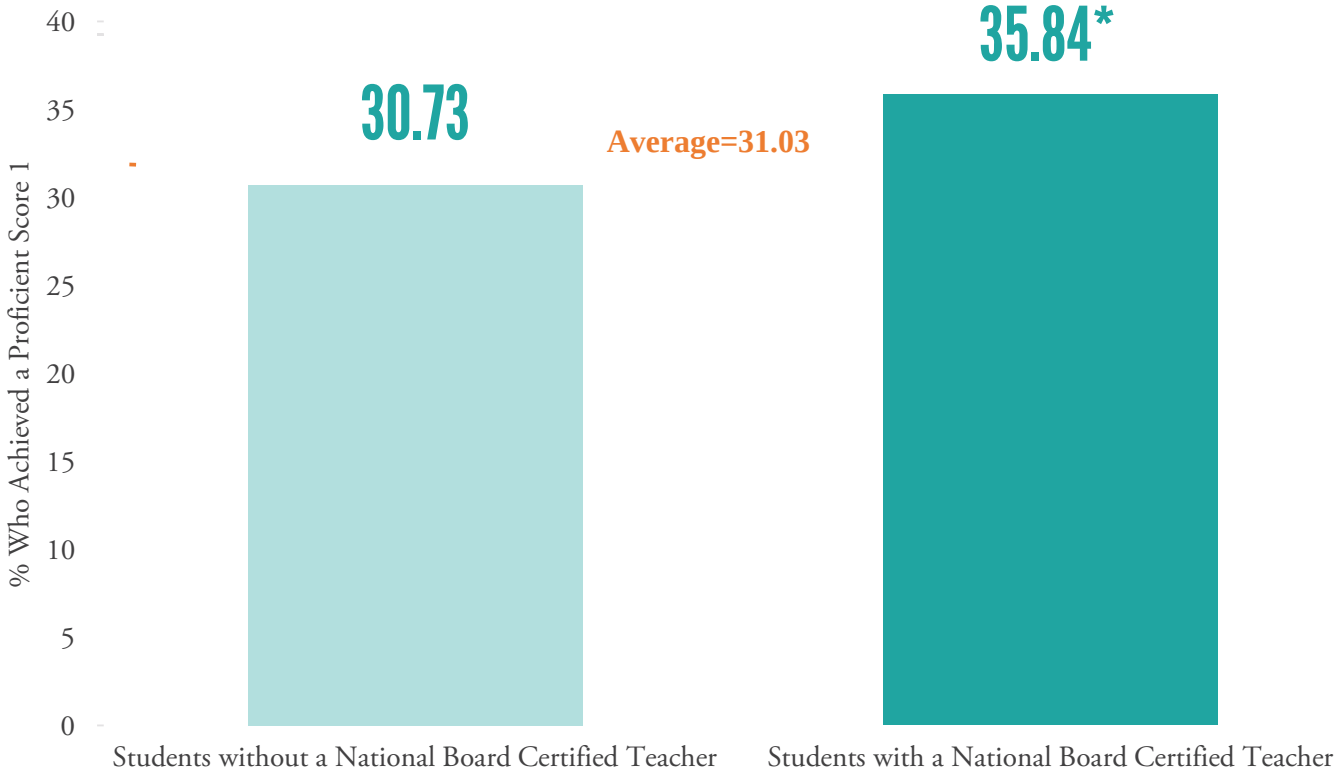
Variable	Definition
Race	Three categorical variables control for whether the student was white (reference category), black, or another race.
Gender	Binary variable equals one if the student was female and zero if they were male.
School Absenteeism Record	Binary variable equals one if the student was absent for 18 or more days during the 2015-2016 school year and zero if they had not been absent for this amount of time.
Grade Retention History	Binary variable equals one if the student was retained in the same grade between academic years 2014-2015 and 2015-2016 and zero if they were not retained over this period.
Pre-Test Performance (kindergarten regressions only)	Four categorical variables control for the student's performance level on the MKAS2 pre-test: early emergent (lowest), late emergent, transitional, and probable reader (highest) (reference group).
Teaching Experience	Binary variable equals one if the teacher had five or more years for teaching experience and 0 if they had less than five.
School Performance	Four categorical variables control for the school's "accountability status" grade as determined by the Mississippi State Board of Education: (1) A, (2) B, (3) C, and (4) D or F (reference group). Accountability status is an official measure of school performance based on students' achievement and growth levels on standardized tests and (in the case of high schools) their graduation rates. Schools scoring highest on these measures receive a grade of "A" while those scoring lowest receive an "F."

RESULTS

Descriptive Analysis

Figures 1 through 3 display the percentages of students achieving either proficiency or growth on literacy assessments by the National Board Certification status of their reading teacher. The results indicate that the students of NBCTs outperform the students of non-NBCTs on average. Figure 1 shows that 30.73 percent of kindergarteners not taught by an NBCT achieved a proficient score on the MKAS2 reading test while 35.84 percent of students taught by an NBCT achieved a proficient score (Figure 4) – a statistically significant difference. Figure 2 presents the percentages of kindergarteners who achieved growth in performance between the MKAS2 pre- and post-tests by teacher NBCT status. Overall, 86.38 percent of kindergarteners whose teacher was not NBC achieved performance growth on the assessment while a significantly higher share of peers with an NBCT–88.19 percent– achieved growth. Finally, as shown in Figure 3, 32.16 percent of third graders whose teacher was not NBC achieved a proficient score on the MAP English test, compared to 42.89 percent of third graders with an NBCT. This last difference is also statistically significant.

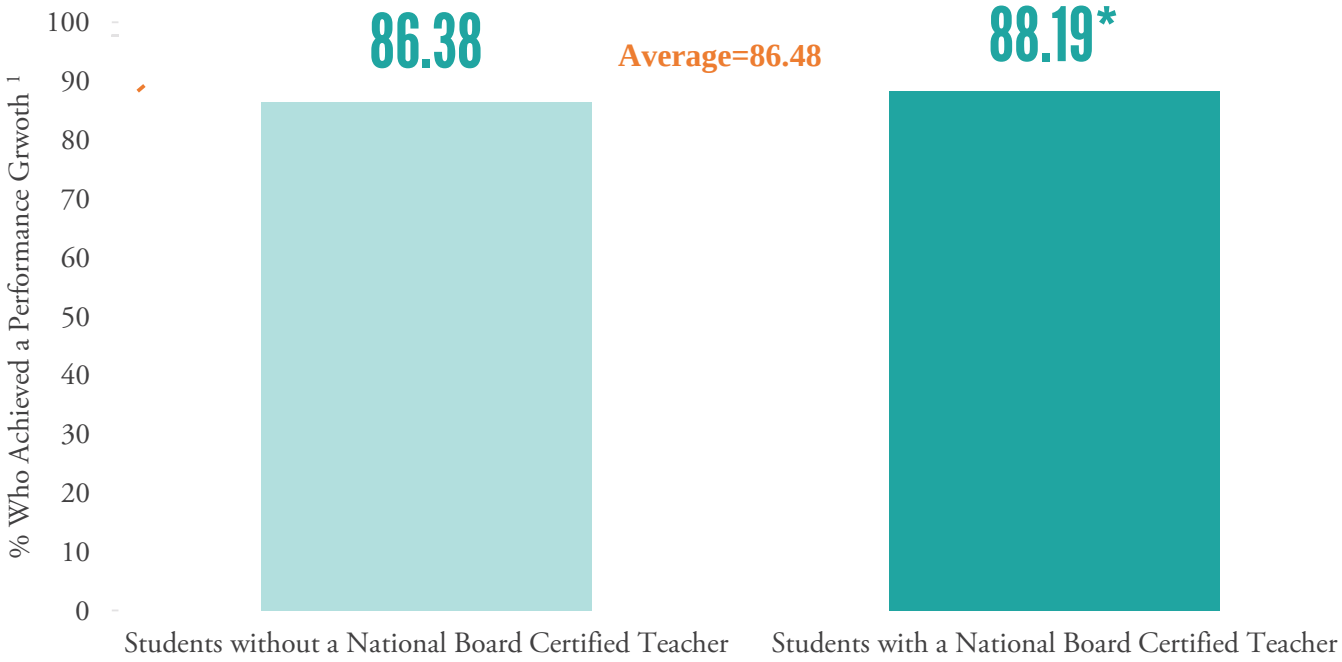
Figure 1. Student Performance on the MKAS2 Kindergarten Readiness Assessment, by Teacher's National Board Certification Status: Academic Year 2015-2016



[1] The Kindergarten Readiness Assessment has four official score categories: early emergent (lowest), late emergent, transitional, and probable reader (highest). Students who scored within the probable reader range are classified here as having achieved a proficient score.

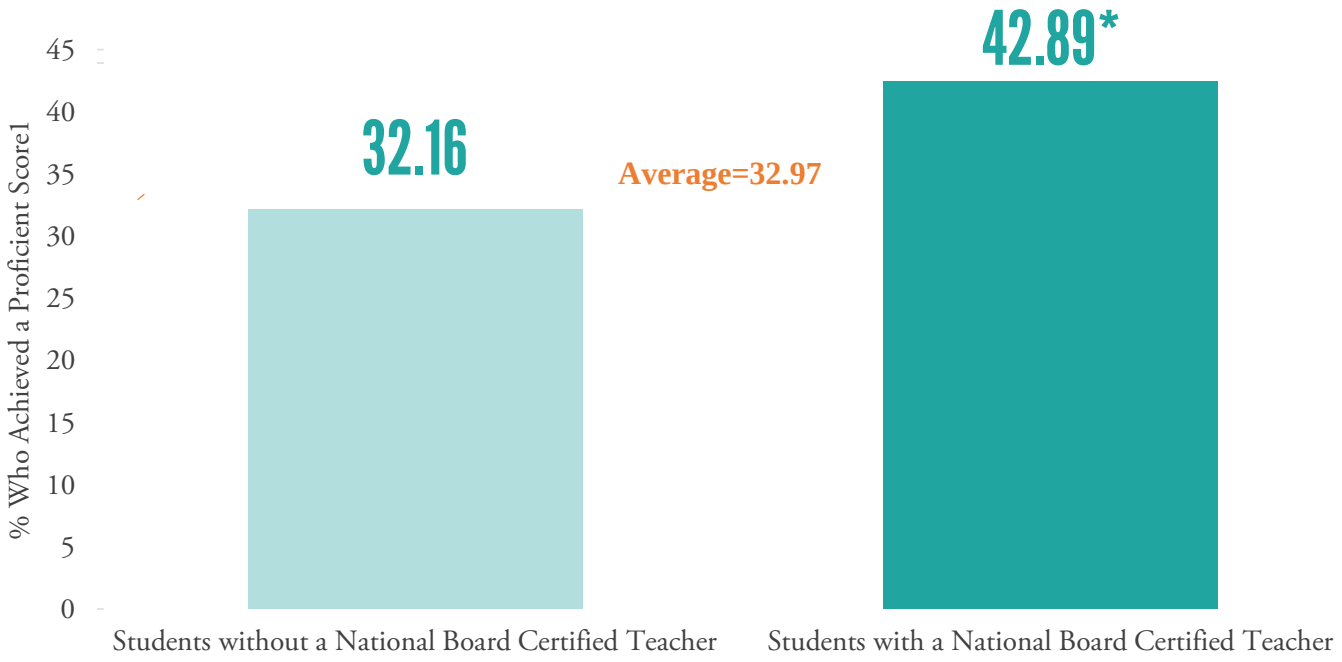
**Differences in proficiency between students with a National Board Certified Teacher and those without a National Board Certified Teacher are statistically significant at the p<0.001 level.*

Figure 2. Student Performance Growth on the MKAS2 Kindergarten Readiness Assessment, by Teacher's National Board Certification Status: Academic Year 2015-2016



[1] The Kindergarten Readiness Assessment has four official score categories: early emergent (lowest), late emergent, transitional, and probable reader (highest). Students who scored within the early emergent (lowest), late emergent, or transitional range in pre-test and moved up at least one more level in post-test score, or the probable reader range were staying at the same level are classified here as having achieved a growth.
**Differences in performance growth between students with a National Board Certified Teacher and those without a National Board Certified Teacher are statistically significant at the p<0.05 level.*

Figure 3. Student Performance on the 3rd Grade Mississippi Assessment Program Test in English Language Arts, by Teacher's National Board Certification Status: Academic Year 2015-2016



[1] The 3rd Grade Mississippi Assessment Program Test in English Language Arts has five official score categories: minimal (lowest), basic, pass, proficient, and advanced (highest). Students who scored in either the proficient or advanced range are classified here as having achieved a proficient score.
**Differences in proficiency between students with a National Board Certified Teacher and those without a National Board Certified Teacher are statistically significant at the p<0.001 level.*

Multivariate Analysis

Tables 3-5 present results from the multilevel hierarchical regressions measuring the relationship between receiving instruction from an NBC reading teacher and literacy assessment outcome[1]. The figures show that students taught by an NBCT have more favorable literacy outcomes than their peers not taught by an NBCT after controlling for student demographic and academic characteristics, teacher experience, and overall school performance.

Table 3 displays results from the regression examining kindergarteners' performance on the MKAS2 literacy assessment. The association between having an NBC reading teacher and achieving a proficient score on the MKAS2 is positive and statistically significant ($p<0.001$). Students of NBCTs are predicted to have 30.7 percent higher odds of attaining a proficient literacy assessment score than students of non-NBCTs after holding constant other characteristics. Turning to the control variables, students who were white, female, not chronically absent, not retained in school, in possession of a higher pre-test score level, or attending a school that achieved an "A" accountability grade also had a greater likelihood of achieving a proficient score.

Table 4 displays results from the regression examining kindergarteners' change in performance on the MKAS2 literacy assessment. The association between having an NBC reading teacher and achieving growth on the MKAS2 is positive and statistically significant ($p<0.10$). Students of NBCTs are predicted to have 18.6 percent higher odds of achieving literacy assessment performance growth than the students of non-NBCTs after controlling for other factors. Regarding the control variables, students who were white, female, not chronically absent, not retained in school, or attending a school that achieved an "A" or "B" accountability grade had a greater likelihood of achieving performance growth.

Table 5 displays estimates from the regression examining third graders' performance on the MAP literacy assessment. The association between having an NBC reading teacher and achieving a proficient score on the MAP test is positive and statistically significant ($p<0.05$). The students of NBCTs are predicted to have 10.7 percent higher odds of attaining proficient literacy assessment score than the students of non-NBCTs after holding constant other factors. Turning to the control variables, students who were white, female, not chronically absent, not retained in school, or attending a school with a higher accountability grade had a greater likelihood of achieving a proficiency literacy score.

[1] *See Tables A1 and A2 in the Appendix for descriptive statistics on the control variables for kindergarten and third grade students, in total and broken down by the National Board Certification status of the student's reading teacher.*

Table 3. Binary Logistic Regression of Kindergarteners' Achievement of a Proficient MKAS2 Literacy Assessment Score

Effect	B	SE	Odds Ratio
Intercept	2.279***	0.254	9.763
NBC Status of Reading Teacher (Non-NBCT as Reference)			
NBCT	0.268***	0.069	1.307
Control Level 1 (Student level)			
Race (White as Reference)			
Black	-0.676***	0.039	0.509
Other Race	-0.327***	0.059	0.721
Gender (Male as Reference)			
Female	0.087**	0.029	1.091
School Absenteeism Record (Not Chronically Absent as Reference)			
Chronically Absent	-0.438***	0.048	0.645
Grade Retention History (Not Retained in School as Reference)			
Retained in School	-1.135***	0.056	0.322
Pre-Test Level (Probable Reader (highest level) as Reference)			
Early Emergent	-4.032***	0.243	0.018
Late Emergent	-2.338***	0.242	0.097
Transitional Reader	-0.853***	0.250	0.426
Control Level 2 (Teacher Level)			
Teaching Experience (Less Than 5 Years as Reference)			
Five years or more	0.055	0.042	1.057
Control Level 3 (School Level)			
School performance (reference = D/F)			
A	0.387**	0.127	1.472
B	0.129	0.097	1.138
C	0.159!	0.096	1.172

*Note: !p<.10, *p<.05, **p<.01, ***p<.001 (two-tailed test)*

4. Binary Logistic Regression of Kindergarteners' Growth in Performance on the MKAS2 Literacy Assessment

Effect	B	SE	Odds Ratio
Intercept	1.998***	0.253	7.376
NBC Status of Reading Teacher (Non-NBCT as Reference)			
NBCT	0.170!	0.090	1.186
Control Level 1 (Student level)			
Race (White as Reference)			
Black	-0.577***	0.047	0.562
Other Race	-0.496***	0.071	0.609
Gender (Male as Reference)			
Female	0.217***	0.036	1.242
School Absenteeism Record (Not Chronically Absent as Reference)			
Chronically Absent	-0.430***	0.051	0.651
Grade Retention History (Not Retained in School as Reference)			
Retained in School	-0.735***	0.050	0.479
Pre-Test Level (Probable Reader (highest level) as Reference)			
Early Emergent	0.732**	0.242	2.079
Late Emergent	-0.246	0.241	0.782
Transitional Reader	-0.868***	0.248	0.420
Control Level 2 (Teacher Level)			
Teaching Experience (Less Than 5 Years as Reference)			
Five years or more	0.033	0.051	1.034
Control Level 3 (School Level)			
School performance (reference = D/F)			
A	0.455***	0.115	1.576
B	0.176*	0.086	1.193
C	0.139	0.085	1.149

*Note: !p<.10, *p<.05, **p<.01, ***p<.001 (two-tailed test)*

Table 5. Binary Logistic Regression of Third Graders' Achievement of a Proficient Score on the MAP Literacy Assessment

Effect	B	SE	Odds Ratio
Intercept	-0.693***	0.061	0.500
NBC Status of Reading Teacher (Non-NBCT as Reference)			
NBCT	0.102*	0.051	1.107
Control Level 1 (Student level)			
Race (White as Reference)			
Black	-1.199***	0.031	0.301
Other Race	-0.593***	0.048	0.553
Gender (Male as Reference)			
Female	0.260***	0.024	1.297
School Absenteeism Record (Not Chronically Absent as Reference)			
Chronically Absent	-0.390***	0.048	0.677
Grade Retention History (Not Retained in School as Reference)			
Retained in School	-1.479***	0.086	0.228
Control Level 2 (Teacher Level)			
Teaching Experience (Less Than 5 Years as Reference)			
Five years or more	0.038	0.034	1.038
Control Level 3 (School Level)			
School performance (reference = D/F)			
A	0.987***	0.093	2.863
B	0.628***	0.068	1.873
C	0.218**	0.070	1.244

*Note: !p<.10, *p<.05, **p<.01, ***p<.001 (two-tailed test)*

SUMMARY

The issue of how to promote the reading skills of early-grade Mississippi public school students has received increased attention in the wake of the 2013 passage of the Literacy-Based Promotion Act. In line with these changes, the National Board for Professional Teaching Standards has initiated a project to improve the literacy rates of K-3 Mississippi public school students by means of National Board Certified Teachers. The NBPTS program aims to enhance student reading ability by utilizing NBCTs to mentor K-3 Mississippi reading teachers on instructional methods, increasing the number of NBCTs who serve as MDE Literacy Coaches and summer literacy instructors, and expanding the pool of K-3 NBCTs in Mississippi. These NBCT-focused efforts to enhance the reading skills of Mississippi students raise the question of whether the teachers with National Board Certification improve student literacy outcomes more than other teachers in practice.

Drawing on data from the Mississippi Department of Education and the National Board for Professional Teaching Standards, this report sought to provide evidence concerning whether NBCTs tend to enhance the literacy abilities of early-grade students in Mississippi. The analysis focused on kindergarten and third grade students attending Mississippi public schools during academic year 2015-2016. Overall, the results show that students with an NBC reading teacher significantly excel peers with a non-NBC reading teacher on measures of reading ability. In particular, kindergarteners who received reading instruction from an NBCT were 5.1 percentage points more likely than other kindergarteners to achieve a proficient score on the MKAS2 reading test, and 1.8 percentage points more likely to achieve performance growth on the MKAS2. Furthermore, third graders with an NBC reading teacher were 10.7 percentage points more likely than peers to achieve a proficient score on the MAP English test. The advantage in literacy skills of students taught by an NBCT remain even after controlling for student demographic and academic characteristics, teacher experience levels, and general school performance. Holding constant other factors, kindergarteners with an NBC reading teacher had 30.7 percent and 18.6 percent higher odds than other kindergarteners of, respectively, achieving a proficient score on the MKAS2 and achieving performance growth on the MKAS2. In addition, third graders with an NBC reading teacher had 10.7 percent higher odds than peers of achieving a proficient score on the MAP English test, after controlling for other attributes.

The present study has consistently found that being taught by a National Board Certified reading teacher is associated with a higher level of literacy achievement for early-grade Mississippi public school students. The results thus lend credence to current efforts to enhance literacy outcomes in the state through greater utilization of National Board Certified Teachers. Future research could build on this analysis by examining how the relationship between teacher NBC status and the reading skills of Mississippi public school students varies by student attributes. Such work would serve to refine the picture presented here of NBCTs' potential impact.

REFERENCES

Cantrell, Steven, Jon Fullerton, Thomas J. Kane, and Douglas O. Staiger. 2008. "National Board Certification and Teacher Effectiveness: Evidence from a Random Assignment Experiment." *National Bureau of Economic Research*. Retrieved March 3, 2017 (http://www.nber.org/papers/w14608).

Ciurczak, Ellen. 2016. "Prohibiting Social Promotion: The Third-Grade Gate." *The Clarion-Ledger*. Retrieved April 2, 2017 (http://www.clarionledger.com/story/news/local/2016/12/18/prohibiting-social-promotion-third-grade-gate/95594932/).

Clotfelter, Charles T., Helen F. Ladd, and Jacob L. Vigdor. 2006. "Teacher-Student Matching and the Assessment of Teacher Effectiveness." *Journal of Human Resources* 41(4):778-820.

Clotfelter, Charles T., Helen F. Ladd, and Jacob L. Vigdor. 2007. "Teacher Credentials and Student Achievement: Longitudinal Analysis with Student Fixed Effects." *Economics of Education Review* 26(6):673-682.

Cowan, James, and Dan Goldhaber. 2015. "National Board Certification and Teacher Effectiveness: Evidence from Washington." *Center for Education Data & Research*.

Goldhaber, Dan, and Emily Anthony. 2007. "Can Teacher Quality Be Effectively Assessed? National Board Certification as a Signal of Effective Teaching." *The Review of Economics and Statistics* 89(1):134-150.

Harris, Douglas N., and Tim R. Sass. 2009. "The Effects of NBPTS-Certified Teachers on Student Achievement." *Journal of Policy Analysis and Management* 28(1):55-80.

Mississippi Department of Education. 2015. "The MDE Literacy Coach Handbook." Retrieved June 5, 2017 (http://www.mde.k12.ms.us/docs/curriculum-and-instructions-library/public-literacy-coach-handbook-9-17-15_final-2_20150918081529_617122.pdf?sfvrsn=2).

National Board for Professional Teaching Standards. 2017a. "About Certification." Retrieved April 2, 2017 (http://boardcertifiedteachers.org/about-certification).

National Board for Professional Teaching Standards. 2017b. "Guide to National Board Certification, Version 1.9." Retrieved April 4. 2017 (http://www.boardcertifiedteachers.org/sites/default/files/Guide_to_NB_Certification.pdf).

Vandevoort, Leslie G., Audrey Amrein-Beardsley, and David C. Berliner. 2004. "National Board Certified Teachers and Their Students' Achievement." *Education Policy Analysis Archives*. 12(46).

APPENDIX

Table A1: Descriptive Statistics: Kindergarten Students

Variable	All kindergarteners	Kindergarteners w/ NBC reading teacher	Kindergarteners w/ non-NBC reading teacher
Gender			
Male	51.74%	52.29%	51.71%
Female	48.26%	47.71%	48.29%
Race			
White	43.85%	54.64%	43.18%
Black	48.06%	37.07%	48.74%
Other Race	8.09%	8.28%	8.07%
Pre-test score level			
Early Emergent	46.44%	43.60%	46.61%
Late Emergent	48.28%	51.23%	48.10%
Transitional Reader	4.72%	4.47%	4.74%
Probable Reader	0.56%	0.71%	0.54%
Teacher's level of teaching experience			
Less than five years	18.52%	0%	19.67%
Five years or more	81.48%	100%	80.33%
Not chronically absent	86.85%	88.31%	86.76%
School absenteeism record			
Chronically absent	13.15%	11.69%	13.24%
Grade retention history			
Not retained a grade	90.29%	89.95%	90.31%
Retained a grade	9.71%	10.05%	9.69%
School performance			
A	15.63%	29.14%	14.80%
B	29.99%	34.90%	29.69%
C	25.59%	19.39%	25.98%
D/F	28.78%	16.57%	29.54%

Table A2: Descriptive Statistics: Third Grade Students

Variable	All third graders	Third graders w/ NBC reading teacher	Third graders w/ non-NBC reading teacher
Gender			
Male	51.04%	50.81%	51.06%
Female	48.96%	49.19%	48.94%
Race			
White	42.46%	58.37%	41.17%
Black	50.62%	33.64%	52.00%
Other Race	6.91%	7.99%	6.82%
Teacher's level of teaching experience			
Less than five years	21.31%	0%	23.04%
Five years or more	78.69%	100%	76.96%
School absenteeism record			
Not chronically absent	92.45%	92.93%	92.41%
Chronically absent	7.55%	7.07%	7.59%
Grade retention history			
Not retained a grade	94.42%	95.50%	94.33%
Retained a grade	5.58%	4.50%	5.67%
School performance			
A	13.65%	20.97%	13.06%
B	30.20%	41.63%	29.28%
C	27.12%	22.03%	27.53%
D/F	29.02%	15.38%	30.13%

nsparc
NATIONAL STRATEGIC PLANNING & ANALYSIS RESEARCH CENTER
STATE
MISSISSIPPI STATE
UNIVERSITY™