Impact of District-Wide Free Lunch on Third-Grade Students' Reading Comprehension

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Abstract: Poverty has an enormous impact on children and their success in school. Children with low socioeconomic status often perform poorly in reading. Poor reading skills often lead to truancy, low rates of high school graduation, low-paying jobs, and cycles of illiteracy in generations of families. Secondary data was collected from the Tennessee Department of Education website and conducted an ANOVA quartile split to examine the impact of universal free and reduced lunch (FRL) policy changes on third grade reading normal curve equivalent (NCE) scores. Findings from this one-way ANOVA indicated there were no statistically significant differences in third grade reading NCE scores after the policy change to 100% FRL. The social implications of these findings offer the potential to raise awareness of universal FRL and its impact on reading comprehension among third grade students in the educational setting, enabling policy changes in the United States Department of Agriculture's core nutrition program for FRL to children regardless of socioeconomic status.

In 2018, approximately 17.5% of the 39.7 million Americans affected by poverty were children (U.S. Department of Commerce, 2018). In 2017, nearly 1 in 5 infants, toddlers, and preschoolers between the ages of 0 and 5 were classified as poor at the time of most significant brain development (U.S. Department of Commerce, 2018). Poverty among children has an enormous negative influence on their school success, with the main reasons being suffering from food deprivation and poor access to adequate health care (Hair et al., 2015).

Poverty and parental education statuses are also associated with the quality of a child's educational experiences and academic achievement, whether attending public school, private school, or homeschool (U.S. Department of Commerce, 2014). For example, childhood poverty correlates with poor academic achievement starting in kindergarten and extending through elementary and high school, leading to meager rates of high school graduation (U.S. Department of Commerce, 2014). Researchers have long associated low family economic statuses with poor academic performances among children in reading (Amendum & Fitzgerald, 2013). One significant predictor of standardized reading comprehension tests in Grades 1 through 12 is the percentage of children who live in poverty (Bhattacharya, 2015). Reading skills lower than basic reading ability can result in truancy, set children on a path towards low-paying jobs, and contribute to the cycle of illiteracy in the next generation (Alharbi, 2015).

Children of low socioeconomic status (SES) often perform poorly in academics, experience chronic absenteeism from school, and attain low-paying jobs as an adult (Spencer et al., 2019). Children of low SES also often perform poorly in math and reading (Bhattacharya, 2015). Poor reading skills among children often lead to truancy and low-paying jobs as adults (Yildiz & Cetinkaya, 2017). Children who do not master reading by third grade may experience academic problems throughout their school process (Capellini et al., 2015).

The National School Lunch Act of 1946 (NSLA) created the modern school lunch program with the multifaceted goals of providing a means of safeguarding the health and well-being of U.S. children by promoting consumption of nutritious foods (U.S. Department of Agriculture [USDA], 2015). Proper nutrition plays a role in providing sufficient development in life for the physical, mental, and social development of children (Rasberry et al., 2015). The NSLA federally funded meal program is in over 100,000 public and nonprofit schools and care facilities (USDA, 2015). The Healthy, Hunger-Free Kids Act of 2010 included the National School Lunch Program (NSLP) and the School Breakfast Program, which are now part of the new universal meal program.

The Community Eligibility Provision (CEP) of the Healthy, Hunger-Free Kids Act of 2010 is a universal meal plan that gives LEAs and schools in low-income areas an alternative method for operating school meal programs (USDA, 2014). The CEP implemented the policy change to universal free lunch, which allows eligible districts and schools with high percentages of students living in poverty to receive meals for students at no cost regardless of economic status eliminating the need to collect eligibility data (U.S. Department of Education, 2016a). Universal free and reduced school lunch (FRL) policies removes the stigma of proverty, improves children's health and education, and helps low-income families make ends meet (USDA, 2014). Removing the administrative processes of qualifying for the program allows schools, principals, and teachers to focus on teaching (Brown & Bilski, 2017).

In this quantitative, comparative study, we examined the impact of policy change of universal FRL on third grade normal curve equivalent (NCE) reading scores. Specifically, we compared the different extremes of low, middle, and high levels of FRL in relation to NCE reading scores before and after FRL policy changes. The use of a Q1Q2Q3 split enabled us to examine which schools, based on socioeconomic-status of percentage of FRL, benefited the most from this policy change.

Research Question/Hypotheses

RQ1: What are the differences in third grade reading

NCE scores before and after the policy change to 100% free and reduced lunch?

H0: $\mu^1 = \mu^2 = \mu 3$ – There are no differences in third grade reading NCE scores before and after policy change based on levels of free and reduced lunch prior to policy change.

H1: $\mu^1 \neq \mu^2 \neq \mu 3$ – There are differences in third grade reading NCE scores before and after policy change based on free and reduced lunch levels prior to policy change.

METHOD

To examine the impact of policy change to universal FRL on third grade NCE reading scores we used a quantitative, ANOVA quartile split research study design to compare the differences of low, middle, and high levels of FRL before the policy change. An ANOVA with a pre- and posttest design was used for this study as it enabled us to compare NCE third grade reading scores of schools the year before the switch in policy (i.e., 2013) and year the after the switch in policy (i.e., 2014). We determined the differential NCE reading score by subtracting the NCE reading scores of 2013 from the NCE reading scores of 2014.

The sampling method used for this study was purposive and convenience sampling. We purposively selected schools that met The Community Eligibility Program (CEP) criteria and implemented the policy change to universal free lunch. Convenience sampling included the purposive sampling of elementary schools with third grade NCE reading scores (see Tennessee Department of Education, 2016b). The sample size utilized was the population of elementary schools in Tennessee (N = 575) that participated in the CEP of the Healthy, Hunger-Free Kids Act, Section 104a and made the switch to 100% FRL in 2014 (USDA, 2014). This large sample size was optimal as it offered the opportunity for enhancing the ability to detect effects (Field et al., 2017).

Independent Variable

PUniversal school percentage of FRL was the independent variable (IV). Universal FRL was defined as meeting the eligibility criterion based on the CEP guidelines of the Healthy, Hunger-Free Kids Act, Section 104a that allows eligible districts and schools with high percentages of students living in poverty to receive meals at no charge (USDA, 2015). To promote reliability and validity, data from the IV group of schools that changed to FRL was derived from the official data of the Tennessee Department of Education and the CEP of the Healthy, Hunger-Free Kids Act.

We conducted an ANOVA Q1Q2Q3 split of FRL before and after the policy change. Using a quantitative, comparative design enabled us to examine which schools benefited the most from this policy change. This Q1Q2Q3 split was conducted to assess whether the means of NCE third grade NCE reading scores were significantly different among the groups based on the indication of FRL among the three groups. We looked at FRL for all 574 schools that made the policy change and ran quartile analysis based on the total sample of schools and their current FRL% in 2013. Those schools at and below the 25th percentile was classified as Q1, those schools at the 75th percentile and higher were classified as Q3 and those schools between Q1 and Q3 were classified as Q2. Given that FRL is an indicator of SES, we wanted to assess how third grade NCE reading scores were impacted by this policy change among these three groups.

Dependent Variable

The dependent variable (DV) was the differential of NCE reading scores in 2013 and 2014. The formula for this differential was the 2014 NCE reading score minus the 2013 NCE reading score. For example, if a school in 2014 had an NCE reading score of 50, and in 2013 they had an NCE reading score of 46, the differential NCE reading score would be 4

(i.e., 50 - 46 = 4). The DV was defined as a way of measuring where students fall along the standard curve. NCE scores range from 1 (lowest score) to 99 (highest score), which indicate an individual student's rank (Ebert & Scott, 2014). The NCE scoring system follows the National Percentile (NP) score when reviewing achievement test reports (Whitford et al., 2018). NCE scores have a preset mean of 50 and a standard deviation of 21.05 (Ebert & Scott, 2014).

We obtained the DV scores from official school data from the Tennessee Department of Education (2016b). NCE scores are deemed reliable and based on an equal-interval scale, meaning the difference between any two successive scores on the scale has the same meaning throughout the scale (U.S. Department of Education, 2013). The NCE scores are valid ways to measure student's performance with the performance of other children in the same age or grade (U.S. Department of Education, 2015). Finally, NCE scores are norm-referenced test scores that compare student performance nationally or locally (Ebert & Scott, 2014).

RESULTS

Analysis of the descriptive statistics is presented in Tables 1 and 2. After conducting a frequency analysis of the total population of schools that changed to 100% FRL (N = 575), one school provided no NCE reading scores; therefore, this school was removed, which resulted in N = 574.

As presented in Table 1, an ANOVA, Q1Q2Q3 split divided the range of NCE gain scores. This process enabled us to examine which schools benefited the most from the FRL policy change. This split was conducted to assess whether the means of the DV were statistically and significantly different among the groups based on the indication of FRL/SES linked to the different groups. We conducted this split to see if this change in policy impacted NCE 3rd grade reading scores based on FRL Free and reduced lunch as an indicator of SES.

Statistical Assumptions

The three assumptions for one-way ANOVA (i.e., independence, normality, and homoscedasticity [homogeneity of variance] were met in this study. The observation (i.e., independence) was the first assumption addressed; this was achieved by purposively sampling selected schools that met the CEP criteria and implemented the policy change

to universal free lunch. The ANOVA was used to assess whether an unequal number of participants in each group (i.e., the means of the DV of NCE gain scores 2014 minus 2013) were significantly different among the groups.

The second assumption addressed was normality. The assumption of normality is based on the F-statistic, where the DV is usually distributed equal in each group (Field et al., 2017). This assumption was met in that the DV had a normal distribution in each group. According to Field et al. (2017), homogeneity of variance assumes that all observations came from the same underlying group with the same degree of variability (see Table 2). To address this third assumption, we used the Levene's to test of the quality of variances, $F(2, 571) = .835$, $p = .434$. There were no significant violations in the assumptions of independence, normality, or homoscedasticity.

Table 2 shows the mean scores of the three groups. NCE gain scores ranged from a mean of .17 to .41. More specifically, Q1 had a mean gain of .41, Q2 had a mean gain of .16, and Q3 had a mean gain of .17.

Hypothesis Testing

We tested the hypothesis for the research question utilizing a one-way ANOVA to examine whether there was a statistically significant difference between the third grade NCE reading gain scores of 2014 (i.e., the year schools implemented the policy change of 100% FRL) minus the 2013 scores (i.e., the year before they implemented the policy change). Table 3 presents a summary of the between groups and within groups. The value of the F ratio is

$(2, 571) = 1.356$, $p = .259$ (which is greater than .05 alpha level); therefore, a post hoc test was not warranted. See Table 4 for a complete summary of the between groups and within groups. Since the p value is greater than 0.05, there were no statistically significant differences between group means as determined by the one-way ANOVA, therefore, we accepted the null hypothesis that there are no differences in NCE third grade reading scores based on the policy change in 2014. In other words, this policy change did not impact third grade NCE reading scores from 2013 to 2014 regardless of the level of FRL prior to the policy change.

DISCUSSION

The purpose of this quantitative, one-way, ANOVA, Q1Q2Q3 split study was to examine whether there was a statistically significant difference between the third grade NCE reading scores in Tennessee schools after a policy change to 100% FRL. The use of a Q1Q2Q3 split enabled us to examine which schools benefited the most from this policy change, and splitting FRL into quartiles before policy change allowed us to see if this policy benefited students in schools with lower, middle, and higher percentages of FRL, which is an indicator of SES. First, we examined if the dependent variable of NCE reading scores was equal between groups and within groups. The findings revealed the schools with lower FRL had the highest gains in 2014 regarding third grade NSE reading scores. The schools with middle and high FRL percentages gained very little in NCE reading scores in 2014. Schools with the lower FRL, or more affluent schools, did gain from this policy change, although not statistically significant.

The CEP allows local educational agencies (LEAs) and schools that meet the program's requirement to offer free meals to all children (USDA, 2015). Under the CEP, eligible districts and schools provide meal services to all students regardless of economic status (USDA, 2014). The eligibility criterion to qualify is based on the CEP meal program that allows eligible districts and schools with high percentages of students living in poverty to receive meals at no charge (Tennessee Department of Education, 2016a). Conversely, our results suggest that the schools with the lower FRL percentage (i.e., more affluent schools) had the highest gains in NCE reading scores in 2014 based on the indication of SES linked to the different and extreme groups. The middle and high FRL schools gained very little.

According to Kieffer and Lesaux (2012), understanding children's SES and reading comprehension is critical as low SES yields a higher risk for reading difficulties. The high FRL schools were already receiving a higher FRL due to having the highest need and lowest SES. According to Brown and Bilski (2017), school lunch is the only nutritious meal many students eat all day; however, eating FRL has a stigma, and despite the need, 1 in 3 eligible students skipped lunch to avoid the shame . Children who qualify for FRL at the lower FRL or more affluent schools may have wanted to eat lunch but did not do so because of the label and stigma (see Brown & Bilski, 2017). The findings of this study suggest that changing the FRL policy to 100% did not increase NCE reading scores among third grade children.

The impact of No Child Left Behind (NCLB) and the Reading First Initiative over the past three decades of the nation's children's failure to read proficiently has been consistent and ongoing (U.S. Department of Education, 2015). There continues to be many contradictory views on the effectiveness and strategies that best meet the needs of improving reading proficiency among young children, with several studies on nutrition, education, and SES. According to Phelan et al. (2010), general knowledge includes literacy about the health gained through access to doctors, medical resources, the ability to read and understand medical information in the healthcare marketplace. The relationship between money and health is linear with a positive slope: The more money a person has, the better their health is, with some exceptions (Benezal et al., 2014; Goldberg, 2014).

Başkale and Bahar (2011) explored several reasons children's diets may be inadequate, such as low levels of education of mothers, low SES, and insufficient family knowledge about nutrition, which may interfere with a child's growth and development. Mensah and Kiernan (2011) conducted a study on general maternal health and cognitive development and behavior in children through the early years. The authors found a relationship between general maternal general health and children's learning and cognitive development. Conversely, the results of our

study suggest that schools who provide lunch through the Community Eligibility Provision Act had a higher percentage of students on FRL before the policy change and showed no statistically significant difference in reading gains after the policy change to 100% FRL This finding can be explained by the fact that high FRL schools were already receiving close to 100% FRL. Hence, they had less to gain from the policy change even though such schools were the reason for the policy change. Conversely, schools with the lowest FRL percentages gained because they had more opportunities for growth or progress in reading scores, even though the policy change was not created for such schools. In other words, the policy change was designed to benefit high poverty schools but because they were already close to 100% FRL the policy change was not as beneficial to such schools as originally hypothesized.

Limitations

There are three noteworthy limitations regarding this study. First, the utilized secondary data was only available at the school level and not at the individual student level. Inclusion of additional variables such as zip codes, specific age, SES of individual respondents who are now receiving FRL because of the policy change, and such students' NCE reading scores before and after the policy change may better offer more insight of FRL and NCE reading scores. Second, the data also was limited to third grade students at one given school year. That is, we did not track and compare the same students from 2013 and 2014. Rather, we compared two but different third grade reading classes from two different years (before and after policy change). Third, this study was delimited to schools in the state of Tennessee.

Future Research

Given the findings from this study, there are several avenues of future research. Additional statistical tests are needed to examine the difference of universal FRL and the impact on NCE third grade reading scores across more than one year of data. Perhaps examining the impact of this universal FRL program from 2015 to 2021 would provide insight regarding the longitudinal effectiveness vs. the short-term effectiveness of this program that we examined. Moreover, additional statistical tests to examine other variables such as demographics of race, age, gender, limited English Proficient, and students with disabilities to study the difference of universal FRL and the impact on NCE third grade reading scores. A mixed-methods design study may help identify the use of theoretical lenses related to gender, race/ethnicity, and class. In addition, a qualitative exploratory case study design with a small group of students conducting structured interviews for data collection and questionnaires could potentially better understand schools, which benefitted more, such as more affluent schools.

CONCLUSION

The process of reading proficiency is one of the necessary fundamental skills that enhance academic success in schools (Capellini et al., 2015). In the United States, having the ability to read is closely connected to how much a person can achieve in their personal and professional lives (Fives et al., 2014). The findings of our study yielded no statistically significant differences between third grade NCE reading gain scores in schools that changed to 100% FRL after the policy change. Based on the finding of our study, we would suggest that USDA, policymakers, and educational institutions consider the process through more thoroughly when establishing policies and procedures related to students from low SES backgrounds. The policy did not benefit low SES schools, which it was intended to do. In hindsight, the policy really could not have benefited high poverty schools as they were already close to 100% FRL. Utilizing the information from this study may afford educational institutions, policymakers, and community partners the opportunity to make data driven to address the problem of poor reading skills among third grade students.

makes it difficult for teachers to provide the understanding and support likely needed for these students. Day et al., (2012) found that foster youth want teachers to be aware of their personal challenges and available for assistance and support. Given the evidence that shows foster children and youth benefit from the involvement of key adults (Leve et al., 2012), supporting educators in their interactions with foster youth is critical.

Youth reported two critical factors related to their participation and progress in school—self-motivation and a relationship with a caring adult. Several youth described taking responsibility for their education as part of their self-determination for a better life. In addition, having one caring adult, whomever that may be, was a repeated theme and highlights the role that teachers and other school staff can have in supporting foster youth's educational and social well-being. In a study of former foster youth who achieved academic success and were attending a four-year university, the most frequently cited role models were teachers (Merdinger et al., 2005).

This recurring theme in the foregoing study—the importance of the presence of one caring adult in the lives of at-risk youth—is strongly represented in the resiliency literature (cf Werner & Smith, 1992; Winfield, 1994; Wolin & Wolin, 1993), and bears repeated emphasis. There is a certain poignancy in the notion that the difference between success and failure may rest on such a strong, but slender thread, and it underscores the tremendous potential contribution of the singular actor—be it a teacher, child welfare social worker, or paraprofessional—to the success of these youth.

REFERENCES

Alharbi, M. A. (2015). Reading strategies, learning styles and reading comprehension: A correlation study. Journal of Language Teaching and Research, 6, 1257-1268. http://dx.doi.org/10.17507/jltr.0606.13

Amendum, S. J., & Fitzgerald, J. (2013). Does structure of content delivery or degree of professional development

support matter for student reading growth in high-poverty settings? Journal of Literacy Research, 45, 465-502. http://dx.doi.org/10.1177/1086296X13504157
Başkale, H., & Bahar, Z. (2011). Outcomes of nutrition knowledge and healthy food choices in 5- to 6-year-old children who received a nutrition intervention based on Piaget's theory. Journal for Specialists in Pediatric Nursing, 16(4), 263-279. http://dx.doi.org/10.1111/j.1744-6155.2011.00300.x
Benzeval, M., Bond, L., Campbell, M., Egan, M., Lorenc, T., Petticrew, M. & Popham, F. (2014). How does money influence health? Project Report. Joseph Rowntree Foundation. https://www.jrf.org.uk/report/how-does-money-influence-health
Bhattacharya, A. (2015). The influence of poverty on individual differences in reading. In P. Afflerbach (Ed.), Handbook of individual differences in reading: Reader, text, and context (pp. 305-317). Routledge.
Brown, A., & Bilski, J. (2017). Fighting the stigma of free lunch: Why universal free school lunch is good for students, schools, and families. Ford Foundation Center for Justice. www.fordfoundation.org-the-ford-foundation-center-for-social-justice.
Campbell, D. T., & Stanley, J. C. (1963). Experimental and quasi-experimental designs for research on teaching. In N. L. Gage (Ed.), Handbook of research on teaching (pp. 13-14). Rand McNally.
Capellini, S. A., Pinto, C. D. A. R., & Cunha, V. L. O. (2015). Reading comprehension intervention program for teachers from 3rd grade' students. Procedia-Social and Behavioral Sciences, 174, 1339-1345. http://dx.doi.org/10.1016/j.sbspro.2015.01.756
Ebert, K. D., & Scott, C. M. (2014). Relationships between narrative language samples and norm-referenced test scores in language assessments of school-age children. Language, Speech, and Hearing Services in Schools, 45(4), 337-350. http://dx.doi.org/10.1044/2014_LSHSS-14-0034
Field, A., Miles, J., & Field, Z. (2017). Discovering statistics using r. Sage.
Fives, A., Russell, D., Kearns, N., Lyons, R., Eaton, P., Canavan, J., & O'Brien, A. (2014). The association between academic self-beliefs and reading achievement among children at risk of reading failure. Journal of Research in Reading, 37(2), 215-232. http://dx.doi.org/10.1111/1467-9817.12025
Goldberg, D. S. (2014). The implications of fundamental cause theory for priority setting. American Journal of Public Health, 104(10), 1839-1843. http://dx.doi.org/10.2105/AJPH.2014.302058
Hair, N. L., Hanson, J. L., Wolfe, B. L., & Pollak, S. D. (2015). Association of child poverty, brain development, and academic achievement. JAMA Pediatrics, 169(9), 822–829. http://dx.doi.org/10.1001/jamapediatrics.2015.1475
Huang, E. B., & Youngmi, K. (2015). Children receiving free or reduced-price school lunch have higher food insufficiency rates in summer. The Journal of Nutrition, 145(9), 2161-2168. http://dx.doi.org/10.3945/jn.115.214486
Kieffer, M. J., & Lesaux, N. K. (2012). Knowledge of words, knowledge about words: Dimensions of vocabulary in first and second language learners in sixth grade. Reading and Writing, 25(2), 347-373. http://dx.doi.org/10.1007/s11145-010-9272-9
Kirkham, S., & Lampley, J. H. (2014). Predicting performance on the Tennessee Comprehensive Assessment for third grade reading students using reading curriculum based measures. SRATE Journal, 24(1), 38-46. https://files.eric.ed.gov/fulltext/EJ1057199.pdf
Mensah, F. K., & Kiernan, K. E. (2011). Maternal general health and children's cognitive development and behaviour in the early years: Findings from the Millennium Cohort Study. Child: Care, Health and Development, 37(1), 44-54. http://dx.doi.org/10.1111/j.1365-2214.2010.01150.x
Phelan, J. C., & Link, B. G., (1995). Social conditions as fundamental causes of disease. Journal of Health and Social Behavior, 80-94. https://doi.org/10.2307/2626958
Phelan, J. C., & Link, B. G. (2005). Controlling disease and creating disparities: A fundamental cause perspective. The Journals of Gerontology, 60B, 27–33. http://dx.doi.org/10.1093/geronb/60.Special_Issue_2.S27
Phelan, J. C., & Link, B. G. (2013). Fundamental cause theory. In W. C. Cockerham (Eds.), Medical sociology on the move (pp. 105-125). Springer. http://dx.doi.org/10.1007/978-94-007-6193-3_6
Phelan, J. C., Link, B. G., & Tehranifar, P. (2010). Social conditions as fundamental causes of health inequalities: Theory, evidence, and policy implications. Journal of Health and Social Behavior, 51(1), S28–S40. http://dx.doi.org/10.1177/0022146510383498
Phelan, J. C., Link, B. G., Diez-Roux, A., Kawachi, I., & Levin, B. (2004).
Fundamental causes of social inequalities in mortality: A test of the theory. Journal of Health and Social Behavior, 45, 265–285. http://dx.doi.org/10.1177/0022146510383498
Rasberry, C. N., Slade, S., Lohrmann, D. K., & Valois, R. F. (2015). Lessons learned from the whole child and coordinated school health approaches. Journal of School Health, 85(11), 759-765. http://dx.doi.org/10.1111/josh.12307
Spencer, M., Wagner, R. K., & Petscher, Y. (2019). The reading comprehension and vocabulary knowledge of children with poor reading comprehension despite adequate decoding: Evidence from a regression-based matching approach. Journal of Educational Psychology, 111(1), 1-14. http://dx.doi.org/10.1037/edu0000274
Tennessee Department of Education. (2016a). Community eligibility provision. Nashville, TN. http://www.tn.gov/education/article/community-eligibility-provision-cep
Tennessee Department of Education. (2016b). Report card on Tennessee schools. Nashville, TN. http://www.tn.gov/education/reportcard
U.S. Department of Agriculture, Food and Nutrition Services. (2014). National School Lunch Program: History. https://www.fns.usda.gov/nslp/history
U.S. Department of Agriculture, Food and Nutrition Services. (2015). National School Lunch Program: Annual summary. https://www.fns.usda.gov/sites/default/files/pd36slmonthly.pdf
U.S. Department of Commerce. (2014). Income and poverty in the United States: 2014. https://www.census.gov/content/dam/census/library/publications/2015/.../p60-252.
U.S. Department of Commerce. (2018). Bureau of the Census 2018.
https://www.commerence.gov
U.S. Department of Education. (2013). The condition

of education. Institute of Education Science: National Center for Education Statistics. https://www2.ed.gov/rschstat/landing.jhtml?src=pn
U.S. Department of Education. (2015). Analysis of scale, proficiency level, or other test scores. Institute of Education Science: National Center for Education Statistics. https://www2.ed.gov/rschstat/landing.jhtml?src=pn
Whitford, D. K., Zhang, D., & Katsiyannis, A. (2018). Traditional vs. alternative teacher preparation programs: A meta-analysis. Journal of Child and Family Studies, 27(3), 671- 685. http://dx.doi.org/10.1007/s10826-017-0932-0
Yildiz, M., & Çetinkaya, E. (2017). The relationship between good readers' attention, reading fluency and reading comprehension. Universal Journal of Educational Research, 5(3), 366-371.

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Table 1

Descriptive Statistics for NCE Gain Scores (2014 - 2013)

Quartile	*N*	*M*	*SD*	*SE*	95% CI for Mean			
					LB	UB	Min	Max
Q1.00	143	.41	1.558	.130	.15	.66	-4	11
Q2.00	287	.16	1.439	.085	-.01	.32	-5	4
Q3.00	144	.17	1.686	.141	-.01	.45	-6	5
Total	574	.22	1.535	.064	-.10	.35	-6	11

Note 1. 2014 reading 3-year average NCE scores. *M* = mean; *SD* = standard deviation; *SE* = standard error; LB = lower bound; UB = upper bound; Min = minimum; Max = maximum. Q3Q1 split represents the means at three levels. Q1 is the lowest half of the data at 25th percentile. Q2 is in-between or middle at 50th percentile of the data, and Q3 is the highest 75th percentile of the data.

Table 2

Test for Homogeneity of Variance

NCE gain scores 2014 - 2013	Levene Statistic	*df1*	*df2*	Sig.
Based on mean	1.028	2	571	.358
Based on median	.835	2	571	.434
Based on median with adjusted *df*	.835	2	546.641	.434
Based on trimmed mean	1.140	2	571	.321

Note. Levene's test tests the null hypothesis that the error variance

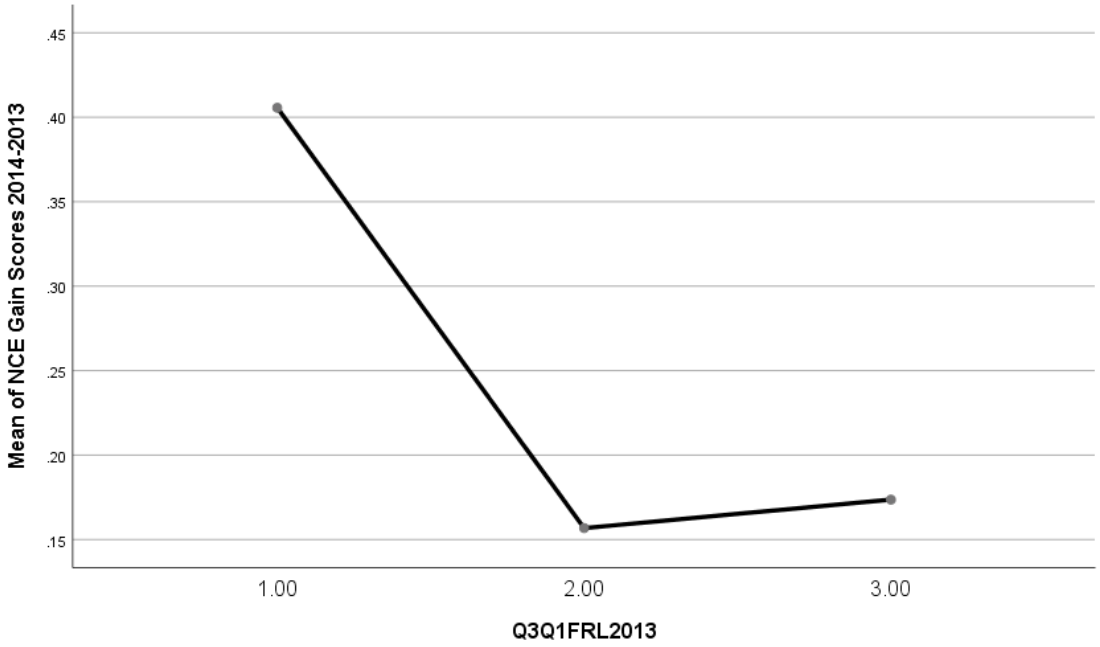
Table 3

Results of ANOVA Examining NCE Grain Scores (2014-2013)

	Sum of squares	*df*	Mean Square	*F*	Sig.
Between groups	6.377	2	3.188	1.356	.259
Within groups	1343.079	571	2.352		
Total	1349.456	573			

Figure 1

Means Plot by Year



Note. This Figure 1 shows that the IV FRL Q3Q1 levels are the differential means of NCE gain scores from 2013–2014. The Q3Q1 split shows the means of the DV. There were no significant differences among the Q3Q1 split levels: Q1 ($\bar{x}\bar{x}$ =.41) is to the left of the means, Q2 ($\bar{x}\bar{x}$ =.16) is in-between the means, and Q3 ($\bar{x}\bar{x}$ =.17) is higher and right of the means, so there seems to be some practical differences between the groups.