Abstract Title Page
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Title: Does Teach For America Have Long-Term Impacts?

Authors and Affiliations:

Emily K. Penner
School of Education
University of California, Irvine
emily.penner@uci.edu

Abstract Body

Limit 4 pages single-spaced.

Background / Context:

"What the growing number of successful teachers, school leaders, and system leaders reveals is that we can provide children facing all the challenges of poverty with an educational experience that places them on a level playing field with children in higher-income communities. The solution isn't to 'fix' teaching…Instead we must redefine our educational mission as working with students and families to ensure learning and achievement at levels that change children's academic and life trajectories," (Kopp & Farr, 2011, p. 10).

Children enter school with vastly different skill levels and formal schooling often magnifies these disparities over time (Entwisle & Alexander, 1988, 2002; Lee & Burkam, 2002). Widening achievement gaps between high- and low-income children have grown substantially in the last 50 years (Reardon, 2011). Further, the opportunity gap facing most low-income students contributes to a host of academic and social challenges including: lower performance in math and reading, increased truancy and incarceration, less higher-level course taking, and lower graduation and college entrance rates than their higher-income peers, and these disparities are not new (Bailey & Dynarski, 2011; Coleman et al., 1966; Morgan, Farkas, & Hibel, 2008; Reardon, 2011).

Teach For America (TFA) was founded with the purpose of addressing these educational inequities. Early on in its existence, TFA became focused on "closing the achievement gap" for students in the schools it serves, and put a large stake in promoting, "significant gains," (defined as 1.5 to 2 grade levels of improvement in core subject areas) for its students (Teach For America, 2013). For many of the students it serves, this target aimed to get students caught up to grade level standards. The research on TFA's short term impacts is mixed (see e.g. Darling-Hammond, Brewer, Gatlin, & Vasquez Heilig, 2005), although experimental and quasi-experimental evidence finds that TFA teachers are more effective than non-TFA teachers in many settings, particularly in high school math and science, and elementary math (Clark et al. 2013; Glazerman, Mayer, & Decker, 2006; Xu, Hannaway, & Taylor, 2011).

More recently, TFA changed its goals from focusing on short-term gains to "altering students' educational trajectories" (Farr, 2010). Despite the organizational interest in impacting long-term outcomes, existing research examining TFA has only examined same-year impacts on student test scores.

Several other educational interventions have had long-term impacts on student achievement and attainment. Interventions like Abecedarian, Perry Preschool, Project STAR, and Harlem Children's Zone have all demonstrated that it is possible to change students' long-term outcomes (Chetty, Friedman, Hilger, et al., 2011; Currie & Almond, 2011; Dobbie & Fryer Jr, 2013; Duncan & Magnuson, 2011; Finn, Gerber, & Boyd-Zaharias, 2005). Likewise, studies of teachers suggest that they can have long-term impacts on students; Hamre and Pianta (2001) show that positive student-teacher relationships can positively impact student achievement in later grades, and Chetty, Friedman, and Rockoff (2011) find that high value-added teachers can increase college attendance and salaries in adulthood. This evidence raises the possibility that, if effective, TFA teachers may also contribute to lasting changes in student achievement and attainment.

Purpose / Objective / Research Question / Focus of Study:
Description of the focus of the research.

This study extends existing research on short-term TFA impacts to examine whether TFA has any relationship with students' long-term academic outcomes. Specifically, I examine whether having a TFA teacher in elementary, middle, or high school is associated with improved student educational outcomes at the end of high school.

Setting:
Description of the research location.

I examine the relationship between TFA and long-term student attainment using administrative data from the state of North Carolina. TFA places teachers in two regions in North Carolina. Eastern North Carolina, which encompasses rural and urban areas, opened in 1990 and was one of TFA's charter locations. Charlotte, which is a primarily urban region, has had corps members since 2004 (teachforamerica.org, 2013).

Population / Participants / Subjects:
Description of the participants in the study: who, how many, key features, or characteristics.

Analyses for this study concentrate on the students in grades 3-12 and their teachers. Because no standardized testing occurs in North Carolina before grade 3, it is not possible to match students to teachers in earlier grades.

Intervention / Program / Practice:
Description of the intervention, program, or practice, including details of administration and duration.

The intervention is whether or not a student had a TFA teacher in elementary, middle, or high school.

Research Design:
Description of the research design.

I examine the relationship between having a TFA teacher and end of high school attainment by comparing students who had TFA teachers with students who had the possibility of being in a TFA teacher's classroom but were not. To do so, I compare students within schools, grades, and years that have TFA teachers using fixed effects. In the absence of random assignment, I am unable to make causal conclusions. Instead, I describe the association between having a TFA teacher and long-term student outcomes. However, through the use of fixed effects for school, grade, and year combinations, I am able to remove several forms of bias from my analyses. These fixed effects remove bias due to sorting of students into schools by comparing students within the same school. They also eliminate bias due to secular trends across years, including differences in reasons for having a TFA teacher one year and not the next, and due to differences across grades that might yield differences in achievement, such as the difficulty of the material.

Data Collection and Analysis:
Description of the methods for collecting and analyzing data.

Administrative data from North Carolina were provided by the North Carolina Education Research Data Center (NCERDC) at Duke University, which include assessment and end of high school attainment records for students matched to test administrators. These matched records are available for all students in North Carolina in grades K through 12 for twelve cohorts of students from the years 1999/2000 through 2010/2011. In a given school year, approximately 100,000 teachers educate roughly 1.4 million students in grades K-12 (ncpublicschools.org/fbs/accounting/data/, 2013). All North Carolina TFA teachers, referred to by TFA as corps members, were identified with the assistance of the External Research Partnerships Team at TFA. 1,502 unique individuals were identified by TFA as being assigned to two NC regions. I focus particularly on students that had the possibility to have a TFA teacher. In other words, they were in schools, grades, and years in grades 3-8 in which there was at least one TFA teacher, or in grades 9-12, they were in schools, subjects, and years in which there was at least one TFA teacher. A comparison of these students relative to students in non-TFA schools and Local Education Areas (LEAs) is shown in Tables 1 and 2. They are considerably

These data are well suited to the examination of the effectiveness of TFA versus non-TFA teachers. In addition to the prior studies that directly compare TFA teachers to non-TFA teachers (Henry et al., 2010; Xu et al., 2011), these data have also been used for numerous studies examining teacher quality (Clotfelter, Ladd, Vigdor, & Wheeler, 2006), the feasibility and stability of teacher value-added models (Clotfelter, Ladd, & Vigdor, 2007, 2010; Goldhaber & Hansen, 2010; Rothstein, 2009, 2010), and teacher persistence and turnover (Goldhaber, Gross, & Player, 2011).

I examine two end-of-high school outcomes, dropping out and graduation, using the following model:

$$A_i = \gamma_o + \gamma_1 S_i + \gamma_2 TFA_i + \pi_{sgy} + \varepsilon_i \quad (1)$$

The dependent variable, A_i, is either of the end-of-high school attainment variables for student i is a linear function of the student's test scores in either 3rd or 8th grade (for elementary/middle and high school models respectively), characteristics of the student *S*, and whether or not the student had a TFA teacher in that school level TFA_i. Student characteristics include gender, race/ethnicity, age, and parent's highest education level. In addition, the model includes fixed effects for school-grade-year combinations (for elementary and middle school models) and school-subject-year (for high school models), π_{sgy}, and restricts the analysis sample to only school-grade-year or school-subject-year combinations in which there was at least one TFA and one non-TFA teacher. This grouping makes comparisons within school-grade-year and school-subject year units. Although the outcomes of interest are dichotomous, fixed effects logistic regression models did not converge in all cases and thus I present results from OLS fixed effects models. In the case where they did converge, results from OLS and logistic regression models were substantively similar.

Findings / Results:
Description of the main findings with specific details.

Results, shown in Tables 3 and 4, suggest different patterns for students who have TFA teachers in grades 3-8 versus 9-12. Among students who ever have a TFA teacher in high school, there is a negative association with dropping out, a decline of 0.012 standard deviations. There is also a positive association of having a TFA teacher and graduating high school, an increase of 0.034 standard deviations, compared with students who were in the same schools, grades, and subjects, but did not have a TFA teacher. In contrast, in elementary and middle school, there is no evidence of a relationship between having a TFA teacher and long term outcomes.

Conclusions:

Description of conclusions, recommendations, and limitations based on findings.

TFA is an influential educational organization that makes substantial claims about its ability to ameliorate educational inequalities, with new claims about its ability to alter educational and life trajectories. This paper is the first to test whether its teachers measure up to this claim. Although test score gains fade out after one year, my high school results suggest that TFA does have a relationship with longer-term student outcomes and does appear to positively impact high school completion and graduation. In contrast, the elementary and middle school results suggest little evidence that having TFA teachers at these earlier stages changes long-term outcomes in any way. Despite the ambitions of TFA organizational leaders, the observed associations are relatively small and do not yet level the playing field with students in more affluent communities. Thus, to the degree that TFA aims to impact students' lives in the longer-term by increasing high school achievement and attainment, these goals might be best attained by placing corps members in high school.

Appendices

Not included in page count.

Appendix A. References

References are to be in APA version 6 format.

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Table 1. Demographic Characteristics across Comparison Samples, Grades 3-8

	TFA Students	Non-TFA, Same School-Grade-Year	Non-TFA, Same School, Different Grade/ Year	Non-TFA, Same LEA, Different School	Non-TFA, Different LEA	Total
Corps Region						
Charlotte	46.1	--	--	--	--	--
Eastern North Carolina	53.9	--	--	--	--	--
Total	100.0	--	--	--	--	--
Student Gender						
Male	50.1	50.7	51.0	50.8	51.0	50.9
Female	49.6	48.1	48.9	49.0	48.9	48.9
Missing Gender	0.3	1.2	0.1	0.3	0.1	0.2
Total	100	100	100	100	100	100
Parent Education Level						
High school or less	36.6	23.4	40.2	27.5	36.2	33.5
Some college/trade school	13.2	11.1	22.5	20.7	20.1	20.3
College degree or higher	4.8	2.4	7.7	11.8	7.4	8.8
Missing Parent Ed.	45.4	63.0	29.7	39.9	36.2	37.4
Total	100	100	100	100	100	100
Student Ethinicity						
White	17.2	18.5	26.9	51.8	61.7	55.7
Black	62.4	52.4	52.1	28.7	23.5	27.4
Hispanic	13.1	15.2	12.8	9.3	8.1	8.8
Asian	2.5	2.9	3.2	3.0	1.7	2.2
American Indian	0.6	0.6	0.5	0.6	1.9	1.4
Other ethnicity	2.4	2.4	2.0	2.9	2.9	2.8
Ethnicity missing	1.8	8.0	2.4	3.8	0.2	1.6
Total	100	100	100	100	100	100
Sample	3,062	11,835	178,427	730,541	1,519,093	2,442,958

Administrative data from North Carolina provided by the NCERDC

Table 2. Demographic Characteristics across Comparison Samples, Grades 9-12

	TFA Students	Non-TFA, Same School-Subject-Year	Same School, Different Subject/ Year	Non-TFA, Same LEA, Different School	Non-TFA, Different LEA	Total
Corps Region						
Charlotte	39.8	--	--	--	--	--
Eastern North Carolina	60.2	--	--	--	--	--
Total	100.0	--	--	--	--	--
Student Gender						
Male	48.3	51.1	49.5	50	50	49.9
Female	51.3	48.4	50.3	49.8	49.9	49.9
Missing Gender	0.5	0.4	0.2	0.3	0.1	0.2
Total	100	100	100	100	100	100
Parent Education Level						
High school or less	20.3	15.1	20.3	13.6	22.5	20.4
Some college/trade school	16	11	20.5	16.3	22.4	20.8
College degree or higher	11.2	8.8	26.9	32.4	21.1	23.7
Missing Parent Ed.	52.5	65.1	32.3	37.6	34	35.1
Total	100	100	100	100	100	100
Student Ethinicity						
White	15.8	20.2	30.0	53.2	62.6	57.0
Black	58.7	54.1	50.9	28.5	23.5	27.3
Hispanic	12.8	12.2	11.1	8.4	7.3	7.9
Asian	1.9	2.8	3.1	2.6	1.6	2.0
American Indian	0.6	0.5	0.4	0.6	2.1	1.5
Other ethnicity	2.1	2.0	2.0	2.8	2.8	2.7
Ethnicity missing	8.2	8.3	2.5	3.9	0.2	1.6
Total	100	100	100	100	100	100
Sample	8,560	9,615	122,844	276,178	980,298	1,407,983

Administrative data from North Carolina provided by the NCERDC

Table 3. Impact of ever having a TFA teacher in grades 3-8 on long term outcomes with School-Subject-Year Fixed Effects

	Dropout	Graduated
Ever had a TFA teacher in grades 3-8	0.003	0.001
	(0.002)	(0.002)
3rd grade math score	-0.010***	0.009***
	(0.002)	(0.002)
3rd grade reading score	-0.011***	0.010***
	(0.002)	(0.002)
Missing 3rd grade math score	-0.033*	0.010
	(0.015)	(0.012)
Missing 3rd grade reading score	0.034*	-0.039**
	(0.015)	(0.012)
Black	0.006	0.012***
	(0.003)	(0.003)
Hispanic	0.007	-0.006
	(0.004)	(0.004)
Asian	-0.012**	0.022***
	(0.004)	(0.006)
American Indian	0.005	0.017
	(0.010)	(0.010)
Other ethnicity	0.006	0.001
	(0.005)	(0.004)
Ethnicity missing	0.009*	-0.006
	(0.004)	(0.004)
Female	-0.022***	0.017***
	(0.002)	(0.002)
sex2 is missing	-0.010	0.014
	(0.025)	(0.031)
Sex is missing	-0.099***	0.060***
	(0.008)	(0.009)
Parent attended some college or trade school	-0.134***	0.109***
	(0.007)	(0.016)
Parent attended 4-year college or more	0.024	-0.072**
	(0.034)	(0.027)
Parent education missing	0.062*	0.142***
	(0.024)	(0.019)
R-squared	0.021	0.019
Observations	94599	94599

Standard errors in parentheses; * p<0.05, ** p<0.01, ***p<0.001

Omitted categories are: student ethnicity is white, student sex is male, parent education level is high school or less

Table 4. Impact of ever having a TFA teacher in grades 9-12 on long term outcomes with School-Subject-Year Fixed Effects

	Dropout	Graduated
Ever had a TFA teacher in high school	**-0.012*** **	**0.034*** **
	(0.002)	(0.003)
8th grade math score	-0.032***	0.032***
	(0.002)	(0.002)
8th grade reading score	-0.015***	0.015***
	(0.002)	(0.002)
Missing 8th grade math score	0.003	-0.004
	(0.016)	(0.021)
Missing 8th grade reading score	0.024	-0.051**
	(0.013)	(0.018)
Black	-0.020***	0.022***
	(0.003)	(0.004)
Hispanic	-0.004	-0.007
	(0.005)	(0.007)
Asian	-0.007	0.013
	(0.008)	(0.011)
American Indian	0.012	-0.031
	(0.012)	(0.016)
Other ethnicity	0.015	-0.045***
	(0.009)	(0.012)
Ethnicity missing	-0.002	-0.006
	(0.009)	(0.013)
Female	-0.018***	0.023***
	(0.002)	(0.003)
Sex is missing	0.008	-0.068**
	(0.018)	(0.025)
Parent attended some college or trade school	-0.015***	0.011*
	(0.004)	(0.005)
Parent attended 4-year college or more	-0.019***	0.027***
	(0.004)	(0.006)
Parent education missing	0.043***	-0.069***
	(0.007)	(0.010)
Constant	0.056***	0.320***
	(0.006)	(0.008)
R-squared	0.025	0.017
Observations	56677	56677

Standard errors in parentheses; * p<0.05, ** p<0.01, ***p<0.001

Omitted categories are: student ethnicity is white, student sex is male, parent education level is high school or less