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Growing Pains: The Effect of Common Core State Standards on Perceived Teacher Effectiveness

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Teachers' Beliefs about Rigor of Curriculum for English Language Learners

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Abstract

Survey research tested the hypothesis that teachers support less rigorous curriculum for English language learners (ELLs) than for general-education (GE) students. Participating teachers (n = 205) worked in urban schools with large populations of ELLs whose home language is Spanish. Eighty-seven were randomly assigned to respond about ELLs and 118 about GE students. Teachers rated descriptions of instructional activities that differed in demand for critical thinking (CT), a proxy for rigor of curriculum. In within-subjects analyses, teachers asked about ELLs rated low-CT activities over high-CT ones, but teachers asked about GE students produced no difference. In between-subjects analyses, teachers asked about ELLs rated high-CT activities lower than did teachers asked about GEs, but these teacher groups did not differ in ratings of low-CT activities. No effects were associated with teachers' gender, ethnicity, age, educational attainment, teaching experience, or administrative experience, or if they held ESL or bilingual certification. Teachers favored less rigorous curriculum for ELL students, especially concerning high-CT activities. Beliefs as such would likely contribute to achievement gaps between ELLs and GE students.

Achievement gaps have been nothing if not persistent. Research shows that some groups are consistently outpaced by others, despite extensive efforts to ameliorate the problem (D'Amico, 2001; Lee, 2002; Murphy, 2014; Olsen, 1996). The underperformers include the fastest-growing school population in the United States, English language learners (ELLs) (Abedi & Gándara, 2006; Abedi, Hofstetter, & Lord, 2004). This population has lagged general education (GE) students in a large corpus of studies of academic performance, regardless of subject tested, grade level, or geographical area (e.g., Echevarria, Short, & Powers, 2010).

Accordingly, a large body of literature examines the possible causes of achievement gaps among ELLs. Possible causes include lack of teacher preparation in multiculturalism, language acquisition, and ELL instructional strategies; poor support systems for families transitioning to a new environment and culture; lack of access to preschool; parenting styles inconsistent with academic achievement; absenteeism; class size; and a great many others (e.g., Callahan, 2005; Good, Masewicz & Vogel, 2010; Rumberger & Gándara, 2004). One noteworthy suggestion concerns the hypothesis that ELLs receive less rigorous curriculum, inhibiting their academic growth and driving down achievement results (Reeves, 2004; Thomas & Collier, 1997). Perhaps ELLs, their school days partly taken up learning English, are given content-area instruction that is simplified or impoverished. The question is raised, what might precipitate such a "rigor gap?" Learning standards such as the Common Core State Standards make no allowances for different language groups, states do not differentiate by language in accountability policies, and it's difficult to imagine a superintendent or principal advocating less rigorous instruction for any group.

It could be that the rigor gap is partly attributable to teachers' beliefs about what sorts of classroom activities are most effective for teaching ELLs. In essence, perhaps teachers believe

that less rigorous curriculum is what ELLs need, given their ongoing efforts to learn English. If so, they would support rigorous curriculum for ELLs at lower levels than they do for general-education students. This hypothesis is put to the test in the research reported in this article. In what follows we present a review of the related literature, followed by the methods, results and discussion of the research.

Literature Review

An enormous body of research documents the struggles of ELLs to match the academic achievements of GE students, and the struggles of schools to meet the needs of burgeoning ELL populations (e.g., Monroy Ochoa & Cadeiro-Kaplan, 2004; Vang, 2005; Young et al., 2012). The quality of instruction is what matters most in educating English learners, according to Calderon, Slavin, & Sanchez (2011). But issues concerning teachers' readiness for teaching ELLs have been widely noted (Calderon, Slavin, & Sanchez, 2011; DeJong & Harper, 2005; Reeves, 2010; Reyes & Vallone, 2008; Young, et al., 2012). For example, teachers' work with ELLs was found to suffer from poorly articulated ELL plans and lack of teacher preparation in multiculturalism, language acquisition, and ELL instructional strategies (Good, Masewicz, & Vogel, 2010). Similarly, a survey of subject-area high school teachers revealed misconceptions regarding how languages are learned (Reeves, 2010).

DeJong, Harper, and Coady (2013) suggest that teachers need more robust preparation in three areas: understanding ELLs from a bilingual and bicultural perspective; understanding how language and culture shape school experiences and inform pedagogy for bilingual learners; and ability to mediate a range of contextual factors in the schools and classrooms where they teach. Educators themselves appear to agree that education for ELLs is sometimes problematic; only

one-third of educators believe that schools are prepared to effectively teach ELLs (Heitin, Klein, Mitchell, & Sparks, 2017).

Findings as such raise the issue of the extent to which teachers' beliefs about learning and teaching play a role in the ELL achievement gap. Beliefs inconsistent with rigorous instruction have been noted; for example, studies have shown that teachers believe ELLs need to learn English before delving deeply into academic content, necessitating a "watered down" curriculum in the content areas until English proficiency is reached (Callahan, 2005; Sterling, 2014). Results as such have prompted the suggestion that ELLs would benefit from a more rigorous approach in the classroom (Harvey, 2015; Hill & Miller, 2008; Olsen, 1996, 2010; Reyes & Vallone, 2008; Taboada, 2014; Thomas & Collier, 1997).

Other evidence suggests, however, that simply training teachers in use of rigorous instructional methods with ELLs might not be sufficient. A study conducted in one of the largest school districts in California revealed that the district had the capacity and personnel to provide pedagogically sound programs for ELLs, but still lacked the consistency and academic rigor needed to provide equal educational access (Monroy Ochoa & Cadeiro-Kaplan, 2004). Evidence as such suggests that teachers' beliefs may work to inhibit rigorous instruction even when teachers have the wherewithal to provide such instruction. Is it possible that teachers believe that ELLs are not able to handle a rigorous academic environment?

No research directly answers this question, but there is considerable evidence that teachers believe less rigorous instruction is appropriate when students are seen as disadvantaged. Radenbush, Rowan, and Cheong (1993) reported that teachers were significantly less likely to focus on rigorous instruction requiring critical-thinking skills (a key element in rigorous instruction) in lower-track classes, particularly in math and science. Similar results were

obtained by Zohar and Dori (2003), who reported that almost half of sampled teachers judged critical-thinking activities to be inappropriate for low-achieving learners. A series of studies conducted by Torff and colleagues showed that teachers supported rigorous critical-thinking activities for high-advantage learners but a leaner curriculum for low-advantage ones (Torff, 2005, 2006, 2011, 2014; Torff & Sessions, 2006; Warburton & Torff, 2005). Underscoring the problematic nature of these results, supervisor-nominated expert teachers did not produce beliefs consistent with less rigorous instruction for disadvantaged students, but randomly selected teachers did (Torff, 2006). The pattern in the evidence is clear: when teachers perceive students to be disadvantaged, they support a curriculum in which academic rigor is reduced.

Problem Statement and Research Questions

The forgoing literature review indicates that ELLs likely receive less rigorous curriculum relative to GE students, and such a rigor gap may explain at least in part why ELLs typically lag GE students in academic achievement. And the review summarizes research not specifically targeting ELLs (but more generally about disadvantaged learners) suggesting that this rigor gap may stem from teachers' beliefs about appropriate instruction for these learners.

But it remains unclear the extent to which beliefs as such are implicated in the rigor gap concerning ELLs. Hence, research was conducted to pursue the following research questions. To what extent, and in what ways, do teachers differ in support for rigorous instruction for ELLs and GE students? To what extent is this support affected by teachers' age, gender, ethnicity, educational attainment, teaching experience, and certification in ESL and/or Bilingual Education? The research has promise to shed light on the role played by teachers' beliefs in observed differences between ELLs and GE students in academic performance.

Methods

Research design and participants. An experimental research design using survey methods was conducted in Spring 2017 (n = 205). Respondents were employed as full-time teachers at two schools in a large city in the northeastern United States. (See Table 1 and Table 2 for descriptive statistics). These schools enroll a large population of students whose home language is Spanish, the predominant non-English home language in the city, state, and nation. Approximately 65% of students at these schools are formally classified as ELLs by the state education department. Participating teachers completed a survey in which they rated the effectiveness of classroom activities that differ in academic rigor, high and low (Table 3). Respondents were randomly assigned to two groups: one asked to rate the activities for use with ELLs (n = 87), and the other asked to rate the activities for use with GE students (n = 118). Random assignment as such circumvents asking teachers to respond vis-à-vis both ELLs and GE students, minimizing response bias possibly caused by respondents making explicit comparisons of how these populations should be taught. A notation in bold type at the top of the survey form apprised teachers of their group assignment.

Variables and measures. Participating teachers completed a survey with two parts. The first part asked them to provide demographic information including age, gender, ethnicity, educational attainment, years of full-time teaching completed, certification in English as a Second Language (yes/no), and certification in Bilingual Education (yes/no). (See Tables 1 and 2 for coding of gender, ethnicity, and educational attainment.)

The second part asked respondents to rate the effectiveness of eight classroom activities presented using brief written descriptions (Table 3). These activities (items) were written in a single academic discipline to minimize measurement error likely to result should respondents view certain subjects are more amenable to rigorous curriculum than others. Science was chosen

as the academic discipline, since it is a subject that can readily be adjusted for rigor by adding or subtracting content and the manner in which content is used by students. All eight items were scored on 6-point scales in which 1=ineffective and 6=effective.

The activities were crafted to differ in level of academic rigor required of students (Table 3). As a proxy for academic rigor, the amount of critical thinking (CT) instantiated in the activities was manipulated, such that half of the items described activities low in CT, and half were high in CT. The low-CT items described activities that essentially require students to memorize information and repeat it, whereas the high-CT items described activities that pressed students to go beyond the information given – i.e., to analyze, synthesize, or evaluate information included in the lesson (Reyes & Vallone, 2008). Psychometric evaluation of this assessment model is provided below.

Data collection. Research assistants attended faculty meetings to administer the survey to teachers. All teachers asked to participate did so, and none were compensated. They were apprised that this opinion survey had no correct answers and was fully confidential. They also were given instructions asking them to read the instructions in bold type on the top of the survey form, to ensure that each group responded concerning the appropriate population of learners.

Results

The dataset was comprised of 15 variables: the grouping variable (ELL, GE); two continuous demographic variables (age, teaching experience); four categorical demographic variables (gender, ethnicity, certification in ESL, and certification in Bilingual Education); and eight response variables (four for high-CT activities and four for low-CT activities). There were 205 observations (87 in the ELL group and 118 in the GE group), with no missing data. SPSS version 23 was used to analyze the data.

Psychometric evaluation of teacher-belief scale. The initial task of data collection was to develop the assessment model of teachers' beliefs about high-CT and low-CT activities. The eight items written for this assessment were subjected to a series of exploratory factor analyses using the principal components method with varimax rotation. The best-performing model consisted of a two-factor solution with four low-CT items and three high-CT ones (Table 1). A KMO of .72 and a Bartlett's test *p*-value *of* <.0001 indicate that these seven items were suitable for factoring. The model explained 68.39% of the variance in the ratings. The two factors produced eigenvalues of 2.78 and 2.00, with the next largest at .62, indicating a clear two-factor solution. Pattern/structure coefficients ("loadings") of the three items interpreted as high-CT were .76, .87, and .89; loadings for the four items interpreted as low-CT were .78, .79, .81, and .83. Alpha coefficients of .76 for low-CT and .72 for high-CT indicate an acceptable level of internal consistency reliability. Overall, the psychometric performance the seven-item model was satisfactory, and its factor scores were used in further analyses of the data.

Within-participants analyses. Paired-sample t-tests were conducted to determine if either or both the ELL or GE group evinced a preference for high-CT over low-CT, or vice versa. Shapiro-Wilk testing of normality was satisfactory. Teachers assigned to the ELL group rated low-CT significantly higher than high-CT (t = -2.52 at 86 degrees of freedom, $p < .01$), indicating that they viewed ELLs as better taught using low-CT activities than high-CT ones. Teachers assigned to the GE group produced no significant difference between high-CT and low-CT activities, indicating similar support for both kinds of activities for teaching GE students.

Between-participants analyses. To explore group differences on the six demographic variables, a MANOVA model was conducted. Levene's test was satisfactory, indicating satisfactory homogeneity of variance, and the residuals were normally distributed. The model

was significant, with Wilk's lambda as follows: $F(7, 197) = 1244.78$, $p < .0001$; partial eta-squared = .98. The ELL and GE groups did not differ significantly on any of the six demographic variables, suggesting that the random assignment procedure had not produced atypically different samples across groups.

A combinatorial variable called *pedagogical preference* was created by subtracting low-CT from high-CT, allowing analyses of a single-variable coefficient of respondents' preferred blend of high-CT and low-CT activities. ANCOVA procedures were conducted entering pedagogical preference as the outcome variable, with the grouping variable and demographics as predictors. Levene's test was satisfactory and the distributions of the residuals were normal. None of the demographic variables made a statistically significant contribution to the variance in the outcome variable. In post hoc testing, no significant pairwise differences were obtained for any of the categories within the variables ethnicity and educational attainment. However, the grouping variable was a significant predictor: $F(1, 115) = 8.31$, $p < .01$; partial eta-squared = .07. Teachers favored a pedagogical blend emphasizing low-CT for ELLs and high-CT for GE students.

This effect is attributable to group differences in teachers' beliefs about high-CT activities, not low-CT ones, according to a MANCOVA model with high-CT and low-CT entered as outcome variables and the grouping variable and demographics added as predictors. Tests of homoscedasticity and normality of residuals were satisfactory. The combined predictor variables contributed significantly to the variance in the outcome variables, with a Wilk's lambda of $F(2, 114) = 16.16$, $p < .0001$; partial eta-squared = .22. None of the demographic variables had a significant effect on either outcome variable, and post hoc testing revealed no significant pairwise differences for any of the categories within the variables ethnicity and educational

attainment. The grouping variable had no significant effect on ratings of low-CT activities. But a group difference was obtained for high-CT: $F(1, 115) = 9.60$, $p < .01$; partial eta-squared = .08. Teachers in the GE group rated the high-CT activities higher than did teachers in the ELL group.

This pattern was confirmed using a logistic regression model in which group was entered as the outcome variable with predictors including high-CT, low-CT, and the six demographic variables. Results of the Hosmer and Lemeshow test were satisfactory at $p = .25$. The logistic regression model was statistically significant, $\chi^2(2) = 9.36$, $p < .01$. The model explained 15.3% (Nagelkerke R^2) of the variance in the grouping variable and correctly classified 64.4% of cases. High-CT contributed significantly to the variance in the outcome (grouping) variable, with a *p*-value of .01 and an odds ratio of .64 (Wald statistic = 8.44 at one degree of freedom). None of the demographic variables made a significant contribution, and neither did low-CT. This analysis indicates that only one variable separated the groups in this study: ratings of high-CT activities. Teachers apparently believed that the ELLs and GE students benefit similarly from low-CT activities (and were similar on the demographic variables), but they regarded high-CT instruction as more appropriate for GE students than ELLs.

Discussion

A series of data analyses support the conclusion that teachers do not support rigorous instruction for ELLs at the same level that they do for GE students, as hypothesized. But not all variables that might reasonably be expected to influence teachers' beliefs about rigorous instruction for ELLs produced significant effects. To begin with, it seems plausible that the developmental variables, age and teaching experience, might have a significant effect on teachers' ratings; after all, the wisdom of age and the accrual of experience often change the

ways individuals conceptualize tasks and carry them out. But neither age nor teaching experience had a significant effect on teachers' beliefs about appropriate instruction for ELLs, indicating that rigor-gap views do not necessarily ameliorate over time.

Similarly, it might be expected that ethnicity affects these beliefs, especially in the case of teachers whose ethnicity and language background matches those of their students. But ethnicity had no significant effects in this study; in particular, teachers who self-reported their ethnicity as Hispanic produced similar ratings as teachers of other ethnicities. It cannot be concluded that only teachers who are mismatched with students' ethnicity and language background hold beliefs consistent with the rigor gap.

Continuing the pattern, it seems plausible that significant effects might stem from the educational variables (educational attainment, ESL certification, and Bilingual certification). Additional schooling might be expected to mitigate rigor-gap beliefs – especially with respect to ESL and bilingual certification, since attainment of these credentials involves extensive training in education for ELLs. But no such results were obtained. Not even educational attainment in programs explicitly targeting ELLs affected teachers' beliefs about appropriate instruction for these students.

The response variables in the study also evince a lack of differences between preferred instructional methods for ELLs and GE students, in this case concerning the utility of low-CT (comparatively less rigorous) activities. It was not found that teachers regarded low-CT activities as more effective for ELLs than for GE students; rather, teachers supported these activities at similar levels for both populations. Use of comparatively non-rigorous activities is viewed as similarly effective for both ELLs and GE students, according to these data.

But the study revealed one variable that did differ significantly across groups: support for rigorous (high-CT) activities. Numerous data analyses reveal that teachers judged these activities as more appropriate for GE students than ELLs. Judgments as such appear consistent with the rigor gap. In essence, teachers seem to believe that ELLs lack skills necessary to participate successfully in rigorous, high-CT activities.

With beliefs as such, it seems likely that ELLs are indeed receiving less rigorous instruction relative to their GE peers. Perhaps this is for the best, some commentators might argue, because this leaner curriculum is the one that allows ELLs to succeed in school and have positive experiences there. From this viewpoint, ELLs need a less rigorous curriculum in the interest of developmentally and educationally appropriate practice.

A different viewpoint on these results holds that less rigorous curriculum, however well intended, does a long-term disservice to these students. By this reasoning, ELLs receive less rigorous curriculum, which diminishes their academic performance, leading to more non-rigorous instruction in the future. In contrast, GE students are given rigorous activities, which enhance their academic output, resulting in additional high-rigor instruction in subsequent lessons. In essence, rigor-gap beliefs keep the in-group in and the out-group out (Torff, 2011).

Accordingly, efforts are needed to mitigate the effects of beliefs consistent with the rigor gap for ELLs. This may be a difficult charge, considering belief change was not produced in this study by higher levels of educational attainment, or even by the explicit training in instruction for ELLs included in certification programs in ESL and Bilingual Education. Moreover, the more general literature on belief change among teachers underscores that such change is not easily accomplished even in the best of circumstances (Richardson & Placier, 2002).

Daunting as this challenge may be, it is incumbent upon teacher educators to develop strategies for helping teachers provide more equitable instruction for ELLs. Research has revealed six factors that teachers take into consideration when opting for less rigorous curriculum for disadvantaged students: students' level of prior knowledge, time constraints, influence of parents, influence of colleagues, students' level of motivation, and students' level of academic ability (Torff & Sessions, 2006). These factors tend to facilitate the rigor gap for disadvantaged students; it is likely they do for ELLs as well. In preservice and inservice education, teachers might well explore how these factors influence their judgments about teaching ELLs.

Progress in this direction might stem from use of four sets of teacher-education interventions. The first involves discussions, journals, and assignments designed to encourage reflection on existing beliefs – since simply telling people what to believe is seldom effective over the long term (Decker, Kunter, & Voss, 2015; Vacc & Bright, 1999; Yost, Sentner, & Forlenza-Bailey, 2000). The second intervention initiates detailed analysis of case studies of classroom interactions and curricula in which ELLs are denied access to rigorous curriculum. The third intervention entails examination of models of best practice wherein challenging activities are directed appropriately to ELLs. Finally, curriculum-writing projects can be crafted to provide challenging curriculum for all student populations. These strategies have potential to help close the ELL achievement gap, by targeting the beliefs underlying the rigor gap.

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Table 1

Descriptive Statistics for Continuous Variables

Variable	Mean	SD	SE	Min.	Max.	Range
Age	39.39	9.74	.68	11	75	53
ELL	39.05	9.35	1.00	22	59	37
GE	39.64	10.06	.93	23	75	53
Teaching Experience	12.44	8.26	.58	1.00	40	39
ELL	12.52	8.02	.86	1.00	32	31
GE	12.38	8.47	.78	1.00	40	39
High-CT	3.50	1.08	.75	1.33	6.67	5.33
ELL	3.25	1.18	.13	1.33	6.00	4.67
GE	3.68	.96	.89	1.33	6.67	5.33
Low-CT	3.59	.96	.67	1.00	6.00	5.00
ELL	3.65	1.08	.12	1.00	6.00	5.00
GE	3.55	.86	.08	1.00	5.75	4.25
Pedagogical Preference	-.09	1.35	-.09	-4.00	4.00	8.00
ELL	-.40	1.48	.16	-4.00	4.00	8.00
GE	-.91	1.21	.11	-2.75	3.92	6.67

Notes. ELL = English Language Learners; GE = General Education students; CT = critical thinking.

Table 2

Descriptive Statistics for Categorical Variables

	English Language Learners		General Education Students		Total	
Variable	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Gender						
Male	14	16.1	16	13.9	30	14.6
Female	72	82.8	98	85.2	170	84.4
Other	1	1.1	1	.9	2	1.0
Ethnicity						
White	63	72.4	67	56.8	130	63.4
Black	3	3.4	7	5.9	10	4.9
Hispanic	12	13.8	33	28.0	45	22.0
Asian	2	2.3	5	4.2	7	3.4
Other	7	8.0	6	5.1	13	6.3

Table 3
Teacher Belief Survey

High in Academic Rigor (High-CT)

1. A science class is studying the effect of salt on the boiling point of water. The teacher asks students to review a data table listing the boiling point at various salt concentrations and then draw a conclusion as to what the table indicates.

2. A science class is studying how an octopus changes color. The teacher gives students the results of an octopus experiment and then asks them to state a question the experiment answers.

3. A science class is studying plant growth. The teacher presents the results of a flawed plant experiment and asks students to determine what's wrong with it.

Low in Academic Rigor (Low-CT)

1. A science class is studying photosynthesis. The teacher describes how photosynthesis works using a flowchart that shows the stages of the process.

2. A science class is studying the desert ecosystem. The teacher shows photographs of desert plants while explaining how these plants cope with the lack of water.

3. A science class is studying the solar system. The teacher points to a large wall chart of the solar system while describing each planet's size, distance from Earth, and geological features.

4. A science class is studying the human circulatory system. The teacher shows a video on the circulatory system and then reviews the new vocabulary it introduced.

Notes. CT = critical thinking. All items rated on 6-point scales (1=ineffective…6=effective).