

Academically Resilient Latino Elementary Students Bridging the Achievement Gap

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Abstract This study investigated associations between school-readiness patterns of Latino students and their subsequent academic achievement. After identifying a subgroup of students with academic risk at kindergarten entry who showed signs of later average or better academic skill development, academic data were gathered to explore how this group of “resilient” students (risk-catching up group) compared to their risk-lagging peers (those who entered kindergarten at high risk and continue to perform far below grade-level) and ready-proficient peers (those who entered kindergarten with low risk and continue to perform at a proficient level). Students were evaluated on individually administered measures that assessed cognitive and academic learning resources. A series of one-way MANOVAs identified that on academic measures of oral reading fluency (GORT-4) and verbal and nonverbal cognitive development (KBIT-2) students in the risk-catching up group performed consistent with their ready-proficient peers, and both groups scored significantly higher than the risk-lagging students. In contrast, scores on the California Standards Test ELA and math indicated that students in the risk-lagging group scored significantly lower than risk-catching up students who scored significantly lower than ready-proficient students. These findings provide evidence that the risk-catching up students made substantial progress to develop

the academic skill base needed to support ongoing improvements in academic achievement; however, this growth was not fully discerned in the CST test results. Importantly, these results suggest that closing achievement gaps is an ongoing process, not an end point. The study highlights the importance of school readiness experiences for all students and that early and targeted interventions are needed to support a positive academic trajectory for all students.

Keywords Latino · Achievement gap · Academic risk · Academic resilience · School readiness

The academic achievement gap is a persistent education policy challenge (Hemphill and Vanneman 2011). Defined as the significant disparity in educational achievement among groups of students (e.g., race/ethnicity, socioeconomic circumstances, gender, language), the achievement gap has been a documented problem in the USA for decades (Coleman et al. 1966; Jencks and Phillips 1998; Lee and Burkam 2002; Snyder and Dillow 2010). The achievement gap is apparent in all forms of achievement measurement and has been evaluated with standardized assessments, student grade retention, and student dropout rates (National Center of Educational Statistics 2009). Although US Federal Government reports indicate that between 1992 and 2009 reading achievement increased slightly for all groups of students (NCES 2009; Planty et al. 2008; Snyder and Dillow 2010), the size of the gap between 2007 and 2009 for Latino students remained unchanged in 45 states (Hemphill and Vanneman 2011).

Adding to the challenges of bridging this persistent achievement gap, the number of minority students enrolled in the education system nationwide has increased substantially over the past three decades. In 1980, the majority of the students enrolled in kindergarten through Grade 12 were White

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(75 %). Comparatively, in 2009, 57 % of the students enrolled in kindergarten through Grade 12 were White, 14 % were Black, and 21 % were Hispanic (Snyder and Dillow 2010). By 2023 it is projected that 30 % of all K-12 students in the USA will be of a Latino heritage (U.S. Department of Education 2013). These demographic changes emphasize the importance of developing a better understanding of factors at the individual student level that are associated with average or better academic achievement in spite of academic risk, particularly in states such as California where a majority (53.3 %) of K-12 students are now of Latino heritage (California Department of Education 2014).

Academic Risk and Achievement Trajectories

A discrepancy in academic performance related to student race/ethnicity and socioeconomic circumstances has been observed as early as kindergarten, and persists through higher education (Entwisle and Alexander 1992; Snyder and Dillow 2010). Literature on early education and school readiness illustrates that early achievement is a significant predictor of later academic success (Gormley 2005; Graziano et al. 2007; Lonigan 2006). Children who have a broad base of school-readiness experience have been found to acquire complex skills more rapidly than those who do not (Bowman et al. 2000). Academic performance trajectories have been found to stabilize as early as the first grade (Torgesen and Burgess 1998) and students from disadvantaged backgrounds often fall further behind their peers as they progress through school (Entwisle and Alexander 1990; Lee and Burkam 2002; Rumberger and Arellano 2009). Students who exhibit low academic achievement are at a greater risk for school failure, and exhibit higher dropout rates (Bridgeland et al. 2006).

Data from the Early Childhood Longitudinal Study–Kindergarten (ECLS–K) 1998–1999 cohort showed that, on average, White and Asian students scored higher than Black and Hispanic students on tests of reading and mathematics as early as kindergarten (Lee and Burkam 2002). Foster and Miller (2007) identified similar patterns in which students with low readiness at kindergarten entry performed significantly lower on phonemic awareness at the end of kindergarten and also identified a comprehension gap that persisted through the third grade. Notably, the low readiness group at kindergarten entry included a higher percentage of ethnic minority students or students of lower socioeconomic circumstances when compared to the high readiness group (Foster and Miller 2007). A body of related research (Sabol and Pianta 2012) suggests that low levels of school readiness at entry to kindergarten is an early marker of student academic risk foreshadowing transitions to below average or lagging achievement trajectories. There is substantial evidence to suggest that the achievement gap not only starts early in

elementary grades, but persists and even grows through later grades (Snyder and Dillow 2010; Taylor and Graham 2007). In particular, Latino students with low levels of school readiness have been shown to have substantially decreased odds of transitioning from a lower to a higher achievement trajectory (catching up with their peers) than students who enter kindergarten with higher level of school readiness (Quirk et al. 2013). Research has also shown that many Latino students enter school with low levels of readiness; that is, with elevated academic at-risk (Quirk et al. 2015a). In fact, in one study Latino students who enter kindergarten with high levels of readiness had an 88 % chance of achieving at average or above levels in Grades 2–5 compared to only 39 % of Latino students who entered kindergarten with lower levels of readiness (Quirk et al. 2015a).

Study Rationale and Objectives

Despite the limited progress made toward bridging the achievement gap in the past 20 years, population-level statistics obscure information about individual student adaptation and persistence in the face of academic risk and neglect the substantial variation in achievement among Latino students (Gutiérrez 2014). Within the group of students with low levels of school readiness some students overcome the odds and incrementally transition to higher achievement trajectories. A strengths-grounded theoretical lens that focuses on the factors associated with individual Latino student competence offers an alternative to the deficit grounded lens of the majority of achievement gap research (Good et al. 2010; Sabol and Pianta 2012). Hence, another approach to examine the achievement gap issue is to consider it from the perspective of student academic resilience (Borman and Overman 2004). This study applies this research lens by carrying out a deeper examination of the academic resources of a group of academically resilient Latino students.

This present study was part of a longitudinal investigation that began in the fall of 2005 and was carried out in collaboration with a participating school district that was interested in examining the associations between school readiness patterns of Latino students and their subsequent academic achievement. An aim of this study was first to examine the risk and early achievement trends of Latino students to determine if there was, in fact, a subgroup of academically resilient students who despite risk were catching up academically with their lower-risk peers. Our particular interest was to identify students with academic risk (low kindergarten readiness), yet whose reading fluency rates were commensurate with fluency rates of Latino children who entered kindergarten with high levels of readiness and who were meeting or exceeding grade-level norms at the end of Grade 2. A second and major aim of this study was to compare academically resilient students (as

described above) with similar academically at-risk peers (low readiness at kindergarten entry) who did not transition to higher fluency levels to identify factors that might help to differentiate academically resilient students from those who followed more common trajectories of below average achievement. Finally, additional comparisons were made contrasting performance on the same factors between academically resilient students and peers with low levels of risk (high kindergarten readiness) and who, as anticipated, transitioned to average or higher achievement trajectories. In sum, our first aim was to identify a subgroup of students with academic risk who showed signs of later average or better academic skill development. Having identified this group, we collected additional information to explore how this group of “resilient” students compared to their peers on individually administered measures that assessed cognitive and academic learning resources.

Method

Sample Pool

The students who participated in this study were a subset of 1069 students (50.1 % males, 91.0 % Hispanic heritage) who first entered kindergarten in a K-8 California central coast school district in August 2005. At the time of kindergarten entry, 20 % of the students were enrolled in the district’s migrant education program, 66 % were classified as English Learners (ELs), and 5 % were receiving special education services, becoming eligible during the preschool years. Across the entire school district many of the students’ families experienced low socioeconomic circumstances (77 % of the students received free/reduced-priced lunch services).

Measures Used to Identify and Select the Subsamples for the Present Study

Kindergarten Student Entrance Profile Academic risk was evaluated using the Kindergarten Student Entrance Profile (KSEP; Lilles et al. 2009; Quirk et al. 2011). The KSEP is an observational screening measure that gathers information on physical, social-emotional, and cognitive elements related to school readiness. The version used in this study included 16 items, each with a 4-category rating rubric that ranges from 1 to 4 with 1 = *not yet*, 2 = *emerging*, 3 = *almost mastered*, and 4 = *mastered*. A trained teacher completed the KSEP after he or she had completed a KSEP training workshop and observed each child for at least three weeks. The observer referred to any naturally occurring verbal (English or Spanish) or non-verbal communications and behaviors when completing the ratings. Previous analyses have found the KSEP to have strong internal consistency (Cronbach’s alpha = 0.91, inter-

rater reliability = 0.90; Lilles et al. 2009), to predict reading fluency in Grades 1 and 2 (Furlong and Quirk 2011), to predict state standardized assessment scores across Grades 2–5 (Quirk et al. 2015a), and to have strong factorial validity (Quirk et al. 2015b; Quirk et al. 2014). For the present study, we tallied the total number of KSEP items rated as mastered (0–16) and used the total mastery score as an indicator of academic risk at the point of first entry into formal education.

Reading Fluency The school district used the Houghton-Mifflin Reading Lions program and in Grades 1 and 2 the students were evaluated in areas of reading fluency, reading comprehension, spelling, and writing (Reading Lions 2006a, b). For this study, reading probes collected six times in Grades 1 and 2 (12 total probes) were used. Classroom teachers administered two 1-min reading probes at conclusion of each Houghton-Mifflin Reading curriculum theme. The mean number of words read across both probes was used in the present study to examine achievement trajectories prior to the first administration of standardized assessments at the end of Grade 2.

Subsample Selection

The KSEP ratings at kindergarten entry and students’ reading fluency rates across Grades 1 and 2 were used to select the subsample for this study. Our first interest was to identify the subgroups of students whose school readiness profiles indicated that they entered kindergarten academically at-risk for later achievement delays (KSEP total mastery scores of 0–3; Lilles et al. 2009) or whose profiles suggested the opposite—they entered kindergarten ready-to-go and would be anticipated to have proficient achievement trajectories (KSEP mastery scores of 13–16; Lilles et al. 2009). Our second interest, and at the core of this study’s objectives, was to see if any of the academically at-risk students who entered kindergarten with low levels of readiness had “caught up” as shown by reading fluency scores ≥ 89 WPM (at or above grade-level standards by the end of Grade 2 on Houghton-Mifflin reading fluency probes; Hasbrouck and Tindal 2006) or if their achievement was lagging as shown by having reading fluency scores at or below the 25th percentile (≤ 61 WPM). In addition, the students who entered kindergarten with KSEP total mastery ratings between 13–16 were included as a comparison group (the end-Grade 2 fluency scores for these students were all ≥ 89 WPM). In sum, the following three risk-achievement trajectory groups were included in the present study:

1. low readiness and lagging fluency (*risk-lagging*; KSEP ratings [0–3] and Grade 2 reading fluency [≤ 61 WPM]);
2. low readiness and catching up fluency (*risk-catching up*; KSEP rating [0–3] and Grade 2 reading fluency [≥ 89 WPM]); and

3. high readiness and proficient fluency (*ready-proficient*; KSEP rating [13–16] and Grade 2 reading fluency [≥ 89 WPM]).

Of the original 1069 students in 2005–06 kindergarten cohort, 297 were identified as possible participants for the current study. Following university IRB review, consent forms on school district letterhead were mailed to the homes of the potential participants, along with a stamped return envelope. On the day the consent forms were sent home, an automated phone message from the district office called each of the homes. The message gave a brief description of the study and notified the listener that a consent form was being mailed. Both the consent form and the phone call provided parents/guardians with information regarding the project and information of who to contact if they had any questions. The letter and phone call were provided in English and Spanish. Consent was provided for 141 students: risk-lagging ($n=40$, 43 % consent rate), risk-catching up ($n=50$, 46 % consent rate), and ready-proficient ($n=51$, 54 % consent rate). Demographic variables including gender, migrant education status, English-language proficiency, and special education services were compared between possible participants who did and did not return a consent form. No significant group differences were identified.

An a priori power analysis (G*Power3; Faul et al. 2007) indicated that for an alpha level of .05 and moderate effect size a sample size of 75 students was needed. Among those with positive contents, 40 students from each group were randomly selected to be participants. This number was larger than the necessary group size to account for student absences on testing day or scheduling conflicts that might prevent selected students to act as final participants. If the student was absent on the testing dates at their respective school they were excluded from the study. The final sample of participants for this study included 109 students (risk-lagging, $n=32$; risk-catching up, $n=39$; and ready-proficient, $n=38$). Of these students, 56 (51 %) were males, 109 (100 %) were Latino, 20 (18 %) were enrolled in the district's migrant education program, 81 (74 %) were ELs, and 6 (6 %) of the students were receiving special education services. See Table 1 for a comparison of the participants in the three risk-trajectory groups on these descriptive variables.

Although the students in these groups had similar demographic profiles, as expected given their differing school

readiness statuses, there were some notable differences. Using available district data, we counted (0–7) the number of student characteristics at kindergarten entry that are associated with lower school readiness: non-English home language, lower parent education, enrolled in migrant education program, eligible for free/reduced lunch services, no preschool experience, limited English-language proficiency, and limited Spanish language proficiency. As anticipated, there were significant differences among the risk-trajectory groups on the total number of risk factors: risk-lagging ($M=5.69$, $SD=1.77$), risk-catching up ($M=5.18$, $SD=1.79$), and ready-proficient ($M=3.63$, $SD=1.58$), $F(2, 106)=14.07$, $p<0.001$. Importantly, the risk-lagging and the risk-catching up students presented with similar levels of general risk at kindergarten enrollment that were not part of the KSEP ratings. Finally, documentation of the reading fluency trajectories for Grades 1 and 2 for this study's subsample are shown in Fig. 1.

Measures of Formal Academic Achievement

Given that performance on state standardized assessments are widely used to evaluate student competence and individual school's progress toward helping students to bridge the achievement gap, we examined student performance on the Grades 2 and 3 California Standards Test.

California Standards Test The Standardized Testing and Reporting series of California Standards Tests (CSTs) was administered annually to public school students beginning in the spring of Grade 2. CST assessments included English-Language Arts (ELA) and math. The CST was developed specifically to assess students' performance on California's Academic Content Standards. All assessment items were in a multiple-choice format. Both the ELA and math tests for Grades 2 and 3 consisted of 65 multiple-choice questions. Total scores were converted into scaled scores for each grade and subject area. Scaled scores ranged between 150 and 600. The California Department of Education compiled the assessment results and produced annual reports. The annual reports provided both mean scale scores and percent of students scoring at each level that can be used to compare student academic progress (California Department of Education 2008).

Table 1 Participant demographic information by KSEP trajectory group

	Continuous risk ($n=32$)	Closing the gap ($n=39$)	Proficient ($n=38$)
Gender—males	50 % ($n=16$)	54 % ($n=21$)	50 % ($n=19$)
Migrant education	31 % ($n=10$)	18 % ($n=7$)	8 % ($n=3$)
English learners	84 % ($n=27$)	82 % ($n=32$)	58 % ($n=22$)
Special education	6 % ($n=2$)	5 % ($n=2$)	5 % ($n=2$)

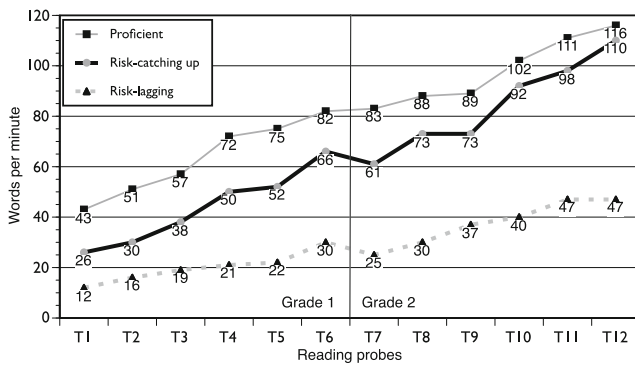


Fig. 1 Reading fluency trajectories for Grades 1 and 2

Measures of Academic and Cognitive Profiles

Although, standardized assessments are one benchmark against which to evaluate the academic achievement of these students, it is possible that the standardized group administration setting might not accurately capture all students' academic skills (Gutiérrez 2014). In an effort to more fully explore the students' risk status by achievement trajectories, in the fall of Grade 4 the students were administered measures that assessed their academic and cognitive resources.

Kaufman Brief Intelligence Test, Second Edition (KBIT-2)

The KBIT-2 (Kaufman and Kaufman 2004) measures both verbal and nonverbal cognitive abilities. The KBIT-2 includes three subtests (verbal knowledge, matrices, and riddles). Items are administered in English but can be responded to in English or Spanish. Age-based standard scores are provided for Verbal and Nonverbal domains. The KBIT-2 manual (Kaufman and Kaufman 2004) reports that the internal consistency for verbal score ranged from 0.86 to 0.96 and nonverbal internal consistency ranged from 0.79 to 0.93. Verbal test-retest reliability scores ranged from 0.88 to 0.93 and nonverbal ranged from 0.76 to 0.89. The verbal and nonverbal standard scores ($M=100$, $SD=15$) are reported in the present study.

Gray Oral Reading Test, Fourth Edition The Gray Oral Reading Test, Fourth Edition (GORT-4; Weiderhold and Bryant 2001) is a standardized measure of reading fluency and comprehension. The test is normed for children ages 6 to 18 and consists of 14 developmentally sequenced reading passages. Each passage is followed by five multiple-choice questions to evaluate student reading comprehension. The GORT-4 yields scores for rate, accuracy, fluency, comprehension, and an overall oral reading quotient (ORQ). The GORT-4 has positive psychometric properties with internal consistency Cronbach's alpha coefficients range from 0.90 to 0.98 (Weiderhold and Bryant 2001). Test-retest delayed alternate-form coefficients range from 0.78 to 0.95 and inter-rater reliability ranged from 0.94 to 0.99. The ORQ standard score ($M=100$, $SD=15$) was used in this the present study.

Procedures

The school district provided the researchers with a data file of the students' Grade 2 and 3 CST scores. Additional measures were administered individually to each student on school campus during school hours or after school for students who were enrolled in an afterschool school education program. Student assent was gained at the beginning of each interview. Interviews took place in a quiet room with minimal distractions. Assessments administered during the interview included the KBIT and the GORT-4. A counterbalanced design (Fraenkel and Wallen 2003) was used with the presentation of the measures altered to control for any possible order effect. Each interview took approximately 45 to 60 min to complete. All students were informed that their answers would be de-identified and confidential.

Data Analysis Plan

Having identified a subgroup of students (risk-catching up) with academic risk who showed signs of later average or better academic skills we examined how this group of students compared with peers on group administered and individually administered academic and cognitive learning assessments. Multivariate analysis of variance (MANOVA) examined the difference between groups for the Grade 2 and Grade 3 CST ELA and math scores (see Table 2). For each MANOVA, follow-up one-way ANOVAs were conducted using the Bonferroni method to control for Type I error, each ANOVA was tested at $p \leq 0.025$. Preliminary assumption testing identified no serious violations for any of the analyses. In addition, for additional contrasts, the percentages of students with Grade 2 and Grade 3 ELA and math scores in the proficient-advanced range (standard scores of 350 or higher) are presented (see Table 2). Finally, an analysis of variance (ANOVA) was used to examine group differences on the KBIT-2 and GORT-4.

Results

California Standards Test

English-Language Arts (ELA) A significant multivariate effect for group membership was found, Wilks's $\Lambda=0.51$, $F(2, 106)=21.41$, $p < 0.001$, with 29 % ($\eta^2=0.29$) of the multivariate variance in CST ELA scores associated with the risk-achievement grouping factor. The follow-up ANOVAs found significant differences by group on both the Grade 2 ELA score, $F(2, 106)=44.67$, $p < 0.001$, $\eta^2=0.457$ (large effect size), and the Grade 3 ELA score, $F(2, 106)=42.93$, $p < 0.001$, $\eta^2=0.448$ (large-effect size). Post hoc pairwise comparisons, tested at the .008 level, found that the following

Table 2 Grades 2 and 3 California State Test Scores (CST) and percent of students with scores in the proficient or advanced (P/A) Ranges English-Language Arts (ELA) and for math by risk-trajectory group

CST Subtest	Risk-lagging			Risk-catching up			Ready-proficient			<i>F</i> (2, 107)	Adj <i>R</i> ²
	<i>M</i>	<i>SD</i>	P/A	<i>M</i>	<i>SD</i>	P/A	<i>M</i>	<i>SD</i>	P/A		
<i>ELA</i>	<i>(n</i> =32)			<i>(n</i> =39)			<i>(n</i> =38)				
Grade 2	290.16 ^a	35.05	3 %	347.18 ^b	41.59	41 %	379.97 ^c	41.80	72 %	45.05***	0.457
Grade 3	267.48 ^a	32.75	0 %	327.23 ^b	40.74	36 %	362.05 ^c	50.52	69 %	42.93***	0.448
<i>Math</i>	<i>(n</i> =31)			<i>(n</i> =39)			<i>(n</i> =38)			<i>F</i> (2, 106)	Adj <i>R</i> ²
Grade 2	305.91 ^a	66.75	25 %	357.59 ^b	58.86	49 %	418.87 ^c	53.52	87 %	32.07***	0.397
Grade 3	294.65 ^a	54.37	22 %	341.54 ^b	49.51	41 %	435.51 ^c	77.31	87 %	47.66***	0.473

Different superscripts denote significant group mean differences. ELA and math scores range from 150–600. ELA and math proficient-advanced range (350+)

P/A percent of students with scores in the proficient-advanced range

*** $p < 0.001$

pattern of significant differences on both the Grade 2 and 3 ELA mean comparisons: risk-lagging < risk-catching up < ready-proficient. In addition, there were significant differences in the proportion of students with ELA scores in the proficient and advanced ranges in both the Grade 2, χ^2 (2, 110) = 34.29, Cramer's $V = 0.558$ (large-effect size), and Grade 3, χ^2 (2, 110) = 36.08, Cramer's $V = 0.573$ (large-effect size) tests. The proportions of students in each group attaining proficient-advanced scores were stable across Grades 2 and 3. At Grade 3 among the risk-lagging, risk-catching up, and ready-proficient students, 0, 36, and 69 %, respectively, had proficient-advanced ELA scores.

Math There was a significant multivariate effect for group membership, Wilks's $\Lambda = 0.50$, F (2, 106) = 21.87, $p < 0.001$, with 29 % ($\eta^2 = 0.29$) of the multivariate variance in CST math scores associated with the risk-achievement grouping factor. The follow-up ANOVAs for Grade 2, F (2, 106) = 34.94, $p < 0.001$, $\eta^2 = 0.397$, and Grade 3, F (2, 106) = 47.66, $p < 0.001$, $\eta^2 = 0.473$, were significant. Post hoc pairwise comparisons, tested at the 0.008 level, found that the following pattern of significant differences on both the Grade 2 and 3 math mean comparisons: risk-lagging < risk-catching up < ready-proficient. Significant differences were found in the proportion of students with math scores in the proficient and advanced ranges on both the Grade 2, χ^2 (2, 110) = 28.62, Cramer's $V = 0.510$ (large-effect size), and Grade 3, χ^2 (2, 110) = 32.84, Cramer's $V = 0.546$ (large effect size) tests. For CST Math it was also found that the proportions of students in each group attaining proficient-advanced scores were stable across Grades 2 and 3, with somewhat higher proportions in each group. At Grade 3 among the risk-lagging, risk-catching up, and ready-proficient students, 22, 41, and 87 %, respectively, had proficient-advanced math scores.

Grade 4 Cognitive Learning Resources

A third one-way MANOVA examined group differences on KBIT-2 verbal and nonverbal scores. A significant multivariate effect for group membership was found, Wilks's $\Lambda = 0.68$, F (2, 107) = 11.07, $p < 0.001$, with 17 % ($\eta^2 = 0.17$) of the multivariate variance in KBIT-2 scores associated with the risk-achievement grouping factor. The follow-up ANOVAs found significant differences by group for verbal, F (2, 107) = 23.43, $p < .001$, $\eta^2 = 0.305$ (large-effect size), and nonverbal scores, F (2, 107) = 3.85, $p < 0.001$, $\eta^2 = 0.067$ (small-effect size). Post hoc pairwise comparisons, tested at the 0.008 level, found the following same pattern of significant differences for the verbal and nonverbal scores: risk-lagging < risk-catching up = ready-proficient.

Grade 4 Reading Learning Resources

A one-way ANOVA examined group differences on the GORT-4 ORQ. As shown in Table 3, a significant group effect was found, F (2, 107) = 42.86, $p < 0.001$, $\eta^2 = 0.445$ (large-effect size). Post hoc pairwise comparisons, tested at the .008 level, found the following pattern of significant group differences: risk-lagging < risk-catching up = ready-proficient.

Discussion

Using data from the Early Childhood Longitudinal Study of Kindergarten Class of 1998–99, Rumberger and Arellano (2009) found that for Latino students, "...about half of the achievement gap in fourth grade exists when students walk in the door at kindergarten" (p. 72). This finding is central to recognizing the difficulty of decreasing the documented

Table 3 Grade 4 academic resource variable mean standard scores and standard deviations by risk-trajectory group

Individual assessments	Risk-lagging (<i>n</i> = 32)		Risk-catching up (<i>n</i> = 39)		Ready-proficient (<i>n</i> = 39)		<i>F</i> (2, 107)	Adj <i>R</i> ²
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
KBIT verbal	77.38 ^a	11.03	90.28 ^b	12.00	96.79 ^b	12.76	23.43***	0.292
KBIT nonverbal	91.34	14.08	93.72	12.81	100.13	15.04	3.85	0.050
GORT ORQ	82.09 ^a	12.96	102.23 ^b	9.43	105.62 ^b	11.68	42.86***	0.445

GORT ORQ Gray Oral Reading Test Oral Reading Quotient, *KBIT* Kaufman Brief Intelligence Test

Different superscripts denote significant group differences

****p* < 0.001

achievement discrepancies between Latino and White students. A first result of this study was consistent with those of Rumberger and Arellano (2009) in that the students who entered kindergarten with academic risk were much less likely than their peers who entered kindergarten ready-to-go to have Grade 2 and 3 CST scores in the aspired-to proficient or advanced range. One contribution of this study was that the ready-proficient group was comprised not of White students but entirely of Latino peers, a majority of whom (68 to 87 %) obtained proficient-advanced CST scores. This finding emphasizes the potential importance of access to high-quality preschool experiences as a necessary pre-condition to bridge the achievement gap (Rumberger and Arellano 2009), particularly for Latino children (Burchinal et al. 2012). In addition, the fact that the kindergarten teachers' observations of students in the first month of kindergarten strongly foreshadowed a pattern of lagging levels of academic development is consistent with other studies that support the value of kindergarten teachers' perspectives for school readiness screening that initiates early school support services (Goldstein et al. 2014; Stormont et al. 2014).

A second contribution of this study was that even in a school district that served many Latino EL students who entered kindergarten with academic risk (low readiness), there was a group of students who could arguably be described as being in the process of overcoming these poor odds and catching up academically. If closing the gap is framed as a long-term process, these students could be considered as being in the process of bridging this gap. As evidenced by the risk-catching up students' pattern of reading fluency, they were able to gradually improve such that by the end of Grade 2, all of them were reading 89 or more WPM. On one hand, this is a clear behavioral pattern with temporal arc that provides compelling evidence that these students reading skills were better than would have been expected based on their school readiness status. This finding provides support for researchers arguing (e.g., Sabol and Pianta 2012) to include a student-centered approach to understanding the achievement gap issue.

A third objective of this study, however, was to further examine how the reading fluency growth of these risk-catching up students was related to their performance on the CST ELA and math assessments in Grades 2 and 3. Our findings indicated that the risk-catching up students obtained higher ELA and math scores than the risk-lagging students; however, the risk-catching up students were much less likely to have above grade-level scores than the ready-proficient students. In this circumstance the risk-catching up students had substantially improved core reading fluency skills, but perhaps due to the added attention given to this effort, they were still in the process of catching up with other core knowledge that is assessed by the CST assessments. Had only the CST assessment been examined, we would have concluded that the risk-catching up students were able to only partially bridge the achievement gap.

Following Gutiérrez's (2014) commentary that one-out high stakes tests might not provide a full rounded understanding of the Latino students' "learning," individual assessments were obtained early in the Grade 4 school year, some five months after the Grade 3 CST was administered. The findings associated with this fourth main objective of this study provided additional insights into the achievement trajectories of the at-risk-catching up students. When given the opportunity to take an assessment in a one-on-one, low distraction context, these students' reading resources (combination of fluency and comprehension) were actually a bit above average and comparable to their ready-proficient peers (102 vs. 106, respectively). Importantly, these were standard scores based on a US nationally representative sample. Furthermore, on other academic resources (verbal skills and nonverbal skills), the risk-catching up students were similar to their ready-proficient peers. These added findings provide evidence that the risk-catching up students had made substantial progress to develop the academic skill base to support ongoing mobility toward higher achievement trajectories; growth that was not fully discerned in the CST test results. Importantly, however, our results suggested that this is an ongoing process, not an end point. Another main finding that emerged from the individual

student assessments is that the risk-lagging students had significantly lower scores on the KBIT-2 verbal scale. None of these students in Grade 3 had ELA scores in the proficient-advanced range and in Grade 4 their GORT-4 reading scores were more than one *SD* lower than the national norm. This pattern of results is consistent with the body of research emphasizing the effects of language skills on the academic trajectories of Latino students and supports the need for providing systematic high-quality language development interventions (Hoff 2013).

Study Limitations

A limitation of this study is that while a broad set of information about the students' academic progress was available for Grades 1–4, we were unable to obtain information about how the students' experienced the kindergarten year. Other research has identified the importance of high-quality kindergarten instruction on a student's long-term academic success (Ponitz et al. 2009; Rimm-Kaufman et al. 2005). In the present study we note that the risk-catching up students made up 45 % of the fluency gap between the risk-lagging and ready-proficient students by the time that the first fluency probe was administered in Grade 1. This observation suggests that research is needed to examine in depth interactions among kindergarten classroom practices, student assets, and parental factors that promoted such academic resilience. Furthermore, in evaluating student academic resiliency the present study focused primarily on cognitive and academic student indicators, and did not investigate student social-emotional or wellness factors. Given the importance of understanding the whole child to support academic growth and success, future research is needed to expand on the current study to evaluate student social-emotional or wellness factors, in addition to academic skill growth, that may have contributed to student academic resiliency.

A second limitation is the sample for this study was from one medium sized school district; hence it is unknown how these results might generalize to other school districts and communities that do not have a student body comprised of a majority of Latino and EL students. Nonetheless, school districts that serve such communities are at the forefront of efforts to close the achievement gap. The fact that this school district had a substantial number of students with resilient academic profiles offers hope that there is a corpus of competence among Latino students upon which to build efforts to maximize the academic potential of all Latino students.

Another limitation is that the present study examined information primarily about the learning skills and resources of the individual students. Hence, although this study focused on the academic resilience capacity of Latino students, we hasten to point out that this resilience draws not only on student individual assets but also on the resources of high-quality

instruction and supports (e.g., teachers prepared to work effectively with EL students in multicultural family contexts and with responsive school administrative support). Future research is needed to more fully explore the day-to-day and week-to-week classroom experiences that support the success of all Latino students because efforts to enhance educational outcomes for Latino students will require a coordinated district plan, effective instruction, and enhanced communication among educators, parents, and students (Good et al. 2010; Hayes et al. 2015). Such coordinated efforts have the potential to help bridge the population-level achievement gap by helping one student at a time fulfill her or his own personal talents.

Conclusion Implications for Practice

Following from the findings of the present study and those of Rumberger and Arellano (2009), one logical strategy to close the achievement gap is to increase the proportion of any incoming kindergarten class that has a high level of school readiness. The achievement gap would be virtually nonexistent if all Latino children had the same academic achievement profiles as the ready-proficient students in this study. Hence, increased efforts are needed to provide high-quality preschool instruction (Burchinal et al. 2010) with an emphasis on language development, including Spanish for Latino students (Burchinal et al. 2012). Districts and communities should consider the availability and need of such high-quality preschool programs and develop opportunities for preschool or similar experiences accordingly. An increase in prekindergarten school exposure would increase the proportion of students entering kindergarten with high school readiness, thus increasing their odds for success from day one.

As we found in this study, however, students with low levels of school readiness (risk-lagging) can rebound to higher-than-predicted levels of academic achievement. For these students, and to maximize the achievement of all Latino students, schools need to provide high-quality kindergarten instruction (Cuticelli et al. 2014; Ponitz et al. 2009). In addition, because children with lower levels of school readiness are less likely to have had a high-quality preschool experience, it has been found that these students benefit substantially from a full-day kindergarten program (Gibbs 2014).

A complicating issue, as far as we can infer from the results of this study, is that in the first few months of school it is difficult for teachers to discern between the risk-lagging and risk-catching up students. This suggests that the progress of all kindergarteners with low readiness needs to be closely (e.g., biweekly) monitored for indications that they are either starting to catch up or not. This can be achieved by connecting ongoing progress monitoring in Kindergarten to a district's data system, or developing a plan for systematic check-in regarding the progress and development of all students. A comprehensive RTI/ MTSS framework that begins with a

kindergarten entry screener can offer support in monitoring the progress and academic trajectory of low readiness students. Systematic screenings, progress monitoring, and additional academic supports can be provided within these contexts. Furthermore, the use of Curriculum-Based Measurements that are sensitive to change can provide valuable data regarding the growth of narrow and specific skills for all children. Reliance on one-time high stakes standardized testing, some three to four years later, does not provide timely information about how to support individual students and, as the results of this study found, provide an incomplete evaluation of what Latino students are learning in school. The best practice for such assessments is now computer adaptive systems that provide vertically scaled content with which to measure absolute, not just relative, achievement growth. The key here is that to bridge the population-level Latino students achievement gap, individual students must transition from lower to higher achievement trajectories by accelerating the pace of their skills acquisition, compared with other groups of students. The only way to know if this is happening is to actually track real-time academic growth.

Finally, results from this study support the importance of multifaceted assessments to fully understand student academic strengths and weaknesses. In this study, if the CST score was the primary academic indicator, the growth exhibited on the cognitive and achievement assessments would not have been represented. It is crucial to recognize the limitations of single standardized assessments. Rather we should focus on understanding the individual student and also evaluate the achievement gap from the perspective of student competence. In doing so we learned that the risk-catching up students had made substantial progress to develop the academic skill base that will support continued growth toward higher achievement trajectories if these students continue to receive high-quality instruction.

Compliance with Ethical Standards

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants included in the study.

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