Appendix

Table A: Descriptive statistics on key variables, post-matching, by sensitivity check

	Sensitivity analyses 2: Propensity score matching			Sensitivity analyses 3: Alternative matching including academic measures			Sensitivity analyses 4: Teacher-identified multilingual student sample			Sensitivity analysis 5: Treatment group defined as ever-EL students			Sensitivity analysis 6a: Matches made on current year EL status -- kindergarten			Sensitivity analysis 6b: Matches made on current year EL status -- first grade			Sensitivity analysis 6c: Matches made on current year EL status -- second grade		
	Non-EL	EL	t	Non-EL	EL	t	Non-EL	EL	t	Non-EL	EL	t	Non-EL	EL	t	Non-EL	EL	t	Non-EL	EL	t
PreLAS (0-20)	14.97	14.56	*	16.46	16.11		14.24	14.06		15.11	15.11		14.48	14.40		14.39	14.48		14.12	14.01	
EBRS (0-20)	10.96	10.78		11.60	11.59		10.61	10.51		10.97	11.02		10.63	10.56		10.55	10.50		9.76	9.84	
Math (theta score)	-1.08	-1.07		-0.93	-0.97		-1.26	-1.14		-0.95	-1.04		-1.17	-1.13		-1.26	-1.14		-1.26	-1.31	
Reading (theta score)	-1.06	-1.04		-0.91	-0.91		-1.05	-1.05		-0.95	-0.96		-1.03	-1.06		-1.00	-1.05		-1.15	-1.17	
Exec. fun. 1 (0-18)	13.07	12.97		14.11	14.04		12.66	12.77		13.02	13.17		12.99	12.83		12.43	12.94		13.40	12.67	*
Exec. fun. 2 (393-603)	416.06	417.01		417.80	417.75		414.84	414.53		420.85	419.58		415.72	415.02		417.62	417.18		413.94	414.09	
Female (%)	47.04	49.01		44.68	44.68		49.04	49.04		43.33	43.33		49.31	49.31		50.14	50.14		44.29	44.29	
Latinx (%)	76.03	74.63		80.80	80.80		80.67	80.67		78.41	78.41		81.77	81.77		82.37	82.37		86.63	86.63	
White (%)	3.46	3.54		2.62	2.62		1.76	1.76		2.90	2.90		1.93	1.93		3.03	3.03		0.84	0.84	
Asian (%)	17.96	18.20		14.49	14.49		16.45	16.45		16.81	16.81		15.19	15.19		12.40	12.40		11.42	11.42	
Other race/ethnicity (%)	3.62	2.55		2.09	2.09		1.12	1.12		1.88	1.88		1.10	1.10		2.20	2.20		1.11	1.11	
Rural (%)	7.17	8.16		3.84	3.84		2.72	2.72		1.74	1.74		2.49	2.49		2.48	2.48		4.74	4.74	
SES (standardized)	-0.73	-0.69		-0.62	-0.68		-0.70	-0.70		-0.58	-0.62		-0.70	-0.71		-0.70	-0.69		-0.76	-0.78	
N	941	1214		455	573		366	626		410	690		538	724		314	363		309	359	
Multivariate L1 distance	NA			0.9983			0.8093			0.8277			0.8533			0.8049			0.7993		

Note. t = t-test. Exec. fun. = executive functioning. SES = socioeconomic status. Sensitivity analyses #1 did not involve matching and are therefore not included in this table. Sensitivity analyses #2 employed propensity score matching rather than coarsened exact matching and matched on kindergarten English proficiency measures (PreLAS & EBRS) and academic skill level measures (English reading, math, and two executive functioning assessments), kindergarten student characteristics (gender, race, socioeconomic status), and school rurality along with ECLS-K student weight. All of the remaining sensitivity analyses employed coarsened exact matching. Sensitivity analyses #3 changed the matching algorithm used in the main model. Specifically, it added math and reading measures as well as a second executive functioning assessment to the other matching variables of English proficiency measures, gender, race, socioeconomic status, and school rurality. It used the same covariates as the main model: kindergarten English proficiency measures (PreLAS & EBRS) and academic skill level measures (English reading, math, and two executive functioning assessments), kindergarten student characteristics (gender, age, race, family socioeconomic status, special education identification, whether repeated kindergarten, whether chronically absent, and whether experienced a teacher change in kindergarten), kindergarten program and teacher characteristics (whether full day kindergarten, teacher's years of experience, education level, and education degree), kindergarten class characteristics (racial composition, EL proportion, class size, and teacher's evaluation of class behavior and reading level), and kindergarten school characteristics (rural locale, school size, proportion Black and Latinx, and average socioeconomic status). Sensitivity analyses #4 and #5 included the same matching variables and covariates as the main model. Sensitivity analyses #4 limited the analytic sample to students that teachers identify as speaking a language other than English at home (excluding students whose parents make that same claim but whose teachers do not). Sensitivity analyses #5 defined the treatment group as students who are characterized by their teacher as being in an EL program in any grade from kindergarten through second grade rather than just students who are identified as being in an EL program in kindergarten. Sensitivity analyses #6 included the same variables as the main model, but rather than being measured in kindergarten, most are measured in the same year as the outcome measure. Most importantly, students were matched not by their kindergarten EL status but by their current year EL status.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Studies, Kindergarten Class of 2010-11 (ECLS-K:2011), 2010-2014.

Table B: Estimated effects of EL status on teacher perceptions, by sensitivity check, grade, year, and subject area

	Kindergarten					1st grade					2nd grade				
	Composite	Language	Math	Social Studies	Science	Composite	Language	Math	Social Studies	Science	Composite	Language	Math	Social Studies	Science
Sensitivity analyses 1: Ordinary least squares without matching															
EL	-0.162***	-0.163***	-0.149***	-0.156***	-0.141***	-0.127**	-0.137**	-0.094~	-0.104*	-0.117*	-0.121**	-0.114*	-0.097*	-0.097~	-0.114*
	(0.039)	(0.038)	(0.043)	(0.044)	(0.043)	(0.047)	(0.046)	(0.050)	(0.050)	(0.049)	(0.045)	(0.046)	(0.049)	(0.052)	(0.051)
N	2,155	2,155	2,155	2,155	2,155	1,738	1,738	1,738	1,736	1,738	1,694	1,694	1,694	1,694	1,694
R2	0.445	0.473	0.335	0.307	0.320	0.396	0.410	0.325	0.295	0.317	0.419	0.403	0.324	0.265	0.268
Sensitivity analyses 2: Propensity score matching															
EL	-0.108*	-0.103*	-0.107~	-0.133**	-0.124**	-0.121*	-0.141**	-0.085	-0.078	-0.097~	-0.097	-0.089	-0.066	-0.083	-0.119~
	(0.051)	(0.049)	(0.057)	(0.050)	(0.047)	(0.054)	(0.053)	(0.056)	(0.057)	(0.056)	(0.068)	(0.066)	(0.070)	(0.071)	(0.072)
N	2,155	2,155	2,155	2,155	2,155	1,738	1,738	1,738	1,738	1,738	1,519	1,519	1,519	1,519	1,519
R2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sensitivity analyses 3: Alternative matching including academic measures															
EL	-0.113	-0.108	-0.111	-0.209**	-0.208**	-0.270**	-0.278**	-0.233**	-0.290***	-0.238*	-0.236**	-0.182*	-0.273***	-0.256***	-0.200**
	(0.081)	(0.078)	(0.092)	(0.070)	(0.066)	(0.090)	(0.085)	(0.088)	(0.084)	(0.103)	(0.071)	(0.077)	(0.079)	(0.072)	(0.072)
N	1,028	1,028	1,028	1,028	1,028	820	820	820	820	820	797	797	797	797	797
R2	0.370	0.404	0.266	0.252	0.264	0.306	0.326	0.265	0.270	0.234	0.335	0.320	0.260	0.234	0.225
Sensitivity analyses 4: Teacher-identified multilingual student sample															
EL	-0.092	-0.088	-0.103	-0.033	-0.100	-0.280**	-0.331***	-0.213*	-0.386***	-0.215*	-0.211*	-0.155~	-0.325***	-0.161~	-0.164~
	(0.097)	(0.095)	(0.106)	(0.094)	(0.082)	(0.095)	(0.091)	(0.095)	(0.091)	(0.104)	(0.086)	(0.092)	(0.081)	(0.084)	(0.087)
N	992	992	992	992	992	787	787	787	787	787	778	778	778	778	778
R2	0.425	0.448	0.338	0.325	0.315	0.356	0.367	0.310	0.254	0.289	0.395	0.381	0.329	0.268	0.259
Sensitivity analysis 5: Treatment group defined as ever-EL students															
EL	-0.037	-0.056	-0.006	-0.020	-0.102	-0.279**	-0.326***	-0.260**	-0.122	-0.195~	-0.281***	-0.277***	-0.265**	-0.195*	-0.203*
	(0.077)	(0.076)	(0.085)	(0.094)	(0.080)	(0.097)	(0.089)	(0.091)	(0.112)	(0.112)	(0.081)	(0.082)	(0.085)	(0.089)	(0.086)
N	1,100	1,100	1,100	1,100	1,100	865	865	865	865	865	867	867	867	867	867
R2	0.478	0.503	0.372	0.314	0.311	0.401	0.424	0.358	0.329	0.305	0.445	0.430	0.346	0.291	0.298
Sensitivity analysis 6: Matches made on current year EL status and controls for current year covariates															
EL	-0.100	-0.111	-0.088	-0.071	-0.115	0.052	0.019	0.058	0.115	0.106	-0.110	-0.140	0.013	-0.105	-0.089
	(0.083)	(0.080)	(0.094)	(0.083)	(0.075)	(0.102)	(0.096)	(0.100)	(0.115)	(0.113)	(0.082)	(0.086)	(0.104)	(0.082)	(0.084)
N	1,262	1,262	1,262	1,262	1,262	677	677	677	677	677	668	668	668	668	668
R2	0.420	0.446	0.326	0.288	0.284	0.541	0.556	0.466	0.385	0.457	0.567	0.549	0.422	0.387	0.397

Robust standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Note. Sensitivity analyses #1 did not involve matching and are therefore not included in this table. Sensitivity analyses #2 employed propensity score matching rather than coarsened exact matching and matched on kindergarten English proficiency measures (PreLAS & EBRS) and academic skill level measures (English reading, math, and two executive functioning assessments), kindergarten student characteristics (gender, race, socioeconomic status), and school rurality along with ECLS-K student weight. All of the remaining sensitivity analyses employed coarsened exact matching. Sensitivity analyses #3 changed the matching algorithm used in the main model. Specifically, it added math and reading measures as well as a second executive functioning assessment to the other matching variables of English proficiency measures, gender, race, socioeconomic status, and school rurality. It used the same covariates as the main model: kindergarten English proficiency measures (PreLAS & EBRS) and academic skill level measures (English reading, math, and two executive functioning assessments), kindergarten student characteristics (gender, age, race, family socioeconomic status, special education identification,

whether repeated kindergarten, whether chronically absent, and whether experienced a teacher change in kindergarten), kindergarten program and teacher characteristics (whether full day kindergarten, teacher's years of experience, education level, and education degree), kindergarten class characteristics (racial composition, EL proportion, class size, and teacher's evaluation of class behavior and reading level), and kindergarten school characteristics (rural locale, school size, proportion Black and Latinx, and average socioeconomic status). Sensitivity analyses #4 and #5 included the same matching variables and covariates as the main model. Sensitivity analyses #4 limited the analytic sample to students that teachers identify as speaking a language other than English at home (excluding students whose parents make that same claim but whose teachers do not). Sensitivity analyses #5 defined the treatment group as students who are characterized by their teacher as being in an EL program in any grade from kindergarten through second grade rather than just students who are identified as being in an EL program in kindergarten. Sensitivity analyses #6 included the same variables as the main model, but rather than being measured in kindergarten, most are measured in the same year as the outcome measure. Most importantly, students were matched not by their kindergarten EL status but by their current year EL status.