

Table 4

Conditional growth models for reading achievement from kindergarten through third grade

Fixed Effects	Gen Status		English		Race		Gender		Socio-		Parenting		Childcare		Schooling	
			Proficiency						economic Factors							
<i>Model for initial status</i>																
Mean Intercept	40.41	***	40.36	***	40.37	***	40.37	***	40.36	***	40.32	***	40.31	***	40.32	***
	(0.10)		(0.10)		(0.10)		(0.10)		(0.10)		(0.10)		(0.10)		(0.09)	
1st Generation	-0.18		2.31	*	1.99	*	2.02	*	1.38		1.24		1.33		1.34	
	(0.97)		(0.97)		(0.91)		(0.91)		(0.88)		(0.88)		(0.87)		(0.87)	
	[0.01]		[0.15]		[0.14]		[0.14]		[0.10]		[0.09]		[0.10]		[0.10]	
2nd Generation	0.43		1.98	***	1.77	***	1.80	***	1.71	***	1.59	***	1.55	***	1.37	***
	(0.37)		(0.42)		(0.41)		(0.41)		(0.39)		(0.39)		(0.39)		(0.39)	
	[0.03]		[0.12]		[0.11]		[0.11]		[0.11]		[0.10]		[0.10]		[0.09]	
Generation Missing	-4.26	***	-3.78	***	-3.26	***	-3.18	***	-1.49	***	-1.48	***	-1.42	***	-1.52	***
	(0.30)		(0.31)		(0.31)		(0.31)		(0.33)		(0.35)		(0.35)		(0.35)	

	[0.36]	[0.31]	[0.27]	[0.26]	[0.12]	[0.11]	[0.10]	[0.11]
Proficient by fall K	-1.05 *	-1.39 **	-1.41 **	-0.96 *	-1.09 *	-0.96	-0.95	
	(0.48)	(0.50)	(0.50)	(0.47)	(0.47)	(0.47)	(0.46)	
	[0.07]	[0.09]	[0.09]	[0.06]	[0.07]	[0.06]	[0.06]	
Proficient by spring K	-9.06 ***	-9.26 ***	-9.24 ***	-6.86 ***	-6.94 ***	-6.62 ***	-6.36 ^{a b} ***	
	(0.57)	(0.58)	(0.58)	(0.56)	(0.56)	(0.55)	(0.55)	
	[0.71]	[0.71]	[0.71]	[0.55]	[0.56]	[0.54]	[0.52]	
Black		-5.80 ***	-5.84 ***	-3.39 ***	-2.80 ***	-2.46 ***	-2.01 ^{a b} ***	
		(0.27)	(0.27)	(0.27)	(0.28)	(0.29)	(0.33)	
		[0.49]	[0.49]	[0.28]	[0.22]	[0.19]	[0.14]	
Hispanic		-4.07 ***	-4.06 ***	-2.48 ***	-2.40 ***	-2.08 ***	-1.85 ^{a b} ***	
		(0.33)	(0.33)	(0.32)	(0.32)	(0.31)	(0.33)	
		[0.28]	[0.29]	[0.18]	[0.18]	[0.15]	[0.13]	
Asian		5.01 ***	4.91 ***	4.98 ***	5.12 ***	5.32 ***	5.59 ^{a b} ***	
		(0.60)	(0.59)	(0.57)	(0.57)	(0.57)	(0.57)	
		[0.29]	[0.28]	[0.29]	[0.31]	[0.32]	[0.34]	

Other	-4.42 ***	-4.42 ***	-3.01 ***	-2.75 ***	-2.22 ***	-1.34 ^{a b} ***
	(0.46)	(0.45)	(0.43)	(0.43)	(0.43)	(0.44)
	[0.33]	[0.33]	[0.23]	[0.22]	[0.18]	[0.10]
Female		2.29 ***	2.27 ***	2.24 ***	2.29 ***	2.25 ***
		(0.20)	(0.19)	(0.19)	(0.19)	(0.19)
		[0.18]	[0.18]	[0.18]	[0.19]	[0.18]
Above HS			5.55 ***	5.53 ***	4.98 ***	4.43 ^a ***
			(0.21)	(0.21)	(0.21)	(0.21)
			[0.42]	[0.42]	[0.38]	[0.34]
Above poverty			4.47 ***	3.66 ***	3.10 ***	2.65 ***
			(0.24)	(0.25)	(0.25)	(0.25)
			[0.36]	[0.28]	[0.24]	[0.20]
2 Parent family				2.39 ***	2.26 ***	2.17 ^b ***
				(0.24)	(0.24)	(0.24)
				[0.17]	[0.16]	[0.15]
Warm parenting				-0.01	-0.06	-0.05

		(0.25)		(0.25)		(0.25)
		[0.00]		[0.00]		[0.00]
Home cognitive stimulation		-0.55	**	-0.31		-0.28
		(0.19)		(0.20)		(0.20)
		[.02]		[0.01]		[0.01]
Maternal beliefs school		1.12	***	1.35	***	1.33
readiness						***
		(0.15)		(0.20)		(0.19)
		[0.06]		[0.05]		[0.05]
Hrs in prekindergarten				0.00		0.00
				(0.01)		(0.01)
				[0.00]		[0.00]
Age kindergarten				0.06	***	0.07
entry						***
				(0.02)		(0.02)
				[0.03]		[0.03]

Parental care	-3.19 ***	-2.71 ^b ***
	(0.34)	(0.34)
	[0.22]	[0.19]
Nonparental, relative care	-2.72 ***	-2.33 ^b ***
	(0.27)	(0.27)
	[0.20]	[0.18]
Headstart	-5.08 ***	-4.19 ***
	(0.34)	(0.34)
	[0.46]	[0.38]
Public school		-2.84 ***
		(0.27)
		[0.20]
Urban school		-0.13
		(0.23)
		[0.01]
Rural school		-2.03 ^b ***

																(0.25)	
																[0.17]	
School over 50 % minority																-1.14 ^b ***	
																(0.27)	
																[0.07]	
Socioeconomic Factors									Yes		Yes		Yes		Yes		
Missing																	
Parenting Missing											Yes		Yes		Yes		
Childcare Missing													Yes		Yes		
School Missing															Yes		
<i>Model for rate of change</i>																	
Mean slope	27.48	***	27.60	***	27.60	***	27.60	***	27.61	***	27.70	***	27.71	***	27.70	***	
	(0.10)		(0.10)		(0.10)		(0.10)		(0.09)		(0.10)		(0.10)		(0.10)		
1st Generation	1.54		2.25	**	2.18	**	2.20	**	1.90	*	1.80	*	1.83	*	1.79	*	
	(0.82)		(0.84)		(0.84)		(0.84)		(0.82)		(0.83)		(0.83)		(0.83)		

	[0.12]	[0.17]	[0.17]	[0.17]	[0.15]	[0.14]	[0.14]	[0.14]
2nd Generation	0.65	1.08 **	0.94 *	0.96 **	0.91 *	0.84 *	0.83 *	0.78 *
	(0.30)	(0.35)	(0.36)	(0.36)	(0.35)	(0.35)	(0.36)	(0.35)
	[0.05]	[0.08]	[0.06]	[0.07]	[0.06]	[0.06]	[0.06]	[0.05]
Generation Missing	-2.46 ***	-2.33 ***	-1.85 ***	-1.80 ***	-0.88 **	-1.27 ***	-1.18 **	-1.20 ***
	(0.31)	(0.32)	(0.32)	(0.32)	(0.34)	(0.37)	(0.37)	(0.37)
	[0.20]	[0.19]	[0.15]	[0.14]	[0.06]	[0.09]	[0.08]	[0.08]
Proficient by fall K		0.34	-0.14	-0.15	0.11	-0.03	0.04	0.17
		(0.41)	(0.43)	(0.43)	(0.42)	(0.42)	(0.42)	(0.42)
		[0.03]	[0.01]	[0.01]	[0.01]	[0.00]	[0.00]	[0.01]
Proficient by spring K		0.51	0.08	0.10	1.47	1.17	1.24	1.53
		(0.78)	(0.79)	(0.79)	(0.78)	(0.78)	(0.79)	(0.79)
		[0.03]	[0.00]	[0.01]	[0.08]	[0.07]	[0.07]	[0.09]
Black			-4.67 ***	-4.70 ***	-3.20 ***	-2.68 ***	-2.46 ***	-1.83 ^{a b} ***
			(0.27)	(0.27)	(0.28)	(0.29)	(0.30)	(0.33)
			[0.39]	[0.40]	[0.26]	[0.21]	[0.19]	[0.12]

Hispanic	-2.23 ***	-2.23 ***	-1.31 ***	-1.26 ***	-1.16 ***	-0.77 ^b *
	(0.32)	(0.32)	(0.32)	(0.32)	(0.32)	(0.34)
	[0.16]	[0.16]	[0.10]	[0.09]	[0.08]	[0.05]
Asian	3.02 ***	2.94 ***	3.00 ***	2.88 ***	2.96 ***	3.28 ^{a b} ***
	(0.49)	(0.49)	(0.49)	(0.49)	(0.49)	(0.49)
	[0.21]	[0.20]	[0.21]	[0.20]	[0.21]	[0.23]
Other	-2.91 ***	-2.91 ***	-2.05 ***	-1.89 ***	-1.68 ***	-0.92 *
	(0.42)	(0.42)	(0.42)	(0.42)	(0.42)	(0.43)
	[0.23]	[0.23]	[0.17]	[0.15]	[0.14]	[0.07]
Female		1.73 ***	1.73 ***	1.72 ***	1.75 ***	1.74 ***
		(0.19)	(0.19)	(0.19)	(0.19)	(0.19)
		[0.14]	[0.14]	[0.14]	[0.15]	[0.15]
Above HS			2.80 ***	2.80 ***	2.62 ***	2.39 ^a ***
			(0.20)	(0.20)	(0.21)	(0.21)
			[0.22]	[0.22]	[0.20]	[0.18]
Above poverty			3.10 ***	2.69 ***	2.48 ***	2.26 ***

	(0.26)	(0.27)	(0.27)	(0.27)
	[0.23]	[0.19]	[0.17]	[0.16]
2 Parent family		1.76 ***	1.66 ***	1.60 ^b ***
		(0.26)	(0.26)	(0.26)
		[0.12]	[0.11]	[0.11]
Warm parenting		-0.67 **	-0.72 **	-0.69 ^b **
		(0.25)	(0.25)	(0.25)
		[0.02]	[0.03]	[0.02]
Home cognitive stimulation		-0.58 **	-0.36	-0.33
		(0.19)	(0.20)	(0.20)
		[0.02]	[0.01]	[0.01]
Maternal beliefs school		0.20	0.50 **	0.51 **
readiness				
		(0.15)	(0.19)	(0.19)
		[0.01]	[0.02]	[0.02]
Hrs in prekindergarten			-0.01	-0.01

		(0.01)	(0.01)
		[0.01]	[0.01]
Age kindergarten		0.02	0.02
entry			
		(0.02)	(0.02)
		[0.01]	[0.01]
Parental care		-0.77 *	-0.52
		(0.33)	(0.33)
		[0.06]	[0.04]
Nonparental, relative care		-0.44	-0.28
		(0.26)	(0.26)
		[0.03]	[0.02]
Headstart		-2.29 ***	-1.86 ***
		(0.37)	(0.37)
		[0.19]	[0.15]
Public school			-0.94 ***

					(0.25)
					[0.07]
Urban school					0.12
					(0.22)
					[0.01]
Rural school					-0.97 ^b ***
					(0.26)
					[0.08]
School over 50 % minority					-1.38 ^b ***
					(0.27)
					[0.09]
Socioeconomic Factors	Yes	Yes	Yes	Yes	
Missing					
Parenting Missing		Yes	Yes	Yes	
Childcare Missing			Yes	Yes	
School Missing				Yes	

Model for acceleration

Mean acceleration	-1.55	***	-1.59	***	-1.59	***	-1.59	***	-1.60	***	-1.63	***	-1.63	***	-1.63	***
	(0.03)		(0.03)		(0.03)		(0.03)		(0.03)		(0.03)		(0.03)		(0.03)	
1st Generation	-0.34		-0.51		-0.28		-0.28		-0.20		-0.18		-0.17		-0.16	
	(0.28)		(0.29)		(0.29)		(0.29)		(0.29)		(0.29)		(0.29)		(0.29)	
	[0.08]		[0.11]		[0.06]		[0.06]		[0.04]		[0.04]		[0.04]		[.04]	
2nd Generation	-0.46	***	-0.57	***	-0.32	*	-0.32	*	-0.31	*	-0.29	*	-0.29	*	-0.27	
	(0.11)		(0.12)		(0.13)		(0.13)		(0.13)		(0.13)		(0.13)		(0.13)	
	[0.11]		[0.11]		[0.06]		[0.06]		[0.06]		[0.06]		[0.06]		[0.05]	
Generation Missing	0.31	***	0.28	*	0.38	***	0.36	***	0.23		0.38	**	0.36	**	0.36	**
	(0.11)		(0.11)		(0.11)		(0.11)		(0.12)		(0.13)		(0.13)		(0.13)	
	[0.07]		[0.06]		[0.09]		[0.08]		[0.05]		[0.07]		[0.07]		[0.07]	
Proficient by fall K			-0.07		0.15		0.15		0.10		0.15		0.14		0.14	
			(0.14)		(0.15)		(0.15)		(0.15)		(0.15)		(0.15)		(0.15)	
			[0.01]		[0.03]		[0.03]		[0.02]		[0.03]		[0.03]		[0.03]	

Proficient by spring K	-0.31	-0.11	-0.12	-0.39	-0.30	-0.32	-0.35
	(0.26)	(0.26)	(0.26)	(0.26)	(0.26)	(0.26)	(0.26)
	[0.05]	[0.02]	[0.02]	[0.07]	[0.05]	[0.05]	[0.06]
Black		0.47 ***	0.48 ***	0.17	0.05	0.03	-0.03
		(0.09)	(0.09)	(0.10)	(0.10)	(0.11)	(0.12)
		[0.11]	[0.11]	[0.04]	[0.01]	[0.01]	[0.01]
Hispanic		0.27 *	0.26 *	0.08	0.08	0.06	0.03 ^b
		(0.11)	(0.11)	(0.11)	(0.11)	(0.11)	(0.12)
		[0.05]	[0.05]	[0.02]	[0.02]	[0.01]	[0.01]
Asian		-1.55 ***	-1.53 ***	-1.53 ***	-1.51 ***	-1.53 ***	-1.56 ^{a b} ***
		(0.17)	(0.17)	(0.17)	(0.17)	(0.17)	(0.18)
		[0.30]	[0.30]	[0.30]	[0.30]	[0.30]	[0.31]
Other		0.19	0.19	0.01	-0.03	-0.08	-0.19
		(0.14)	(0.14)	(0.14)	(0.14)	(0.14)	(0.15)
		[0.04]	[0.04]	[0.00]	[0.01	[0.02]	[0.04]
Female			-0.41 ***	-0.41 ***	-0.41 ***	-0.42 ***	-0.41 ***

	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
	[0.10]	[0.10]	[0.10]	[0.10]	[0.10]
Above HS	-0.57 ***	-0.58 ***	-0.55 ***	-0.49 ^a ***	
	(0.07)	(0.07)	(0.07)	(0.07)	
	[0.13]	[0.13]	[0.12]	[0.10]	
Above poverty	-0.65 ***	-0.53 ***	-0.50 ***	-0.45 ***	
	(0.09)	(0.09)	(0.09)	(0.09)	
	[0.14]	[0.11]	[0.10]	[0.09]	
2 Parent family		-0.48 ***	-0.46 ***	-0.45 ^b ***	
		(0.09)	(0.09)	(0.09)	
		[0.10]	[0.09]	[0.09]	
Warm parenting		0.17	0.18	0.18	
		(0.09)	(0.09)	(0.09)	
		[0.02]	[0.02]	[0.02]	
Home cognitive stimulation		0.20 **	0.14	0.14	
		(0.07)	(0.07)	(0.07)	

					[0.02]		[0.02]		[0.02]	
					-0.16	**	-0.23	***	-0.23	***
Maternal beliefs school										
readiness										
					(0.05)		(0.07)		(0.07)	
					[0.02]		[0.03]		[0.03]	
Hrs in prekindergarten							0.00		0.00	
							(0.00)		(0.00)	
							[0.00]		[0.00]	
Age kindergarten							-0.01		-0.01	
entry										
							(0.01)		(0.01)	
							[0.01]		[0.01]	
Parental care							0.08		0.03	
							(0.12)		(0.12)	
							[0.02]		[0.01]	
Nonparental, relative care							0.20	*	0.16	

		(0.09)	(0.09)
		[0.04]	[0.03]
Headstart		0.43 ***	0.34 **
		(0.13)	(0.13)
		[0.11]	[0.08]
Public school			0.35 ***
			(0.09)
			[0.07]
Urban school			-0.01
			(0.08)
			[0.00]
Rural school			0.21 ^b *
			(0.09)
			[0.05]
School over 50 % minority			0.14
			(0.09)

														[0.03]		
Socioeconomic Factors										Yes	Yes	Yes	Yes			
Missing																
Parenting Missing											Yes	Yes	Yes			
Childcare Missing												Yes	Yes			
School Missing													Yes			
<hr/>																
<i>Residual variance</i>	Var		Var		Var		Var		Var		Var		Var			
	(SD)		(SD)		(SD)		(SD)		(SD)		(SD)		(SD)			
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Level 2 Intercept	157.31	***	155.93	***	148.03	***	146.70	***	135.04	***	133.61	***	130.72	***	128.62	***
	(12.54)		(12.48)		(12.16)		(12.11)		(11.62)		(11.56)		(11.43)		(11.34)	
Slope	83.54	***	83.38	***	79.39	***	78.64	***	74.86	***	74.95	***	74.48	***	73.84	***
	(9.14)		(9.13)		(8.91)		(8.87)		(8.65)		(8.66)		(8.63)		(8.59)	
Acceleration	8.99	***	8.99	***	8.82	***	8.78	***	8.60	***	8.61	***	8.57	***	8.53	***
	(3.00)		(3.99)		(2.97)		(2.96)		(2.93)		(2.93)		(2.93)		(2.92)	
Within Individual	49.56		49.44		49.46		49.47		49.47		49.30		49.28		49.27	

(7.04)	(7.03)	(7.03)	(7.03)	(7.03)	(7.02)	(7.02)	(7.02)
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Note. Coefficients are reported unless otherwise indicated; * $p < .05$, ** $p < .01$, *** $p < .001$ after controlling for multiple tests with the Bejamini-Hochburg adjustment. Standard errors in parentheses; effect sizes in brackets; ^a factor is a significant mediator (Sobel test statistics significant after adjusting for multiple tests with the Bejamini-Hochburg adjustment) of the association between reading and first generation ; ^b factor is a significant mediator (Sobel test statistics significant after adjusting for multiple tests with the Bejamini-Hochburg adjustment) of the association between reading and second generation: Yes indicates missing data dummy for that factor was included in the model.