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Racial/Ethnic Differences in Kindergartners' Reading and Math Skills:

Associations with Parents' Knowledge and Home-Based Practices

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This Study

- Examine racial/ethnic similarities and differences in reading and math skills at the start of kindergarten
- Investigate the associations between home factors and reading and math skills

Background: Racial/Ethnic Differences

- Black/Hispanic children, on average, earn reading/math scores up to one standard deviation lower than Asian/White children (e.g., Lee & Bowen, 2006; National Research Council, 2009)
- Differences are evident by the start of kindergarten (Burchinal, 2011; Serpell et al., 2005) and increase as children go through school (Fryer & Levitt, 2004)
- Thus, we need to look more at what goes on at home before the start of formal schooling, and how that may differ by race/ethnicity and academic domains

Background: Parent Knowledge

- Systematic group-based differences in parents knowledge of child development (Bornstein & Cote, 2004; Bornstein et al., 2010; Glick et al.; Keels, 2009)
- Parents' knowledge are related to home activities and children's subsequent development (e.g., Benasich & Brooks-Gunn, 1996; Dichtelmiller et al., 1992; Keels, 2009, McGillicuddy-DeLisi & Sigel, 2002; Sigel, 1992; Sonnenschein et al., 2014)

Background: Home Activities

- Significant racial/ethnic differences in home activities
 - Black/Hispanic parents talk less to their children, use a more limited vocabulary, and are less likely to read to their children than White parents (Bradley et al., 2001; Brooks-Gunn & Markman, 2005)
 - Asian parents engage in more systematic instruction at home than White parents (Huntsinger & Jose, 2009)

Research Gaps

- Little research investigating associations between parents' knowledge, practices, and children's early academic skills
- Inconsistent findings in previous studies
- It is not clear whether parents' early knowledge predicts children's later academic skills

Research Questions

- Are there racial/ethnic differences in parents' knowledge, home activities, and children's reading and math skills?
- What are the associations between parents' knowledge, home activities, and children's reading and math skills in kindergarten?
 - Do home activities mediate the relation between parents' knowledge and children's reading/math?
 - Does the mediation differ by race/ethnicity and academic domain?

Conceptual Model

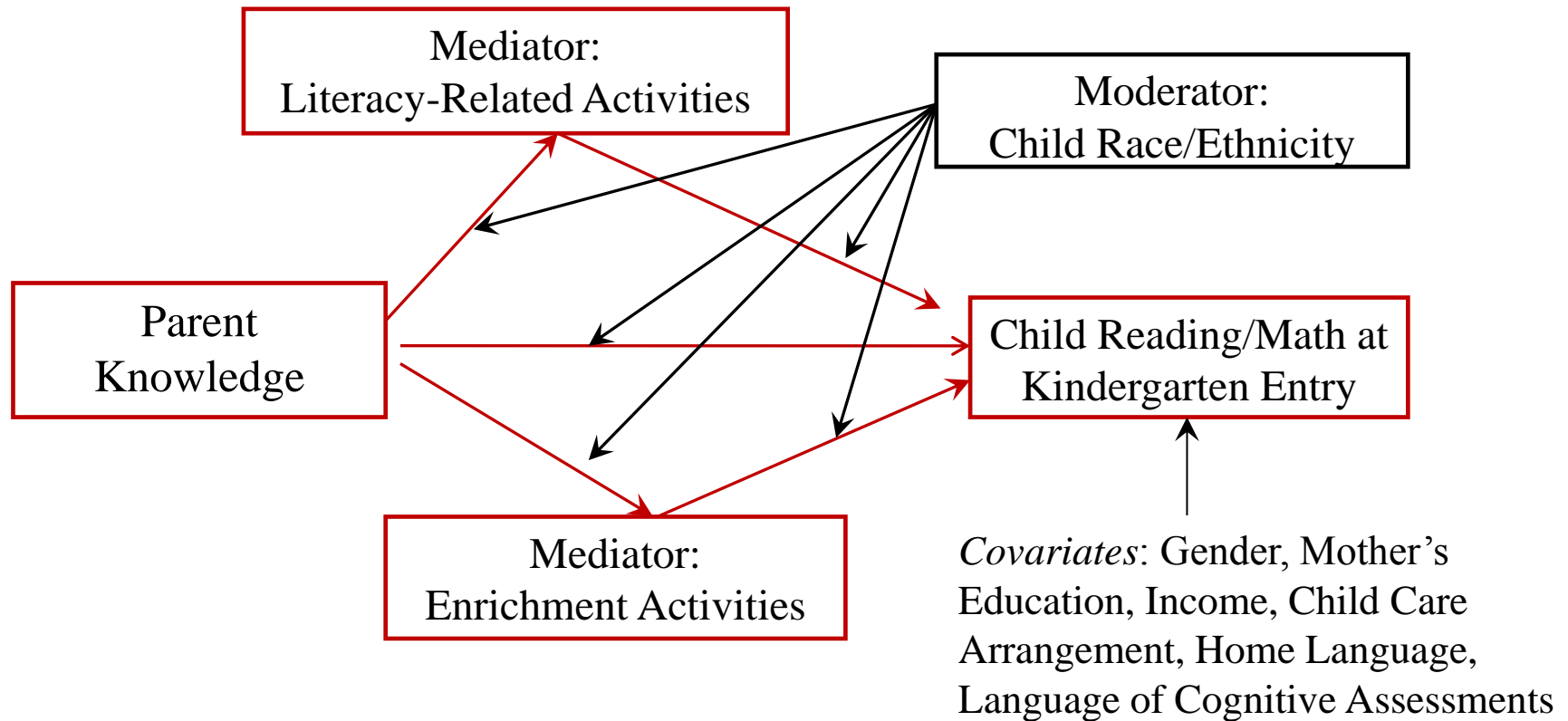


Figure 1. A conceptual moderated mediation model in which (1) literacy-related activities and enrichment mediate the relation between parent knowledge and child reading/math skills and (2) the direct effects and indirect effects may differ for Asian, Black, Latino and White children.

Method: Data Source

Data come from the Early Childhood Longitudinal Study Birth Cohort (ECLS-B)

Demographics		<i>N</i>	%
Child Race/Ethnicity	White	2,700	46.07
	Black	1,000	17.89
	Hispanic	1,400	23.37
	Asian	700	12.67
Primary Child Care	Not in Formal Care	2,100	36.91
	Center-Based Program	2,800	47.74
	Head Start	800	13.15
	Multiple Care Arrangement	100	2.20
Mother's Education	Less than High School	900	14.75
	High School Diploma	1,450	25.43
	Some College	1,700	29.32
	College Degree and above	1,750	30.51
Home Language	English	4,400	76.28
	Non English	1,400	23.72

Method: Measures

- Reading/Math IRT Scores: Assessed when children entered kindergarten
- Parents' Knowledge of Infant Development (KIDI; MacPhee, 1981): assessed when children were 9 months old
- Home activities: assessed when children were 4 years old
 - Literacy-Related Activities (e.g., read books, tell stories)
 - Enrichment (e.g., playing with blocks, religious and athletic activities)

Results: Racial/Ethnic Differences

	White	Black	Hispanic	Asian	Racial/Ethnic Differences
KIDI	8.30 (0.06)	6.85 (0.09)	6.45 (0.09)	6.45 (0.10)	White>Black>Hispanic=Asian
Literacy	0.25 (0.05)	-0.34 (0.06)	-0.56 (0.06)	0.23 (0.10)	White=Asian>Black=Hispanic
Enrichment	0.27 (0.04)	-0.22 (0.06)	-0.35 (0.06)	-0.09 (0.08)	White>Black=Hispanic=Asian
Reading	46.29 (0.49)	41.21 (0.53)	39.68 (0.66)	51.19 (0.84)	Asian>White>Black=Hispanic
Math	46.48 (0.31)	40.48 (0.37)	40.55 (0.42)	48.36 (0.51)	Asian>White>Black=Hispanic

Results: Reading

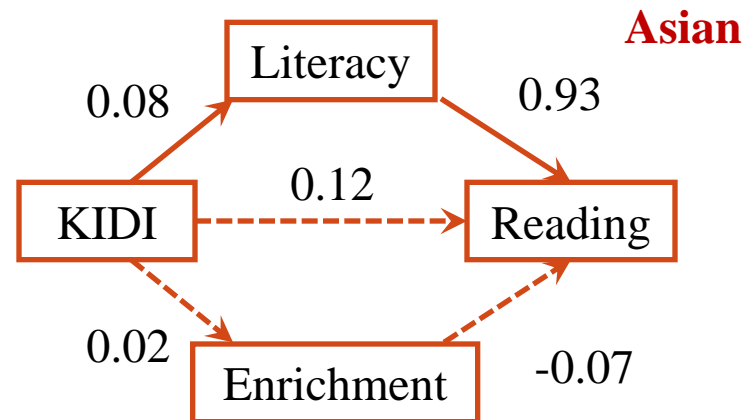
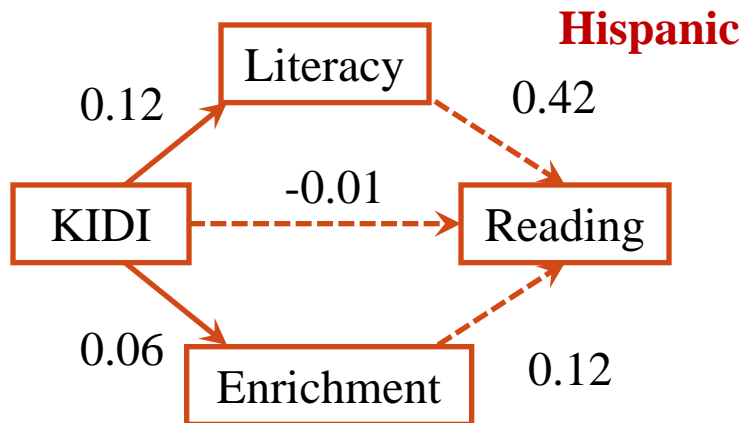
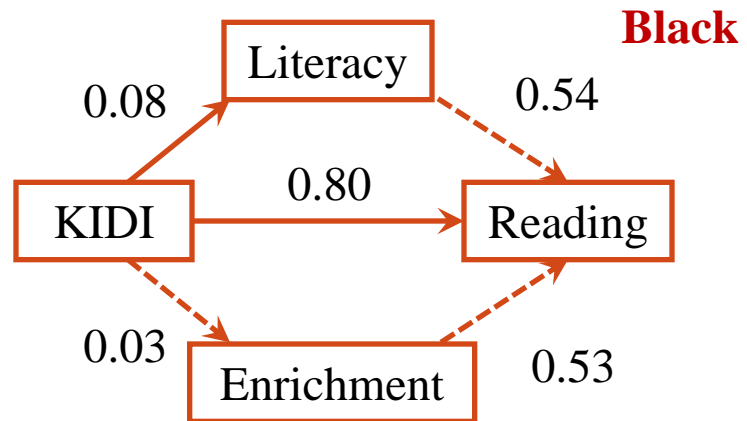
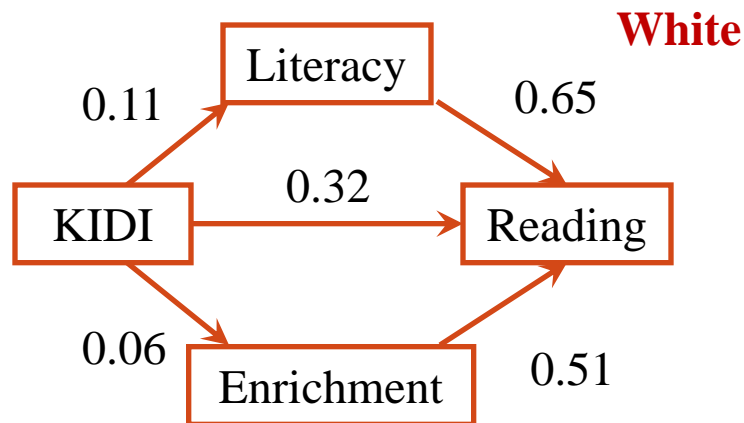


Figure 2. Results from the moderated mediation model for reading skills at kindergarten entry. Solid lines indicate significant paths and broken lines indicate nonsignificant paths.

Results: Indirect Effects on Reading

		Estimate	<i>SE</i>	95% Bootstrap CI	
				Lower	Upper
KIDI-> Literacy ->Reading	White	0.07	0.02	0.03	0.12
	Black	0.04	0.03	0.00	0.11
	Hispanic	0.05	0.03	0.00	0.12
	Asian	0.08	0.04	0.02	0.18
KIDI->Enrichment->Reading	White	0.03	0.01	0.01	0.06
	Black	0.01	0.02	-0.01	0.06
	Hispanic	0.01	0.02	-0.02	0.04
	Asian	0.00	0.01	-0.03	0.01

Results: Math

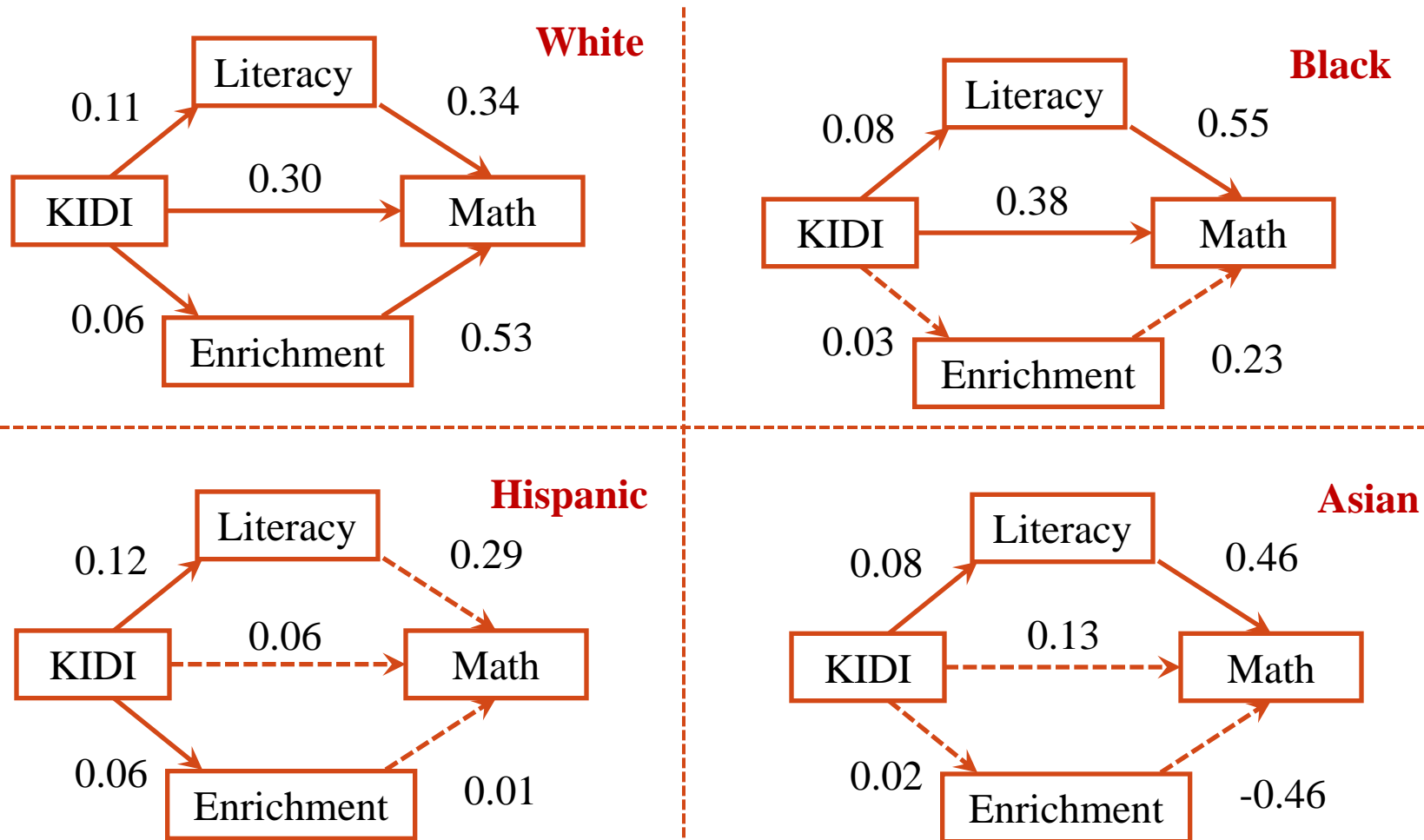


Figure 2. Results from the moderated mediation model for reading skills at kindergarten entry. Solid lines indicate significant paths and broken lines indicate nonsignificant paths.

Results: Indirect Effects on Math

		Estimate	SE	95% Bootstrap CI	
				Lower	Upper
KIDI-> Literacy >Math	White	0.01	0.01	0.00	0.04
	Black	0.04	0.02	0.01	0.10
	Hispanic	0.03	0.02	-0.01	0.08
	Asian	0.04	0.02	0.00	0.10
KIDI->Enrichment->Math	White	0.01	0.01	0.00	0.04
	Black	0.03	0.01	0.01	0.06
	Hispanic	0.00	0.01	-0.02	0.03
	Asian	-0.01	0.02	-0.05	0.01

Results: Summary

- There are significant racial/ethnic differences in parent knowledge, home activities, and children's academic skills
- Home activities mediate the relation between parent knowledge and children's academic skills; however, the mediation is moderated by race/ethnicity

Discussion

- Race/ethnicity needs to be taken into account in order to understand and improve all children's educational outcomes
- Parenting programs/interventions are needed
 - Both Blacks and Hispanics may need additional focus on parent knowledge and home activities that foster children's academic development
 - Hispanics also may need a focus on the nature of optimal parent-child interactions

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