

INTERGENERATIONAL TRANSMISSION OF CHINESE READING IN CANTONESE-SPEAKING FAMILIES: Cognitive Mediation from Mother to Children

Wong Cheuk Yin, Ally, supervised by Prof. Zhao JingJing
The Department of Psychology, The Chinese University of Hong Kong

INTRODUCTION

DEVELOPMENTAL DYSLEXIA (DD)

- Prevalence in HK: 10%–13% of children (Chan et al., 2007)

HONG KONG'S LINGUISTIC CONTEXT

- morpho-syllabic script; high visual-orthographic complexity in traditional characters; “look-and-say” approach; diglossic-bilingual context (Mattingly, 1992; McBride et al., 2008)

THEORETICAL FRAMEWORK

- Intergenerational Multiple Deficit Model of Dyslexia*
 - multiple shared genetic and environmental risks shape familial similarities in cognitive skills and reading. (Van Bergen et al., 2014)

RESEARCH GAP:

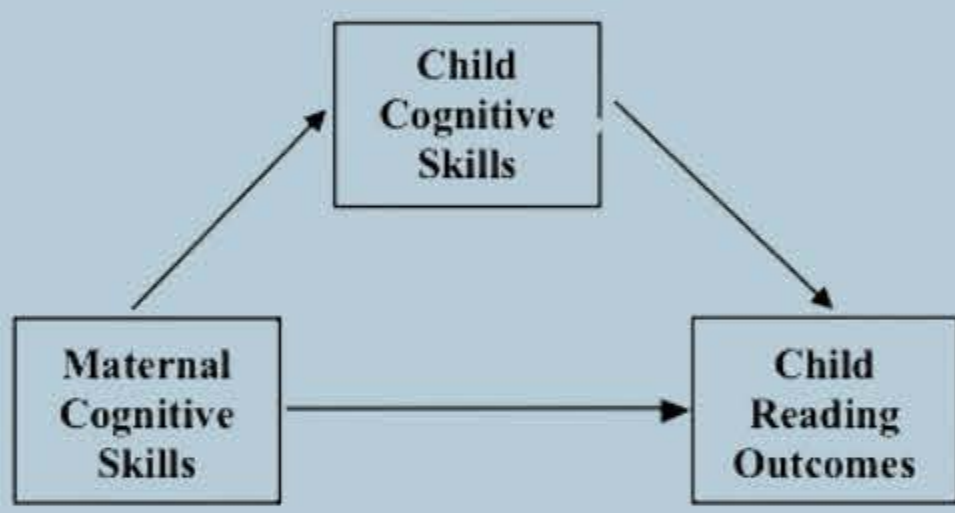
- Most family-risk studies relied on parental self-reports; lack direct cognitive assessments
- Conteoverial role of cognitive skills in Cantonese
- Unique language context limits studies’ generalizability

RESEARCH QUESTIONS

RH1: Which cognitive-linguistic skills uniquely predict children’s reading outcomes?

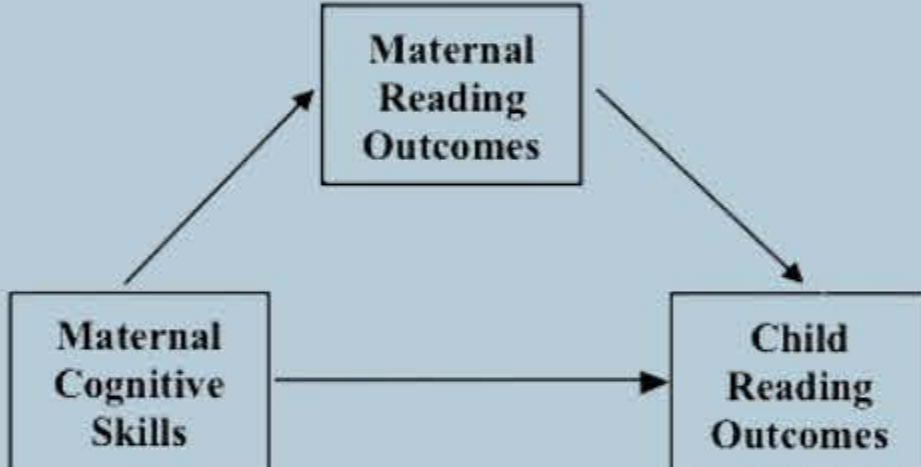
RH2: Does children’s cognitive skill identified in RQ1 mediate the association between maternal RAN and children’s reading?

COGNITIVE TRANSMISSION PATHWAY



RH3: Can the transmission be explained by an behavioural pathway, which maternal cognitive skills predict children’s reading via maternal reading ?

Behavioral Transmission Pathway



METHODOLOGY

Participants

- 47 Cantonese-speaking families in Hong Kong
 - children aged 8–14 (N=57)
 - mothers (N=44)
 - fathers (N=12)

Measures

- Cognitive-linguistic skills**
 - Phonological Awareness (PA)
 - Rapid Automatized Naming (RAN)
 - Verbal Short-Term Memory (VSTM)
 - Morphological Awareness (MA)
- Reading outcomes**
 - Reading Fluency
 - Reading Accuracy

Statistical Analysis

- Principal Component Analysis (PCA)
- Hierarchical regression models
- Simple mediation models
- Models estimated as path-analytic SEMs with family-clustered robust SEs

RESULTS

RQ1: PREDICTORS OF CHILDREN’S READING

- only **RAN & MA** predict reading outcomes
 - RAN(accuracy: $\beta = 0.459$; fluency: $\beta = 0.804$)
 - MA (accuracy: $\beta = 0.470$; fluency: $\beta = 0.333$)

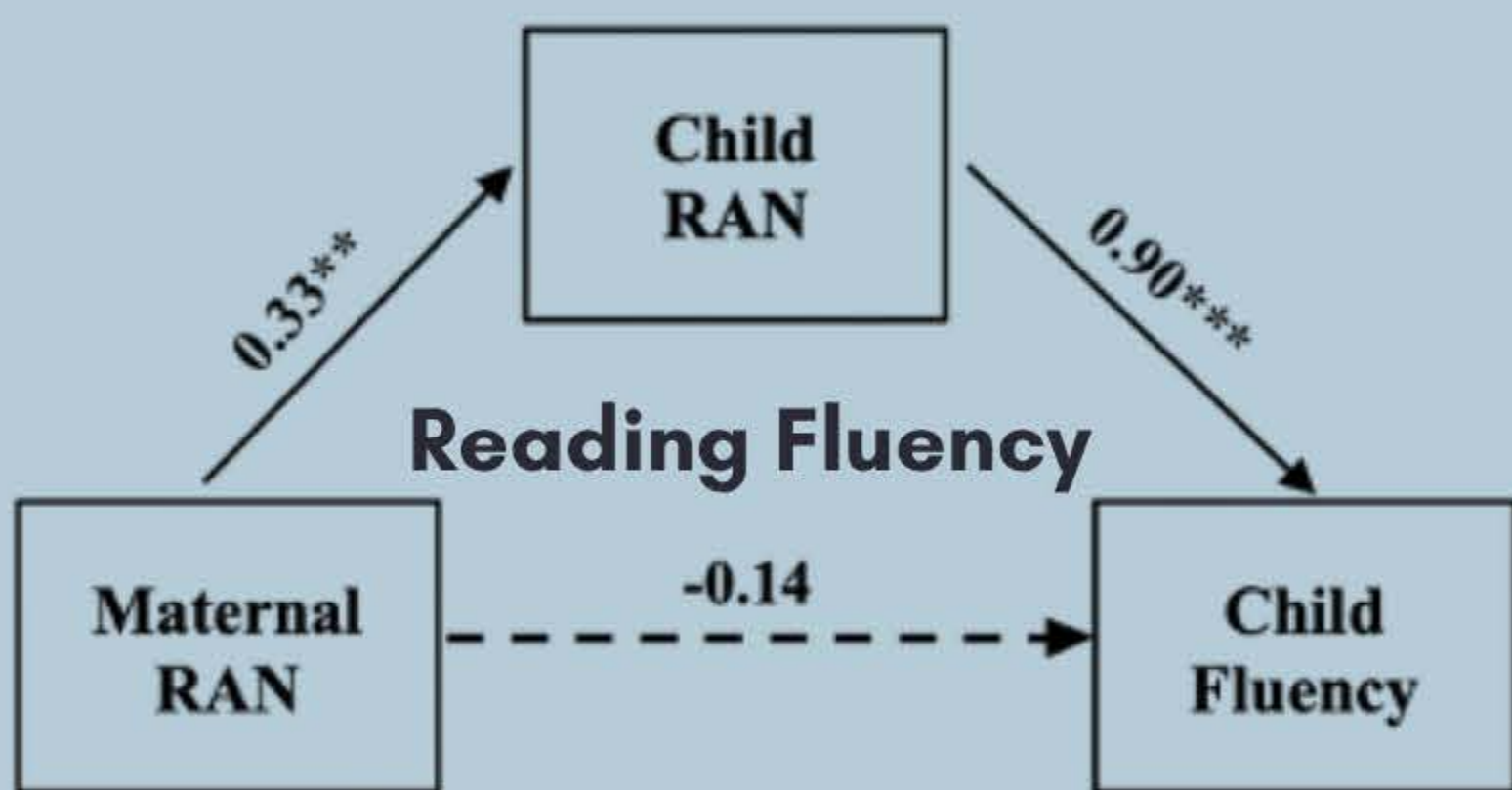
Table 6 Hierarchical Regression Predicting Child Reading Accuracy and Fluency

Model	Dependent Variables	R ²	Reading Accuracy			Reading Fluency		
			β	p		β	p	
1	Control variables	0.223	—	—	—	0.133	—	—
	Age		0.476	.000		0.369	.006	
	Sex		−0.045	.720		−0.048	.709	
2a	Age	0.369	—	—	—	0.570	—	—
	Sex		—	—	—	—	—	—
	RAN		0.459	.003		0.804	<.001	
2b	Age	0.262	—	—	—	0.189	—	—
	Sex		—	—	—	—	—	—
	PA		0.202	.133		0.244	.107	
2c	Age	0.225	—	—	—	0.134	—	—
	Sex		—	—	—	—	—	—
	VSTM		0.055	.680		0.034	.831	
2d	Age	0.415	—	—	—	0.227	—	—
	Sex		—	—	—	—	—	—
	MA		0.470	<.001		0.333	.016	

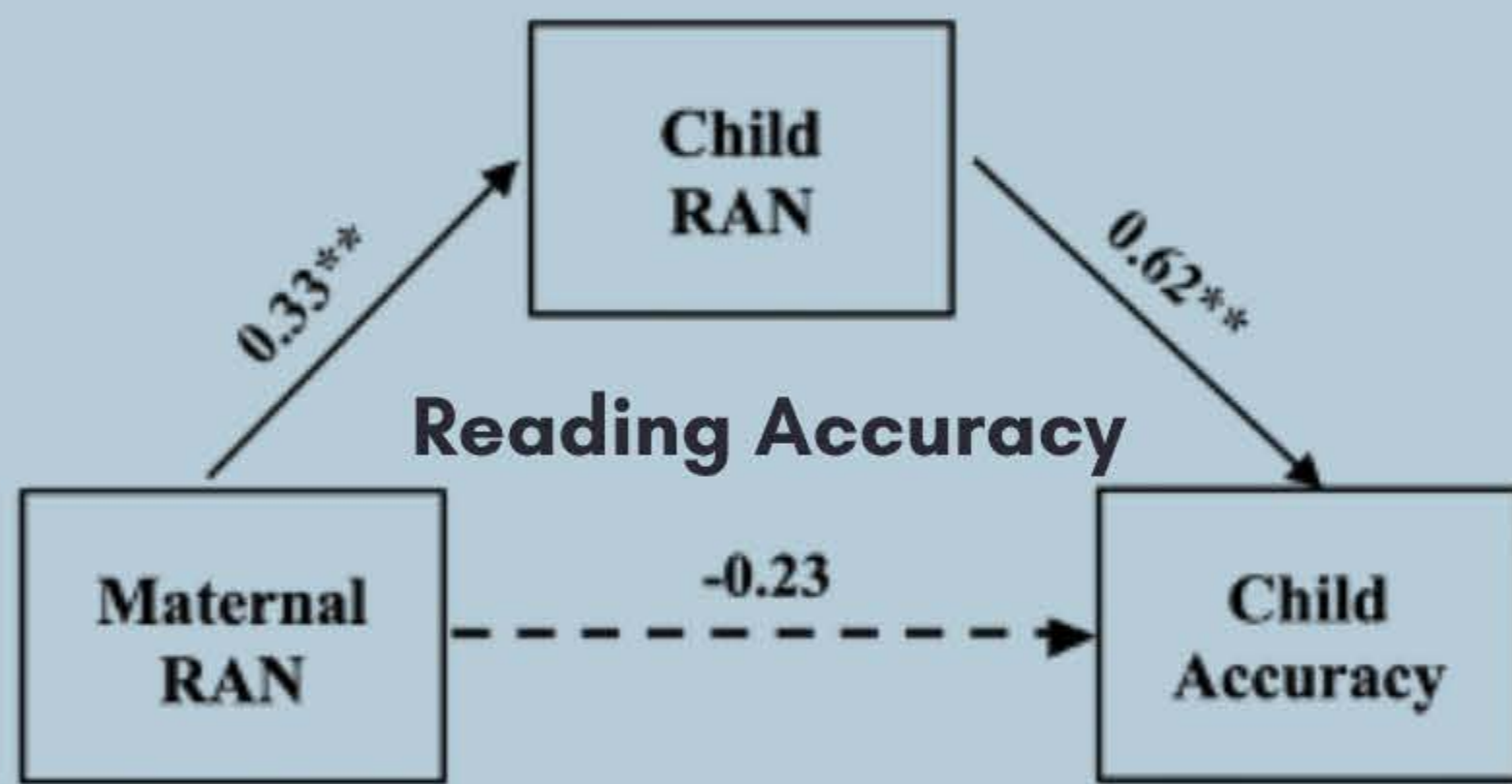
Note. RAN = Rapid Automatized Naming; PA = Phonological Awareness; VSTM = Verbal Short-Term Memory; MA = morphological awareness. B = unstandardized coefficient; β = standardized coefficient; ΔR^2 = change in explained variance.

RQ2: COGNITIVE TRANSMISSION PATHWAY SUPPORTED

- Full Mediation Models:** Children’s RAN **fully mediated** the association between maternal RAN and children’s reading outcomes



Indirect effect: $\beta \approx 0.21$, $p = .025$ (95% CI $\approx [0.03, 0.38]$)



Indirect effect: $\beta \approx 0.30$, $p = .008$ (95% CI $\approx [0.08, 0.53]$)

RQ3: BEHAVIORAL TRANSMISSION PATHWAY NOT SUPPORTED

- NO significant association** between maternal and child reading outcomes (accuracy: $r = -0.02$, fluency: $r = 0.13$)

DISCUSSION

1. RAN as Core Endophenotype

- Child-level: predicts both accuracy & fluency
- Cross-generational: Only RAN showed significant mother-child correlation ($r \approx .38$, $p < .01$)

2. MA as Environmentally shaped

- Child-level: predicts both accuracy & fluency
- Cross-generational: NO significant mother-child correlation ($r \approx -.01$, $p > .10$)
- could be shaped by schooling and print exposure than transmitted

3. Cognitive v.s. Behavioral Pathway

- Behavioural pathway via maternal reading: unsupported
- only cognitive skills trasmitted, but not reading performance
- could be due to compensated adult reading or additional mediators (e.g. independent reading, HLE)

IMPLICATIONS

screening & future research

- important to include **direct parental cognitive assessment**

interventions:

- MA a strong but likely modifiable predictor.
- Fluency interventions: RAN
- Accuracy intervention: RAN+ MA

CONCLUSION

In Cantonese-speaking families, Intergenerational transmission of reading ability operates primarily through **shared cognitive skills, specifically RAN** as core endophenotype, rather than via **direct behavioural resemblance in reading performance**.

LIMITATIONS

- Small sample size & underrepresented fathers
- Cross-sectional design
- Lack direct measurement of environment (e.g., HLE/ instructional practices)

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