The Impact Cognitive and Environmental Factors have on Children's Reading Resilience

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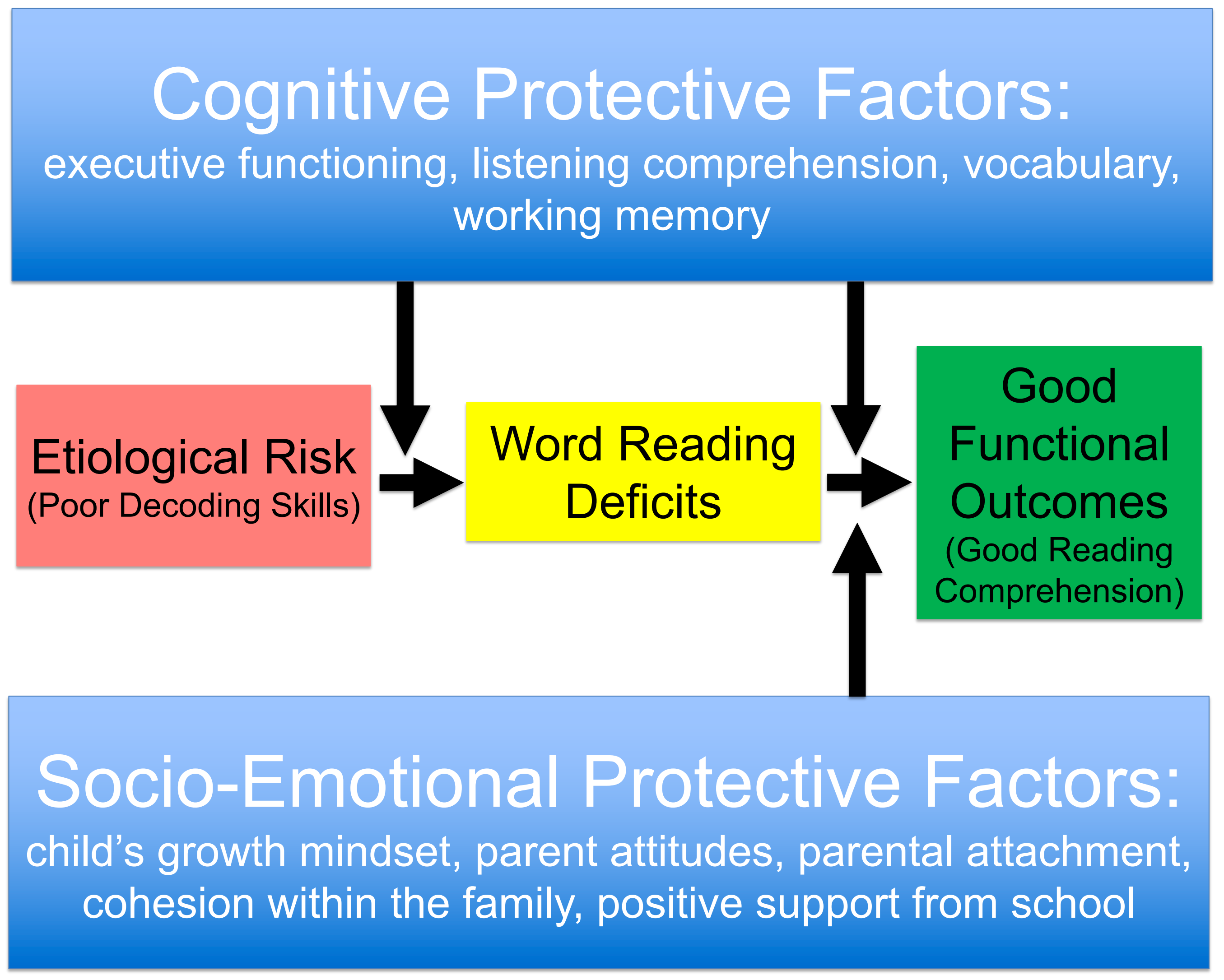Contact email :
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Introduction

- Dyslexia is **a specific learning disability** that impacts an individual's ability to spell, decode, and recognize words accurately and fluently. These difficulties can have downstream effects on reading comprehension. Yet, despite these difficulties, some children exhibit **reading resilience** and are still able to comprehend written text.

The Literacy-Based Resilience Framework:
(Haft, Myers, & Hoeft, 2016)

Cognitive Protective Factors:
executive functioning, listening comprehension, vocabulary, working memory

Etiological Risk (Poor Decoding Skills) → **Word Reading Deficits** → **Good Functional Outcomes** (Good Reading Comprehension)

Socio-Emotional Protective Factors:
child's growth mindset, parent attitudes, parental attachment, cohesion within the family, positive support from school

- However, limited research has focused specifically on the impact of environmental factors surrounding the child, such as parental attitudes towards reading and parental growth mindset.
- This study aimed to examine how environmental factors stemming from the child's parents, and the child's cognitive factors influenced reading resilience within a sample of children who have characteristics of dyslexia.

Hypotheses

1. Measures of a child's cognitive factors (listening comprehension and parent report of executive functioning) will predict reading resilience.
2. Environmental factors that come from children's parent (parent's grit, general and reading growth mindset, and reading attitudes) will predict reading resilience.

Participants

- The sample included data from **28 children and parents/guardians** from a clinic-referral sample of children identified with characteristics of dyslexia.

Materials & Procedures

- Children completed an individually administered battery of norm- & criterion-referenced measures of literacy skills as part of an evaluation at the Center for Dyslexia.
- Parents completed a series of questionnaires while their child was being evaluated.

Results: Child and Parent Scores

- **Reading resiliency** is the standardized residual scores for reading comprehension obtained after partialling out pseudoword decoding scores (Pataea et al., 2018). It is also reported as a difference score.

Child Scores	M (SD)	Min - Max
Age in years	8.8 (1.8)	6.5 - 14.75
Sex (Female = 13; Male = 15)		
Grade (K = 1; 1st = 7; 2nd = 8; 3rd = 3; 4th = 3; 5th = 4; 7th = 2)		
Ethnicity (White = 23; African American = 4; Asian American = 1)		
Parental Reports		
BASC Overall Executive Functioning T	32.04 (10.93)	12 - 58
Reading and Language Skills		
WIAT-III Listening Comprehension SS	100.46 (10.01)	73 - 115
WIAT-III Pseudoword Decoding SS	85.25 (9.02)	73 - 102
WIAT-III Reading Comprehension SS	92 (9.70)	73 - 111
Reading Resiliency		
Standard scores (RC – PD)	6.75 (11.32)	-10 - 32
Std. residual score	0.0 0.98	-1.62 - 2.04

Parent Scores	M (SD)	Min - Max
Age in years	38.6 (6.05)	29 - 59
Sex (Female = 28)		
Ethnicity (White = 24; African American = 4)		
Education (High School = 1; Undergraduate = 13; Graduate = 13; Trade = 1)		
Adult Reading History Questionnaire	.27 (.14)	.02 - .75
Adult Reading Attitudes (ARA)		
Activity	43.6 (11.2)	22 - 60
Social Reinforcement	23.2 (4.6)	14 - 30
Tutoring	7.6 (1.5)	4 - 10
Ease	66.2 (10.1)	38 - 77
Alternative Modes	11.3 (3.3)	4 - 18
Adult Short Grit	3.9 (.62)	2 - 5
Growth Mindset		
General	3.6 (.23)	3.15 - 4
Reading	3.4 (.38)	2.77 - 4.4

Correlation Matrix												
$p < .05$ $p < .01$	A	B	C	D	E	F	G	H	I	J	K	L
A. Reading Resiliency std. residual	1											
B. ARA Activity	.17	1										
C. ARA Social Reinforcement	.19	**.87**	1									
D. ARA Tutoring	.16	**.78**	**.80**	1								
E. ARA Ease	.16	**.69**	**.48**	**.53**	1							
F. ARA Alt. Modes	.07	**.49**	.21	.29	**.60**	1						
G. ARHQ	-.31	**-.71**	**-.50**	**-.52**	**-.79**	**-.51**	1					
H. Adult Short Grit	.18	.12	.21	.04	.18	-.15	-.10	1				
I. General Growth Mindset	**.39**	.10	.05	.00	-.04	.24	.09	.04	1			
J. Reading Growth Mindset	.16	-.06	-.02	-.01	-.27	.18	.07	-.18	.27	1		
K. BASC Overall Executive Functioning	.07	-.08	-.18	-.18	.12	.11	-.19	-.32	-.13	-.13	1	
L. Listening Comprehension	**.43**	-.14	-.02	-.15	-.10	-.32	.08	-.11	-.01	.11	.13	1

Results: Cognitive and Environmental Predictive Factors of Reading Resilience

- Multiple regression analyses were used to examine the relationship between the children's reading resilience and possible protective factors.

Cognitive	Resilience Std. Residual			
Predictor	β	SE B	t	p
Listening Comprehension	.17	.17	2.43	.02*
Adjusted R²	.15			
F (1, 26)	5.89			.02

Listening comprehension was the significant cognitive factor.

Environmental	Resilience Std. Residual			
Predictor	β	SE B	t	p
Parental General Growth Mindset	.38	.18	2.13	.04*
Adjusted R²	.12			
F (1, 26)	4.52			.04

Parental General Growth Mindset was the significant environmental factor.

Exploratory	Model 1				Model 2			
	Resilience Std. Residual				Resilience Std. Residual			
Predictor	β	SE B	t	p	β	SE B	t	p
Listening Comprehension	.44	.16	2.67	.01	.21	.15	1.39	.18
Parental General Growth Mindset	.39	.16	2.40	.02	.19	.15	1.24	.23
Child's Age					.55	.16	3.32	.003*
Adjusted R²	.28				.49			
F (1, 26)	6.35			.01	9.61			.001

- In a model with age and both previously identified factors, age was the only significant predictor. So, we examined potential age differences in our sample using a median split.

Scores	Older > 8.9 yrs (M, SD)	Younger < 8.9 yrs (M, SD)	p
Resilience Std. Residual	0.73 (1.19)	-0.64 (.81)	.001
Reading Comprehension	0.59 (95)	-0.52 (.74)	.002
Pseudoword Decoding	-0.14 (.95)	0.12 (1.06)	.51
Listening Comprehension	0.16 (1.24)	-0.14 (.76)	.44
Parental General Growth Mindset	0.44 (.90)	-0.38 (.95)	.03

Discussion

- Both listening comprehension and parental growth mindset predicted a child's reading resilience. This suggests a child's oral language abilities and their parent's approach to learning contribute to the child's literacy profile.
- Future research should continue to examine the impact of age and aspects of the child's own attitudes.

References

Haft, S. L., Myers, C. A., & Hoeft, F. (2016). Socio-Emotional and Cognitive Resilience in Children with Reading Disabilities. *Current Opinion in Behavior Science. 10*, 133-141. http://dx.doi.org/10.1016/j.cobeha.2016.06.005

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