What Predicts 4th Grade Reading Comprehension?

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Home-School Study of Language and Literacy Development

Outcome Measure: 4th Grade

California Achievement Test

Racially diverse, low-income sample of 55 children from the Home-School Study of Language and Literacy Development with complete data from preschool to 4th grade

Sample Mean: 47.7
Sample Standard Deviation: 23.9
Sample Minimum: 2
Sample Maximum: 97

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Control Variables

Predicting 4th Grade Reading Comprehension

Correlations between Control Variables and 4th Grade CAT:

MLU at Age 3	Race	Gender	Mother-s Education	Income at Age 3 Visit	Age 4 Preschool Teacher-s Education
0.24~	-0.17	-0.01	0.04	0.34*	0.14

$ Control Variables alone account for 21% of the variation in the 4th Grade CAT.

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Home Composites

(from Age 3, 4, and 5 Home Visits)

- *Extended Discourse:* Includes measures of mother's use of extended discourse from book reading, toy play, and mealtimes.

- *Rare Word Density:* The proportion of rare words used by the mothers during toy play and mealtimes.

- *Home Support for Literacy:* Mothers' reported frequency and variety of literacy activities in the home.

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Preschool Composites
(from Age 4 Preschool Visit)

- *Quality of Teacher Talk:* Includes measures of teacher=s use of sophisticated language across a variety of settings.

- *Curriculum Content:* Whether the teacher reports that she includes writing, science, and social studies in her preschool curriculum.

- *Teacher Vocabulary:* Includes measures of the teacher=s use of rare words in free play, large group, and mealtime settings.

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Home and School Preschool-Age Predictors of 4th Grade Reading Comprehension

	Partial Correlation with Grade 4 CAT (controlling for background factors)
Extended Discourse (Home)	0.27~
Rare Word Density (Home)	0.28*
Home Support for Literacy (Home)	0.34*
Quality of Teacher Talk (Preschool)	0.42**
Curriculum Content (Preschool)	0.30*
Teacher Vocabulary (Preschool)	0.23

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Home and School Preschool-Age Predictors of 4th Grade Reading Comprehension

All six composites together as predictors of the 4th grade CAT:

- No predictors significant at the .05 level.
- Together with controls, explain 46.2% of the variation in the CAT.
- Despite non-significance of the predictors, they do explain significantly more variation in the CAT when added to the control variables ($F_{6,42} = 3.25$*)

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Language and Literacy Development over Time in Early Elementary School

Individual Growth Models in:

- *Academic Language*: Oral Formal Definitions task
- *Vocabulary*: PPVT
- *Word Recognition*: WRAT- Reading

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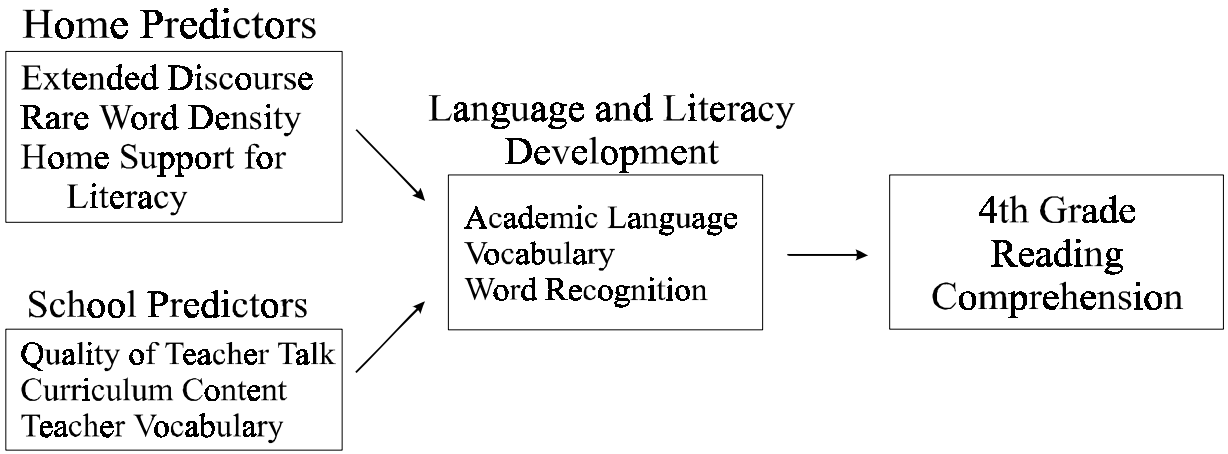
Analytical Model for Preschool and Elementary School Language and Literacy Factors



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Home and School Preschool-Age Predictors of Development in Academic Language

	Partial Correlation with Academic Language Initial Status	Partial Correlation with Academic Language Rate
Extended Discourse (Home)	0.30*	0.19
Rare Word Density (Home)	0.32*	0.32*
Home Support for Literacy (Home)	0.48*	0.36*
Quality of Teacher Talk (Preschool)	0.27~	0.19
Curriculum Content (Preschool)	0.15	0.15
Teacher Vocabulary (Preschool)	0.24~	0.08

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Home and School Preschool-Age Predictors of Development in Academic Language

- Control Variables on their own explain 28% of the variation in initial status of academic language.
- Adding the home and school preschool-age predictors explains 57% of the variation in initial status of academic language.
- Control Variables on their own explain 16% of the variation in rate of change of academic language.
- Adding the home and school preschool-age predictors explains 36% of the variation in rate of change of academic language.

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Home and School Preschool-Age Predictors of Development in Vocabulary

	Partial Correlation with Vocabulary Initial Status	Partial Correlation with Vocabulary Rate
Extended Discourse (Home)	0.12	-0.01
Rare Word Density (Home)	0.50***	0.22
Home Support for Literacy (Home)	0.32*	0.02
Quality of Teacher Talk (Preschool)	0.42**	-0.02
Curriculum Content (Preschool)	0.22	-0.13
Teacher Vocabulary (Preschool)	0.29*	0.11

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Home and School Preschool-Age Predictors of Development in Vocabulary

- Control Variables on their own explain 22% of the variation in initial status of vocabulary.
- Adding the home and school preschool-age predictors explains 55% of the variation in initial status of vocabulary.
- Control Variables on their own explain 24% of the variation in rate of change of vocabulary.
- Adding the home and school preschool-age predictors explains 31% of the variation in rate of change of vocabulary.

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Home and School Preschool-Age Predictors of Development in Word Recognition

	Partial Correlation with Word Recognition Initial Status	Partial Correlation with Word Recognition Rate
Extended Discourse (Home)	0.18	-0.04
Rare Word Density (Home)	0.16	-0.03
Home Support for Literacy (Home)	0.29*	0.27~
Quality of Teacher Talk (Preschool)	0.30*	0.22
Curriculum Content (Preschool)	0.24~	0.05
Teacher Vocabulary (Preschool)	0.25~	-0.04

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Home and School Preschool-Age Predictors of Development in Word Recognition

- Control Variables on their own explain 21% of the variation in initial status of word recognition.
- Adding the home and school preschool-age predictors explains 43% of the variation in initial status of word recognition.
- Control Variables on their own explain 12% of the variation in rate of change of word recognition.
- Adding the home and school preschool-age predictors explains 22% of the variation in rate of change of word recognition.

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Home and School Preschool-Age Predictors of Academic Language, Vocabulary, and Word Recognition

	Controls Only	Controls plus Home and School Preschool-Age Predictors
Academic Language		
Initial Status	28%	57%
Rate	16%	36%
Vocabulary		
Initial Status	22%	55%
Rate	24%	31%
Word Recognition		
Initial Status	21%	43%
Rate	12%	22%

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Growth Trajectories in Academic Language, Vocabulary, and Word Recognition as Predictors of 4th Grade Reading Comprehension

Regression Models

	Initial Status	Rate	R^2 Statistic
Academic Language	5.36***	19.46**	0.40
Vocabulary	1.24***	1.73**	0.56
Word Recognition	1.71***	4.19**	0.55

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Growth Trajectories in Academic Language, Vocabulary, and Word Recognition as Predictors of 4th Grade Reading Comprehension

	Full Model	Final Model
Academic Language		
Initial Status	-0.07	
Rate	1.08	
Vocabulary		
Initial Status	0.88**	0.85***
Rate	1.31~	1.31*
Word Recognition		
Initial Status	1.13**	1.13***
Rate	2.90*	2.98**
R^2 Statistic	0.67	0.67

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Analytic Conclusions

- Preschool-age language and literacy experiences are strong predictors of early elementary language and literacy growth, which is in turn a strong predictor of 4th grade reading comprehension.

- Both home and school factors during the preschool years are important predictors. In particular, Rare Word Density, Home Support for Literacy, Quality of Teacher Talk, and Teacher Vocabulary show strong and consistent findings.

- These factors are much more successful at predicting initial status in early elementary language and literacy growth than the rate of change in that growth. This suggests that other factors are influencing the rate of change; elementary school instruction would be a strong candidate.

Analytic Conclusions, Continued

- Academic Language predicts 4th grade reading comprehension, but is not a unique predictor when combined with the other growth trajectories.

- Vocabulary and Word Recognition are both strong and independent predictors of 4th grade reading comprehension.

- Taken as a whole, these findings suggest a non-deterministic model of factors leading to success in reading comprehension. There are multiple opportunities for enrichment, both in homes and in schools, over the preschool and early elementary school years.