

Development of text comprehension in elementary grades: component processes

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Study goals

Rapid recognition of printed words, an essential component of reading, is considered as a prerequisite for text comprehension. The purpose of the present study was to identify the potential contribution of various reading and language skills to the development of reading speed, accuracy, and comprehension.

Population & measures

We tested 522 children in grades 2–4 from 17 schools in Crete and Attika on pseudoword reading accuracy and fluency, word reading accuracy and fluency, text comprehension, rapid automatized naming, spelling, block design, expressive and receptive vocabulary. Teachers rated children's performance and behavior.

Each dependent measure was regressed in turn on groups of related variables accounting for grade level

Results: Most significant predictors of...

1 Text comprehension

Vocabulary measures accounted for most comprehension variance. Reading accuracy contributed in 2nd grade only; fluency measures did not contribute significantly.

R ² change if entered	first	last
Vocabulary & NVIQ	.280	.168
Accuracy (incl. spel.)	.140	.017
Fluency (incl. RAN)	.069	.000

Largest absolute standardized β	Grade			
	PPVT vocab	WISC vocab	word accu.	spel. accu.
2 nd	.27	.18	.17	.12
3 rd	.27	.13	.10	.20
4 th	.43	.22	.10	.10

2 Word reading accuracy

Decoding accuracy and speed, in this order, accounted for most variance. Vocabulary measures accounted for small but significant amounts of unique variance.

R ² change if entered	first	last
Vocabulary & NVIQ	.140	.028
Accuracy (incl. spel.)	.327	.057
Fluency (incl. RAN)	.275	.024

Largest absolute standardized β	Grade			
	pseu. accu.	spel. accu.	pseu. read fluen.	read comp
2 nd	.25	.19	.13	.14
3 rd	.29	.14	.29	.07
4 th	.30	.21	.20	.10

3 Word reading fluency

Both speed and accuracy measures accounted for significant variance, including rapid letter naming and spelling. Vocabulary and reading comprehension did not contribute.

R ² change if entered	first	last
Vocabulary & NVIQ	.077	.001
Accuracy (incl. spel.)	.361	.064
Fluency (incl. RAN)	.433	.145

Largest absolute standardized β	Grade			
	spel. accu.	pseu. read fluen.	RAN letter	word accu.
2 nd	.40	.43	.26	.14
3 rd	.43	.40	.33	.08
4 th	.39	.35	.33	.13

Teacher ratings were highly intercorrelated, reflecting mainly reading speed and spelling, not comprehension

Determinants of comprehension

In this school sample from the general population, text comprehension without time pressure does not depend much on the speed and accuracy of decoding but rests primarily on general verbal ability, measured by vocabulary, more so in the 4th grade when skills have presumably stabilized.

Reading impaired children, who would read slowly and with difficulty, may have additional difficulties in text comprehension; this should be studied in an appropriately selected sample.

Reading fluency and accuracy

Reading fluency and accuracy are highly intercorrelated and at this age seem to reflect a common dimension of undifferentiated skill, which is the one most attended to by teachers in their ratings of performance. This is apparent already in the 2nd grade although improvements in all measures were seen in the higher grades.

Pseudoword decoding is a strong index of word reading accuracy. Verbal ability is not related to fluency, thus speed and comprehension seem to develop mostly independently in the population.