

Precursors of Spelling of Children with Specific Language Impairment (SLI)

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Introduction

Children with Specific Language Impairment (SLI) are at risk for developing spelling problems. To investigate precursors of early spelling of children with SLI in first grade, a large number ($n=12$) of possible predictors were studied.

Predictors were: **Linguistic** (3), **phonological** (3), **orthographic** (3), **memory skills** (3), and **intelligence**, as well as spelling at an earlier point in time.

Criteria were: *Spelling Level* at the end of 1st grade; *Spelling Progress* (the increase between halfway and the end of first grade).

Three linear models and one nonlinear (CUSP) regression model were used to analyze the data.

Method

- 58 first grade children with SLI
- 21 girls, 37 boys
- age 75;6 months at second year of kindergarten

• Models

Spelling Level at the end of 1st grade:

Linear: $Y_2 = a + b$

Linear interaction: $Y_2 = a + b + a*b$

Pretest-posttest: $Y_2 = a + b + Y_1$

Spelling Progress between halfway and the end of 1st grade:

Linear: $\Delta Y = a + b$

Linear interaction: $\Delta Y = a + b + a*b$

Pretest-posttest: $Y_2 = a + b + Y_1$

CUSP: $\Delta Y = a + Y_1*b + Y_1^2 + Y_1^3$

Components

a = all predictors¹

b = school

ΔY = spelling progress

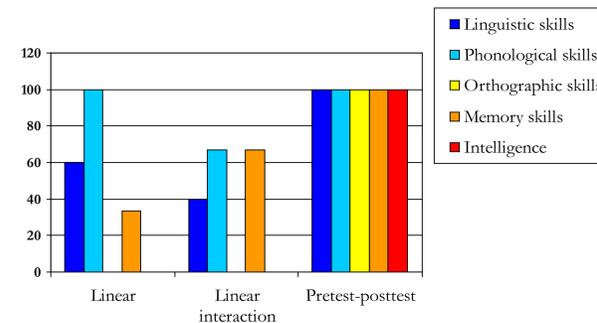
Y_1 = spelling (halfway 1st grade)

Y_2 = spelling (end of 1st grade)

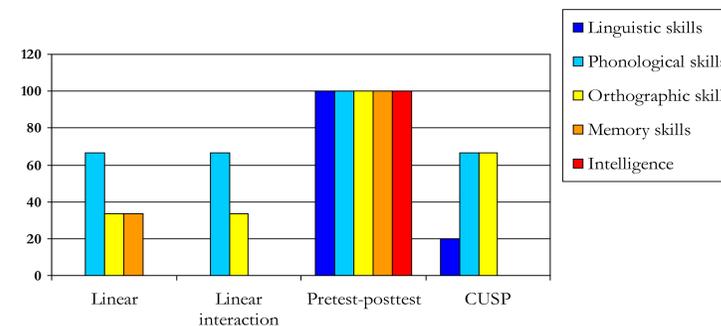
Results

Percentages of significant predictors for:

- *Spelling Level* at the end of 1st grade



- *Spelling Progress* between halfway and the end of 1st grade



Conclusion

Predictors for *Spelling Level* at the end of 1st grade in the linear and linear interaction models explained between 9% and 35% of the variance. Linearity of spoken language awareness and working memory were the best predictors. The pretest-posttest model explained between 62% and 77% of the variance.

Predictors for *Spelling Progress* between halfway and the end of 1st grade in the linear and linear interaction models explained between 7% and 30% of the variance. Auditory synthesis and letter-symbol distinction were the best predictors. The pretest-posttest model (identical to the one for *Spelling Level*) explained between 62% and 77% of the variance.

Interestingly, the nonlinear CUSP-model provided a substantial poorer fit compared to the pretest-posttest model. It explained between 11% and 30% of the variance; letter-symbol distinction was again the best predictor.

Educational practice

The pretest-posttest model was far superior, it is therefore recommended that kindergarten teachers serve their students best practicing skills directly related to spelling: Teaching them to write down letters and to segment words into sounds.

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¹ Predictors: *Linguistic skills*: linearity of spoken language awareness, articulation, rapid naming; *Phonological skills*: sound awareness and rhyming, auditory synthesis I and II; *Orthographic skills*: awareness of written language, letter-symbol distinction, wordness judgment; *Memory skills*: long-term memory, short-term memory, working memory; *Intelligence*: nonverbal-deductive reasoning.