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School-based implementation of an early-literacy intervention: The role of dosage and familial risk

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Purpose

When schools implement an evidence-based intervention, the level of treatment integrity that is reached, affects intervention outcomes.

A distinction can be made between

- dosage, i.e. time spent on the intervention, and
- progress within the intervention, i.e. number of intervention parts finished.

Not all children necessarily make the same progress when receiving the same dose.

Two research questions:

- Does progress mediate the relation between dosage and intervention outcomes?
- Is familial risk related to dosage, progress, and intervention outcomes?

Method

- 396 children, 50 schools
- 24% had a familial risk for dyslexia
- They received the computer-based early-literacy intervention *Build!*, implemented under schools' own responsibility.



- 2 intervention periods:

1. Kindergarten

Outcomes:

- letter knowledge
- phonological awareness
- word reading accuracy

2. First half of first grade

Outcomes:

- word reading accuracy
- word reading fluency

Results

Measure	Wave/Period	Max	M	SD
LK	K _{mid}	34	6.71	3.92
	K _{end}	34	14.07	5.31
PA	K _{mid}	45	22.50	8.38
	K _{end}	15	8.41	3.94
Acc	G1 _{start}	20	9.61	4.50
	G1 _{mid}	40	12.13	8.57
	G1 _{end}	40	23.85	10.06
Flue	G1 _{mid}	137	11.64	6.80
	G1 _{end}	154	22.54	13.09
Dosage	K _{mid} -K _{end}	-	25.54	11.93
	G1 _{start} -G1 _{mid}	-	27.32	9.82
Progress	K _{mid} -K _{end}	-	40.15	22.63
	G1 _{start} -G1 _{mid}	-	60.38	29.96

PA = Phonological Awareness

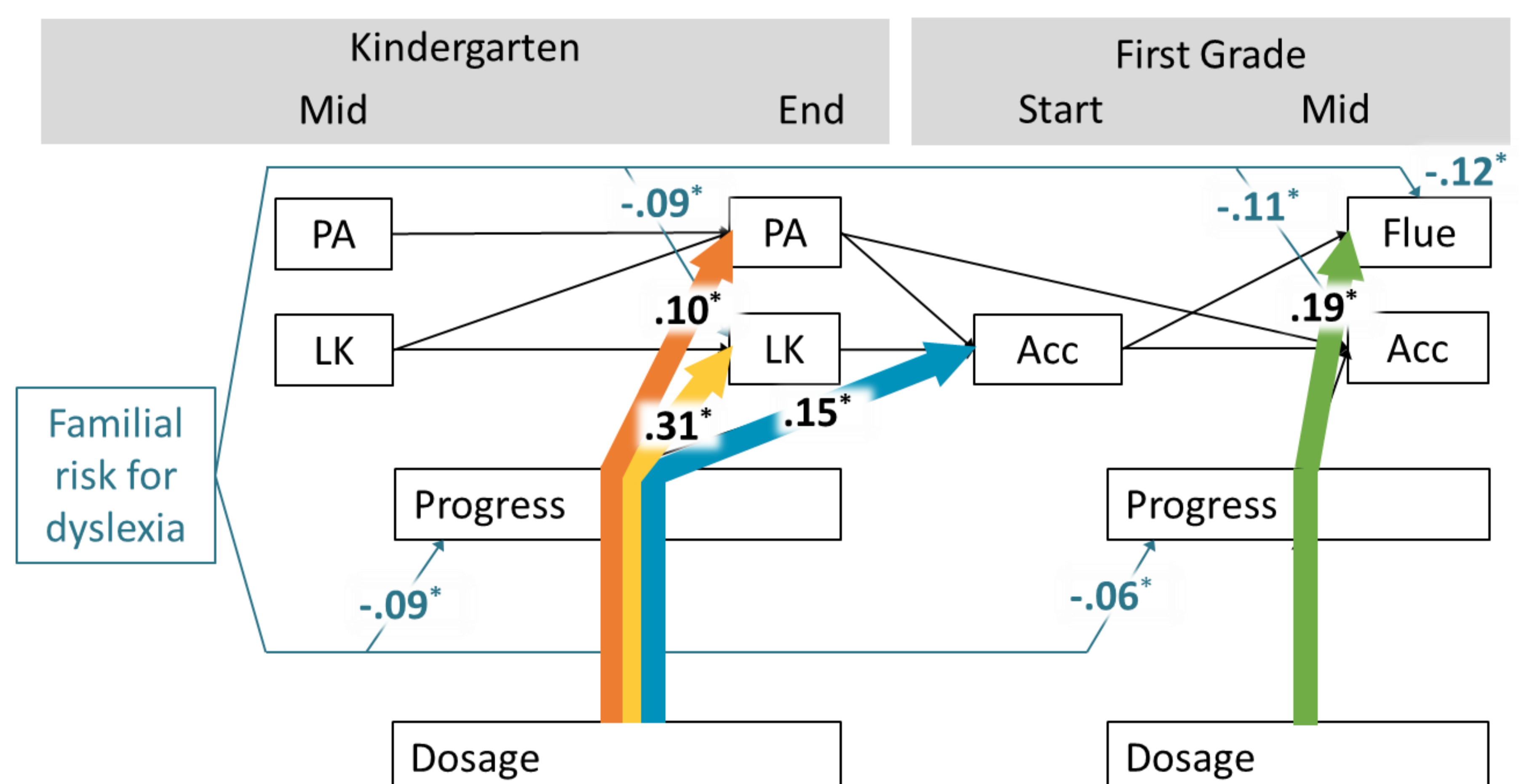
LK = Letter Knowledge

Acc = Word Reading Accuracy

Flue = Word Reading Fluency

Dosage = Hours Spent on the Intervention

Progress = Number of New Intervention Lessons Completed



Conclusions

- The relation between dosage and children's outcomes was mediated by progress.
- The distinction between dosage and progress is important.
- Children with familial risk received the same dose but showed less progress and lower intervention outcomes.
- To optimize intervention outcomes it might be better to adjust the dosage to individual children's progress.