



# Code-focused and meaning-focused activities and their associations with first graders' reading fluency and reading comprehension in Estonia and Finland



Centre for Research on Learning and Teaching

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# Effective literacy instruction in primary grades

- Supports acquisition of reading **accuracy and fluency**
  - **code-focused activities** e.g. focus on phoneme awareness, letter knowledge, decoding, encoding, fluency
- Promotes understanding of the meanings of words and texts and **reading comprehension skills**
  - **meaning-focused activities** (e.g. vocabulary, comprehension tasks)
- Takes children's pre-skills and concurrent skills into account
  - Beginning readers need more practice in basic skills but benefit also from meaning-focused activities.
  - Readers who have acquired foundation level decoding skills need more comprehension tasks to advance their existing skill. (Connor et al., 2009)
  - Changes over the school year



# Learning to read in Estonia and Finland

- Children acquire accuracy in reading rapidly; reading fluency and comprehension are strong indicators of competency at an earlier stage than in languages such as English.
- Reading fluency is highly associated to reading comprehension but its effect diminishes by age.

## Similarities

- Orthography
- School entry at the age of 7
- Extent of lessons in literacy instruction in Grade 1
- Phonics based early reading instruction

## Differences

- Timing of formal reading instruction (K vs. Grade 1)
- Curriculum emphases
- Trajectories in reading skill development in Grades 1 to 6 (Soodla et al., 2015; 2018)



# Research question

1. How are code-focused activities associated with first graders' reading fluency and reading comprehension in Estonia and Finland?
2. How are meaning-focused activities associated with first graders' reading fluency and reading comprehension in Estonia and Finland?
3. Are the associations with instructional activities and reading comprehension similar for the students at different levels of reading fluency?



# Method

## Participants

- 21 Estonian teachers and 415 students in Grade 1
- 12 Finnish teachers and 154 students in Grade 1

## Classroom data

One literacy lesson recorded in each classroom in Grade 1 spring (March–April, T2)

- Audio data of lessons varying from 27 to 61 minutes
- Instructional practices were coded with *the Individualizing Student Instruction* Classroom Observation system (*ISI*; Connor et al., 2009). Every activity lasting at least 10 second was coded. Coding took place using the NOLDUS software and was aided with transcripts
- **Code-focused activities (CF; e.g. encoding, fluency), meaning-focused (MF; e.g. text reading, listening and reading comprehension, vocabulary),** and Non-instructional activities (e.g. transitions), activities were identified (described as percentages of the whole lesson).

## Students' measures

- **Reading fluency (RF)**, word recognition test, parallel versions in Grade 1 autumn (T1) and spring (T2), max. 80 words in 2 minutes, sum score, (Finnish national normative test battery, Lindeman, 1998; Estonian translation see Soodla et al. 2015)
- **Reading comprehension (RC)**, Grade 1 spring (T2), responding to 12 multiple choice questions based on reading of page long passage of expository text, sum score, (Finnish national normative test battery, Lindeman, 1998; Estonian translation see Soodla et al. 2015)

## Analysis

A two-way analysis of variance was conducted to examine the associations of

- code-focused instruction and country (Estonia vs. Finland) with students' reading fluency and reading comprehension (RQ 1),
- meaning-focused instruction and country (Estonia vs. Finland) with students' reading fluency and reading comprehension (RQ 2)
- Level of reading fluency, CF/MF instruction and country (Estonia vs. Finland) with students' reading comprehension (RQ 3)



# Descriptives

	Range	M	Sd	t
<b>Group size</b>	8–25	17.15	4.577	5.85***
<b>CF activities</b>	0.96 %–56.44 %	22.10 %	15.638 %	-1.44 / -7.40***
<b>MF activities</b>	13.92%–83.45 %	54.72 %	19.62 %	1.39 / 7.62***
<b>Reading Fluency</b>	5–50	18.23	8.06	-2.18*
<b>Reading Comprehension</b>	0–12	5.97	3.01	1.45

\* $p < .05$ ; \*\*\* $p < .001$

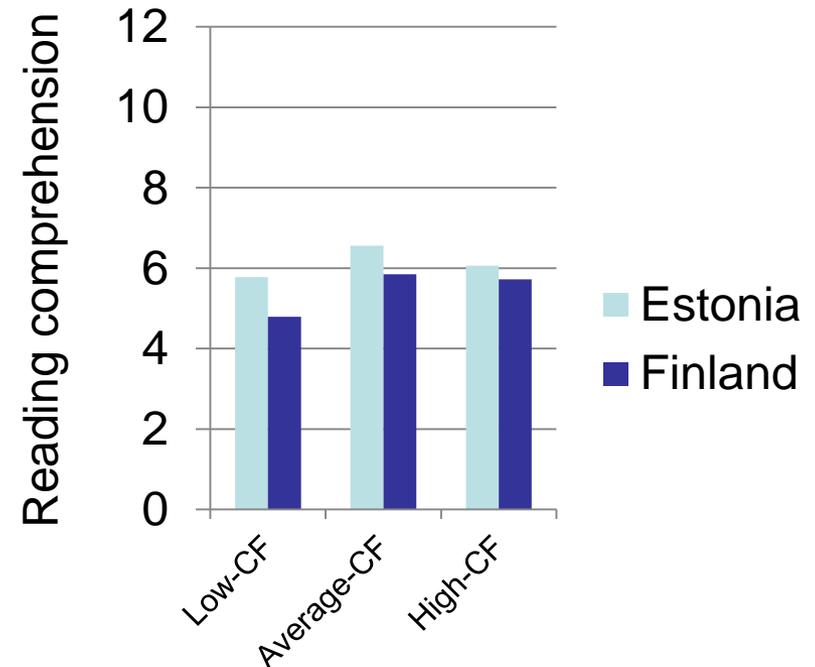
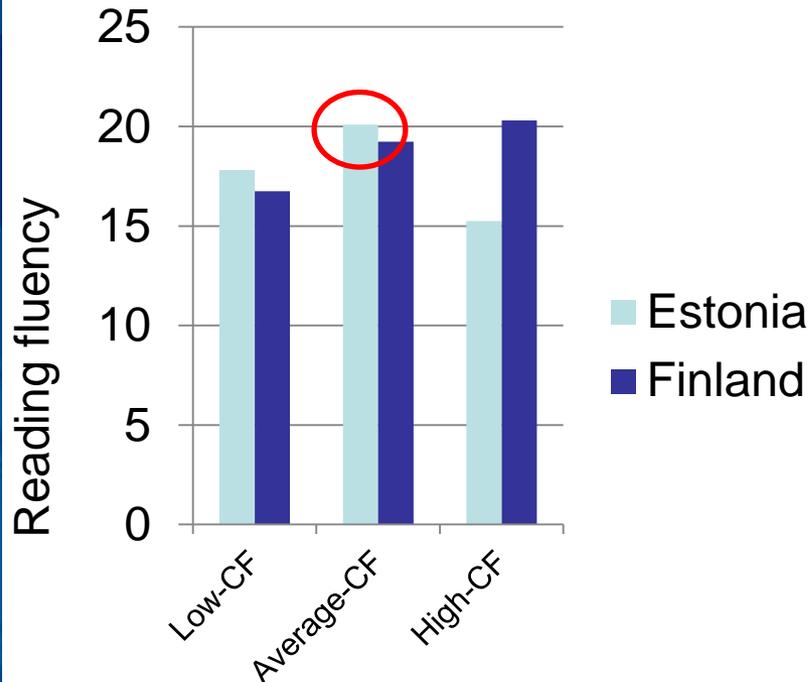
## Grouping of code-focused and meaning-focused activities and students' reading fluency in Grade 1 spring

	Low			Average			High		
	N	M	Sd	N	M	Sd	N	M	Sd
<b>CF</b>	11	4.20 %	4.13 %	11	17.10 %	5.04 %	11	38.97 %	10.96 %
<b>MF</b>	11	31.88 %	2.81 %	10	55.25 %	6.63 %	12	75.21 %	4.97 %
<b>RF</b>	179	10.15	2.03	179	16.34	1.81	211	26.65	6.34

MF = meaning-focused activities, CF = code-focused activities, RF = reading fluency



## Code-focused activities association with first graders' reading fluency and reading comprehension in Estonia and Finland (RQ1)



### Interaction between CF activities and country

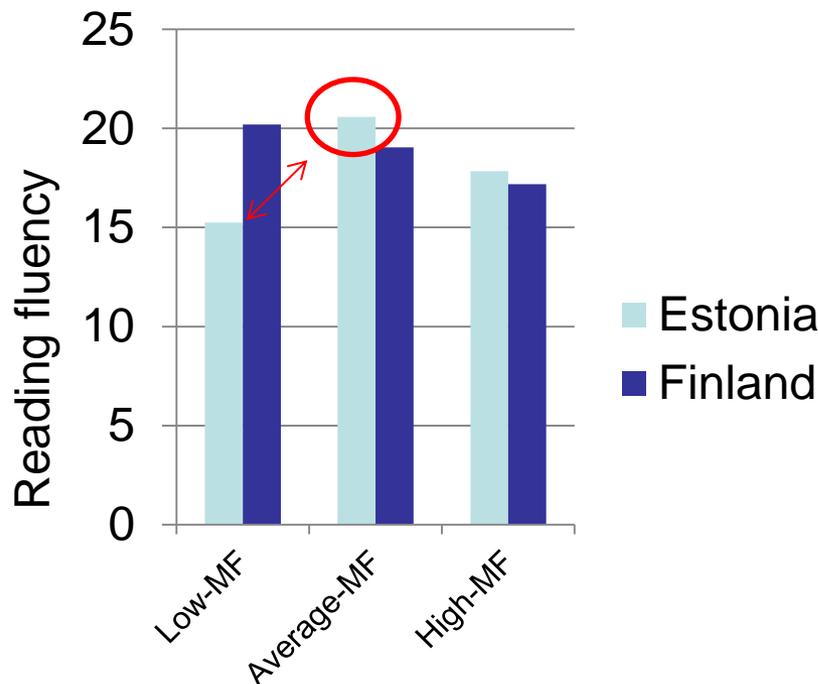
$F(2, 569) = 7.29, p = .001$ ;  
 RF differed significantly in **Estonia** in classrooms with low/average/high amount of CF activities  
 → Best in classrooms with Average-CF

### Main effect for country

$F(1, 566) = 4.41, p = .036$ ;  
 Estonia students had higher reading comprehension (estimated marginal mean<sub>Est</sub> = 6.13, estimated marginal mean<sub>Fin</sub> = 5.45)



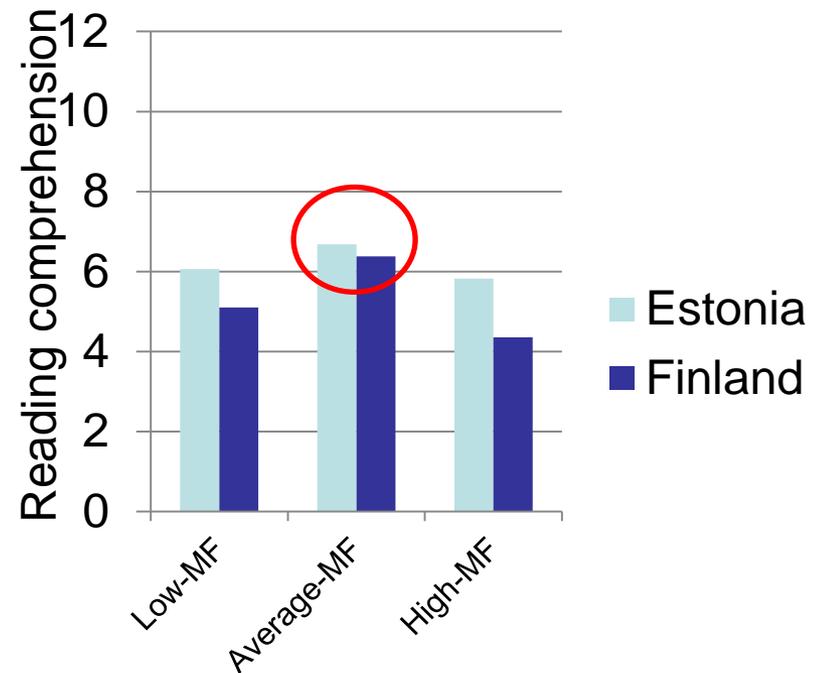
## Meaning-focused activities association with first graders' reading fluency and reading comprehension in Estonia and Finland (RQ2)



### Interaction between MF activities and country

$F(2, 569) = 7.68, p = .001$ ;  
 RF differed significantly in **Estonia** in classrooms with low/average/high amount of MF activities

→ Best in classrooms with Average-MF



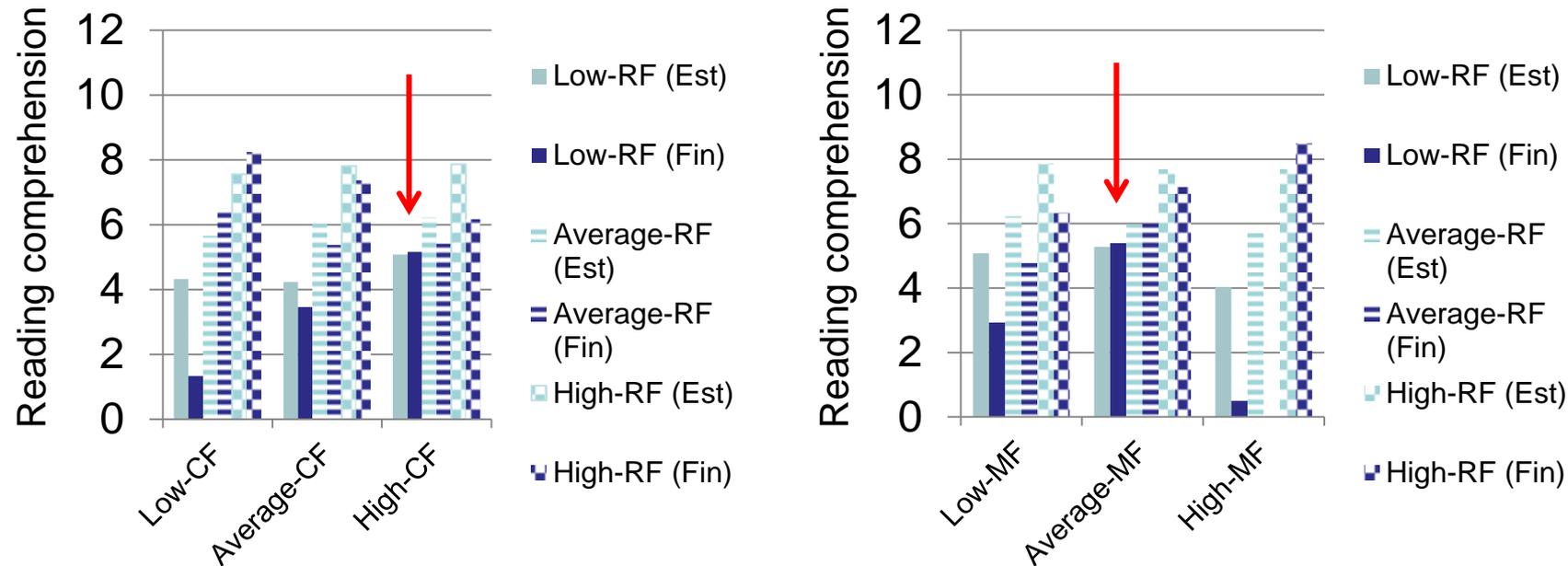
### Main effects for MF activities and country

*MF activities:*  $F(2, 566) = 6.25, p = .002$ ;  
 Average-MF (estimated marginal mean = 6.53) was associated with better RC than Low-MF (estimated marginal mean = 5.58,  $p = .010$ ) and High-MF (estimated marginal mean = 5.09,  $p = .016$ )

*Country:*  $F(1, 566) = 5.77, p = .017$   
 Estonia students had higher reading comprehension (estimated marginal mean<sub>Est</sub> = 6.19, estimated marginal mean<sub>Fin</sub> = 5.28)



## Associations with instructional activities and reading comprehension similar for the students at different levels of reading fluency (RQ3)



A three-way interactions were found both for RF x CF x country ( $F(4, 566) = 2.71, p = .030$ ) and RF x MF x country ( $F(4, 566) = 2.734, p = .028$ ).

Differences were found only among **Finnish Low-RF students** whose reading comprehension were best (close to average in the total sample) in classrooms with high amount of CF activities ( $F(2, 38) = 5.36, p = .009$ ) or average amount of MF activities ( $F(2, 38) = 8.45, p = .001$ ).



## Limitations

- The number of observed literacy lessons was small especially in Finland and limited to one time point.
- Only audio data were available.
- Potential effects of language in test materials and results were not examined.
- Only quantity not the quality of the instructional activities was analyzed

## Conclusions

- Support for both fluency development and reading comprehension development is required also in transparent orthographies.
- A balance between code-focused and meaning-focused activities is especially important for beginning readers with low fluency skills.





**Thank you!**

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