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The study of international Performance Indicators for Primary Schools (iPIPS): a trial in Russia

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What is iPIPS?

- ✓ **international Performance Indicators for Primary Schools (iPIPS)**
- ✓ **iPIPS is a monitoring system of children starting school and evaluation of their individual progress during the first year of schooling**

About iPIPS

- **A monitoring project started in the Durham in 1994, 1 million assessed pupils**
- **Provides diagnostic feedback to schools, as well as data for policy makers**
- **Baseline and follow up assessments**
- **Computer adaptive, child friendly**
- **High reliability (0.98 test-retest; 0.92 Cronbach's alpha)**
- **Good predictive validity (0.6-0.7 correlations to performance at age 7 and 11)**
- **Adopted in Scotland, Australia and New Zealand. Translated into German, Dutch, Slovenian, Chinese and Russian**

Russia: why iPIPS?

International assessment studies

- **TIMSS, PIRLS, PISA**
 - **Age of children is different**
 - **Not individual assessment**
 - **Do not measure progress**

Assessment in Russia

- **Methods of starting diagnostics**
 - **Difficulties in mass use**
 - **Do not measure progress**
 - **A lack of validation studies**

Trial in Russia

- **Development of Russian test version of iPIPS**
- **Administering 2 assessment cycles**
- **The research on adaptation**
- **Validity study of the Russian version of iPIPS**
- **Constructing a common scale for two cycles (comparable with the international scale)**

iPIPS: Russian version

- **A booklet with items for children (verbal part, math, attitudes)**
- **A questionnaire for parents**
- **A questionnaire for teachers:**
 - **Survey of social and emotional development of a child**
 - **Behavioral survey**
 - **Survey of teachers**

Sample

Region: Veliky Novgorod, Novgorod Region

Sample size: 310 first year students (5% of the population)



Gender, %		Place of living, %		Type of school, %	
<i>Female</i>	50.2	<i>Urban</i>	70.8	<i>Gymnasium</i>	17.0
<i>Male</i>	49.8	<i>Rural</i>	29.2	<i>Specialized school</i>	20.6
				<i>Comprehensive school</i>	62.4

Preparing materials

- **Dual translation**
- **Selecting the items**
 - **Addressing experts for:**
 - **Item analysis**
 - **Clinical piloting**
 - **Correcting the items**
- **Software testing**



Booklet's structure

Writing

Vocabulary

Repeating words

Rhyming words

Ideas about Reading

Letters

Words

Reading short stories

Reading passages

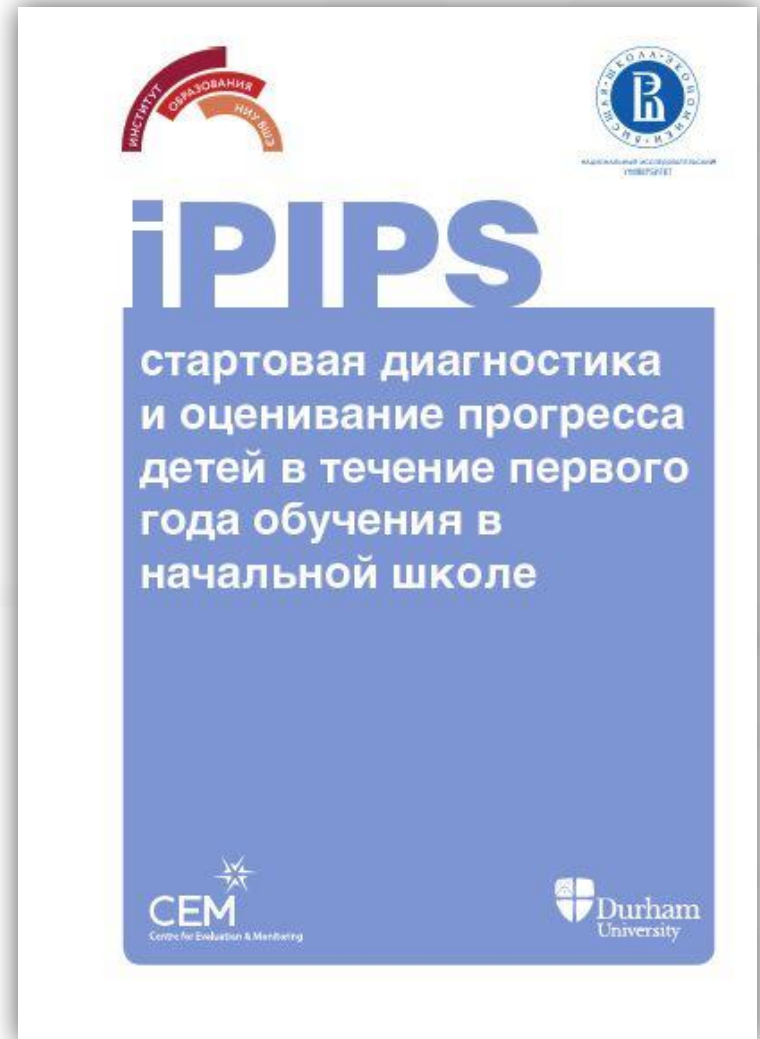
Counting

Simple sums

Numbers












Math problems

Attitudes



Examples of items...

Writing

		
1 ^я		
2 ^я		
3 ^я		
4 ^я		
5 ^я		

Reading



У щенка красный мяч.



Щенку очень нравится играть с мячом на траве.



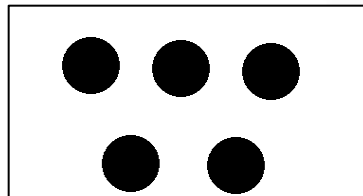
После игры ему хочется лечь и поспать.

Examples of items...

1) Sasha wants to buy an orange which costs 12 rubles, which coins should he use?



2) What is 1 more than 5?



3) Can you do this sum?

$$17-15=$$

Diagnostic procedures

✓ *Assessing kids*

- Interviewers:
 - Individual work with each child, 20-30 min
- Teachers:
 - Behavioural survey (online)
 - Personal social and emotional development of a child



✓ *Surveying teachers*

- Teacher's questionnaire

✓ *Surveying parents*

- Parents questionnaire

Measuring progress

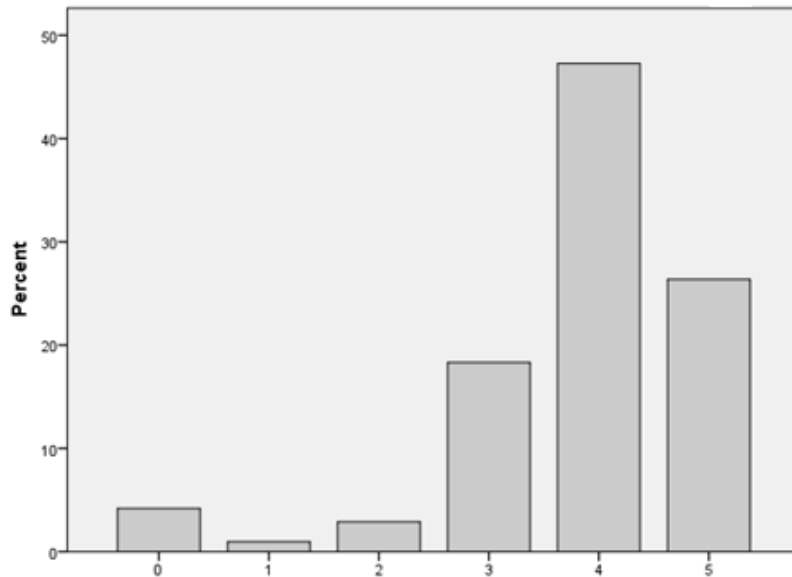
2 cycles of assessment

- ✓ **October 2013 – 1st trial: Starting point**
- ✓ **April 2014 – 2nd trial: Follow up Assessment**
 - ✓ **Data collection**
 - ✓ **Constructing of common scale**
 - ✓ **Preliminary analysis**

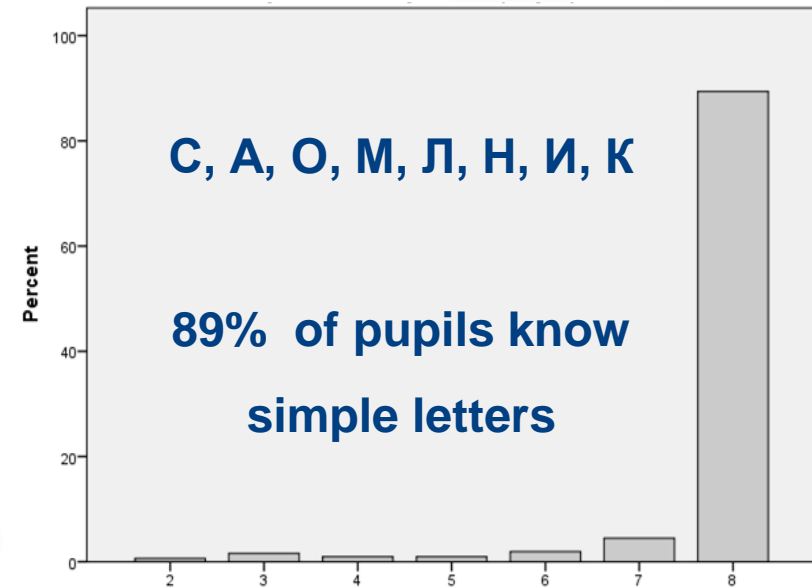
First results: starting school

Writing

47% of pupils write their full names good, 27% write perfectly fine.



Letters



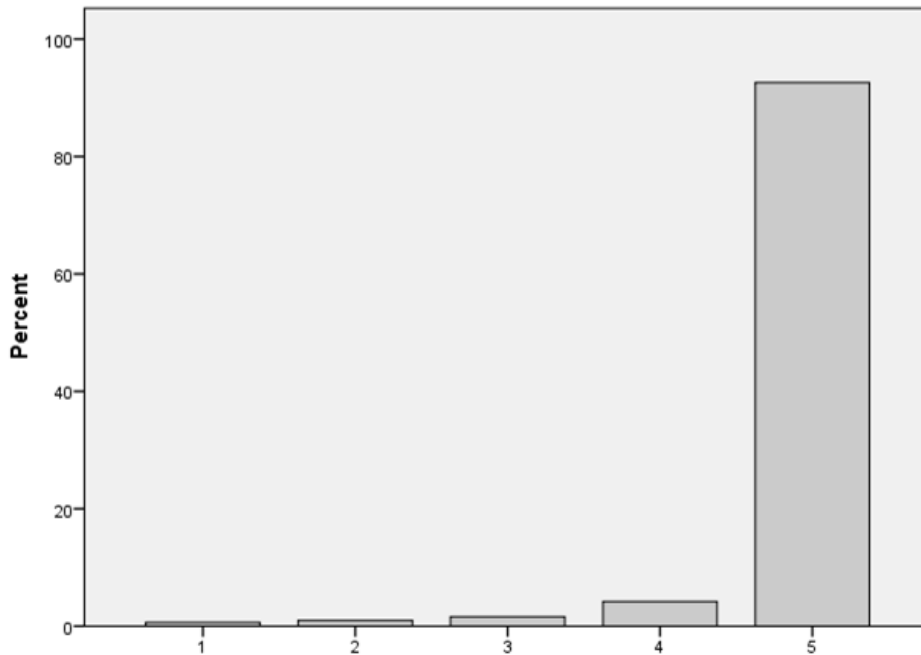
Reading

31% of kids read correctly a short story
17% do not read

First results: starting school

Numbers: 2, 6, 7, 5, 9

93% of pupils know 1 digit numbers



✓ **30% identify 3-digit numbers**

Math problems:

✓ **“What is 1 more than 5?”**

59% correct answers

✓ **“Can you do this sum?”**

15-17=

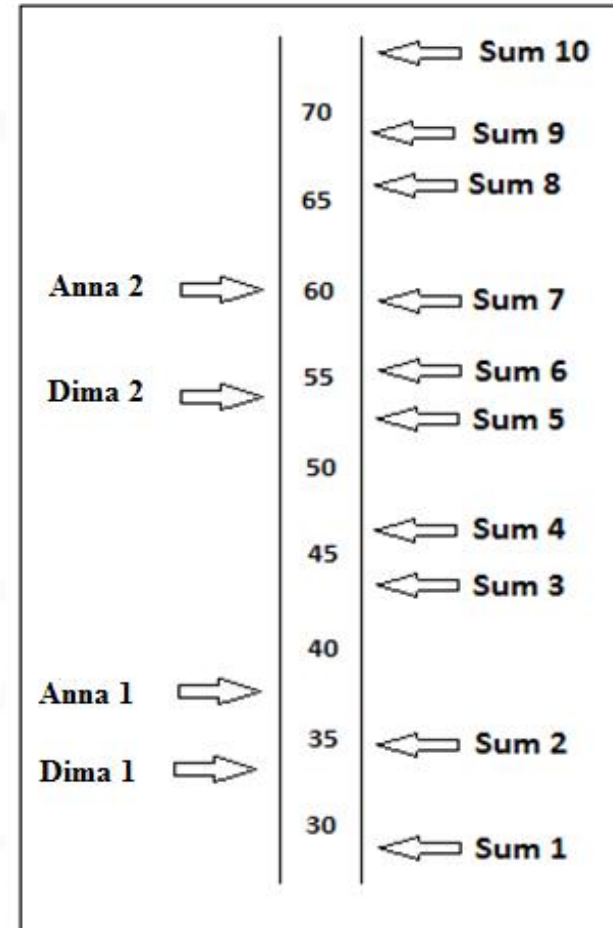
14% correct answers

Item Response Theory (IRT)

- ✓ three types of score interpretation:
 - norm-referenced,
 - criterion-referenced
 - self-referenced

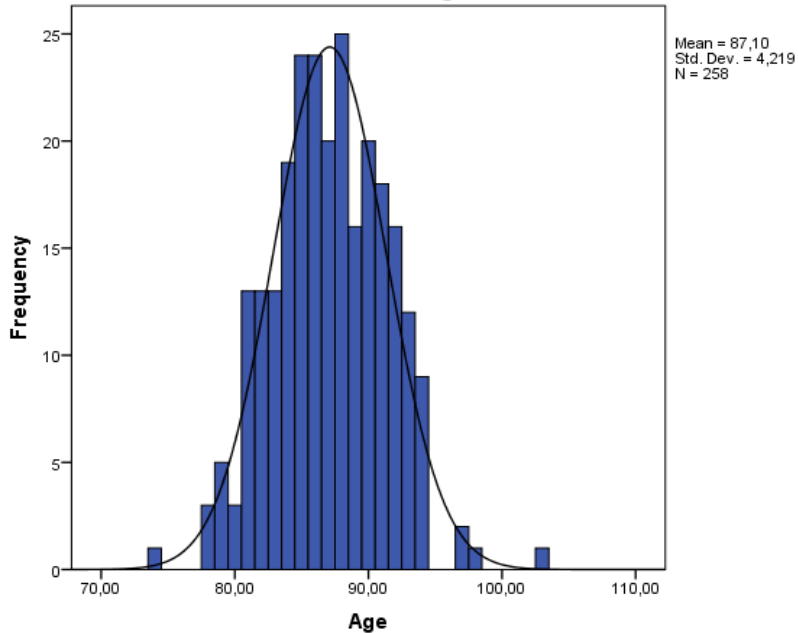
Family of Rasch models

- ✓ Comparing results of pupils and groups of pupils



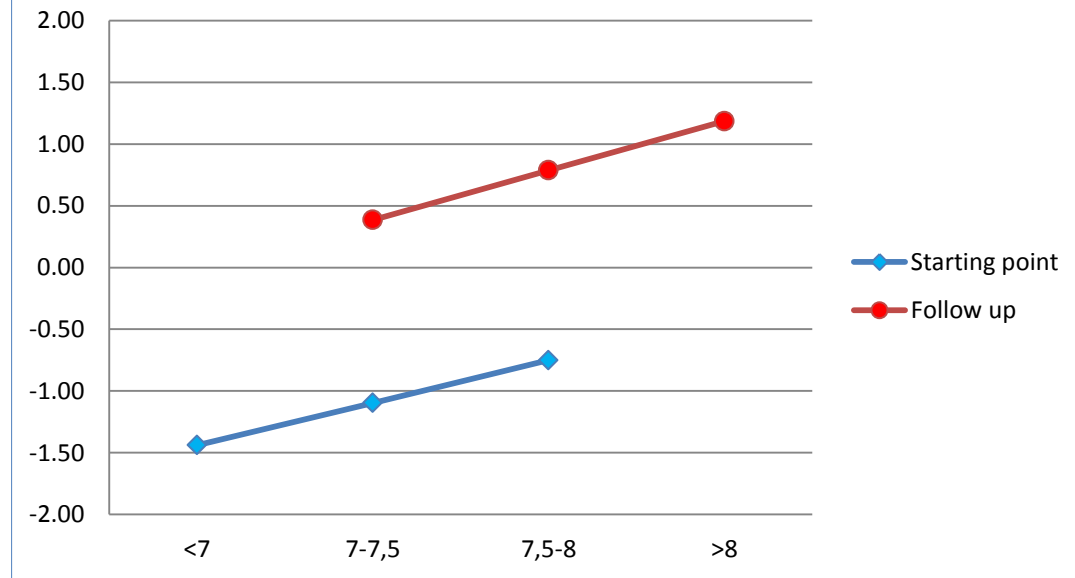
Progress in Math

Histogram



Age	Percent
less than 7	19.8
7-7,5	57.8
more than 7,5	22.5

Math development over the year



✓ Progress is not related to age

Preliminary findings

- Correlations of up to 0.8** between the iPIPS starting diagnostics and follow-up assessment
- Negative correlation between Progress and Starting point -0,25**

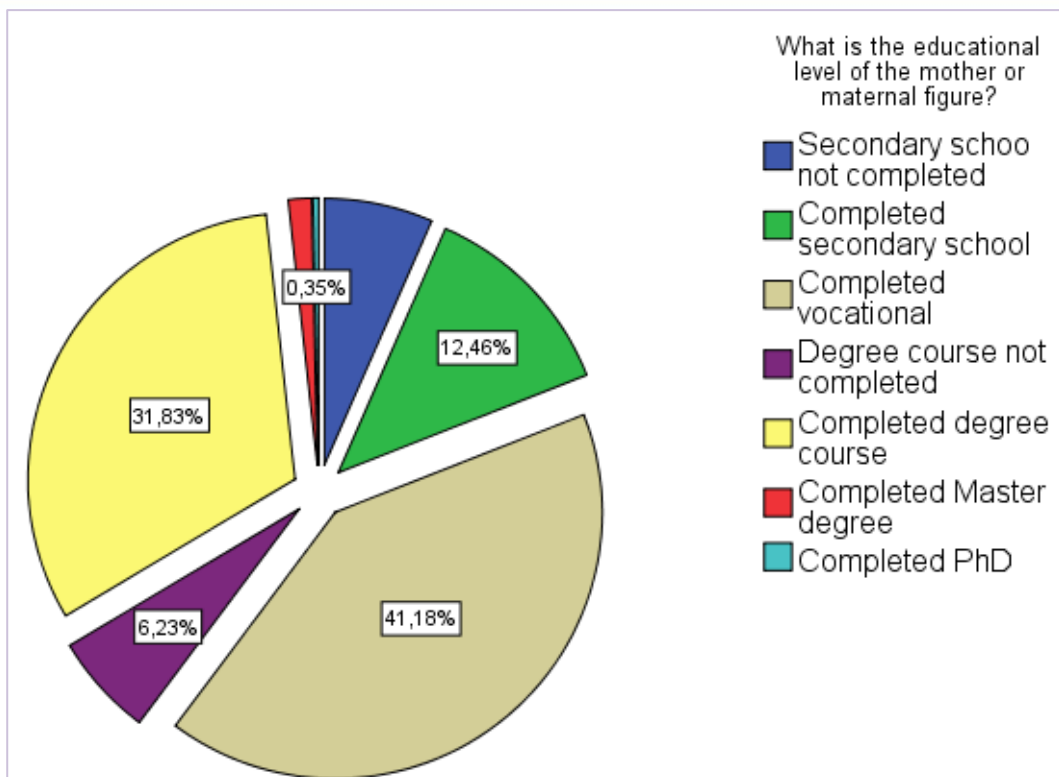
Pupils progress:

- No relation to age, gender and place of living
- Type of school does matter

	Variable	Const.	B	Sig.	R ²
Model 1		1.70		.00	0.06
	Measure1		-.18	.00	
Model 2		1.80			0.07
	Measure1		-.18	.00	
	Gender		-.21	.16	
	Model 3	1.77			0.07
	Measure1		-.18	.00	
	Residence		-.25	.12	
Model 4		1.53			0.08
	Measure1		-.20	.00	
	Gymnasium		.36	.08	
	Specialized school		.39	.04	

Measure1– Pupils score in logits for Starting testing, Gender – gender of pupils, Residence – Place of living, Gymnasium and Specialized schools – dummies for type of school (comprehensive, specialized or gymnasium).

Home background



41% of mothers и 50% of fathers have vocational secondary education

Education of parents

- Children whose mothers **have higher education** read better and understand more in math (t-test)

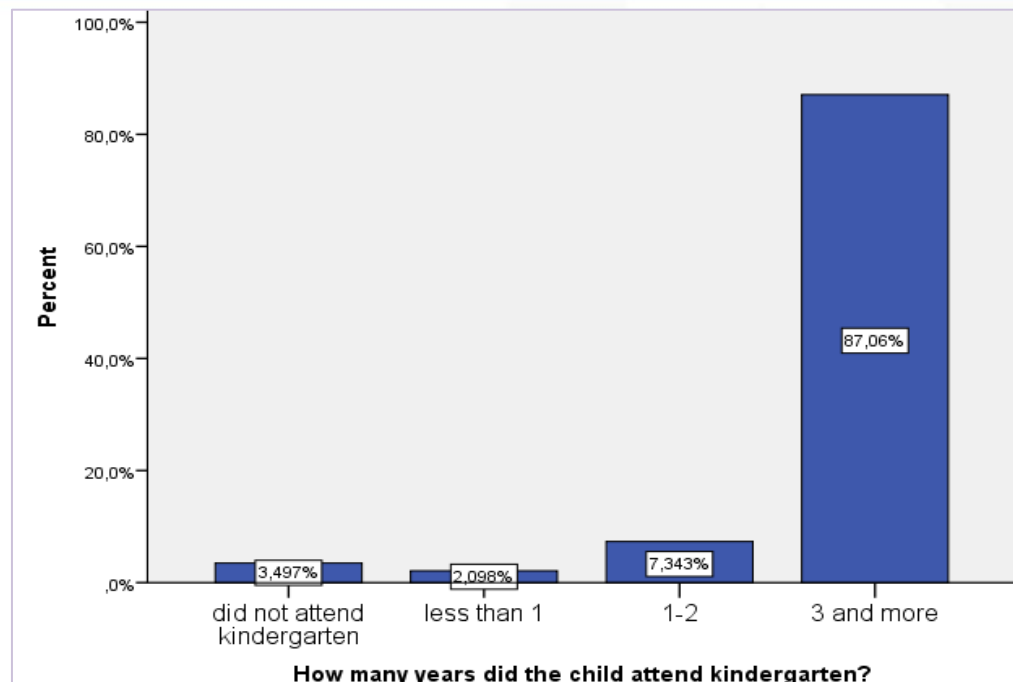
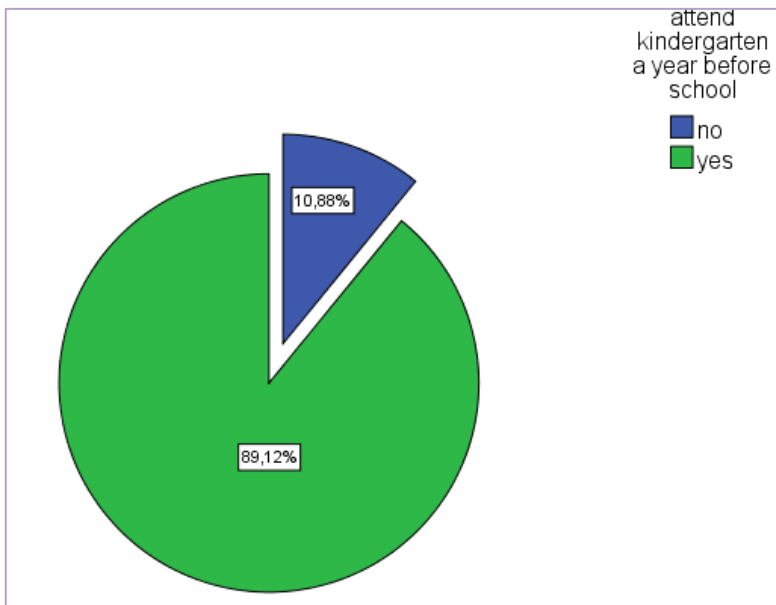
Family income

- Children from more affluent families are better in math

- ❑ **No relation to the progress**

Home background

- ✓ 87% of children went to kindergarten for more than 3 years
- ✓ 89% went to kindergarten for one year just BEFORE school
- ✓ 55% went to special pre-school classes



Pre-school classes are positively related to starting results in math

No relation to the progress

Progress...

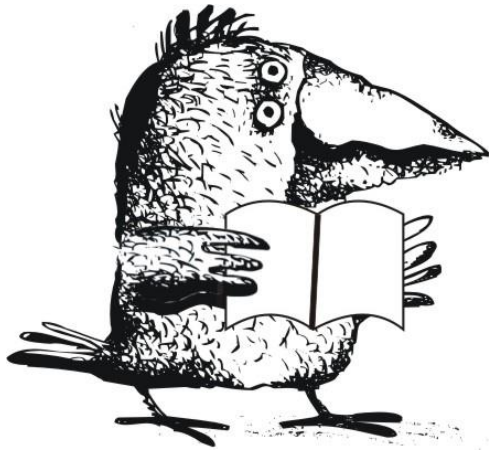
What is important?

- School resources?
- School climate?
- Teacher practices?

Research will be continued....

Plans for 2014-2015

- Analysis and interpretation of the data collected
- 1st stage of main study in 2 Russian regions
(September 2014, Sample of 3000 children)
 - Validation study of the instrument
- 2nd stage of main study
(May 2015, the same sample of 3000 children)
 - Individual progress assessment
- Prospects for iPIPS international study



Questions and comments