School Readiness of First-Graders and Associated Factors:

Identifying Region-Specific Characteristics

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Abstract. The regions of Russia enjoy substantial autonomy in shaping their own education systems. However, there is very little objective empirical data on specific features of the development, for instance, of preschool and elementary school children in the regions. This situation renders it difficult to make informed decisions on any corrections required to meet region-specific needs. We analyzed the basic mathematical and reading skills of preschoolers in two regional capitals—Krasnoyarsk and Kazan. We applied the IPIPS study, which allows for assessing the skills of children starting school, to a sample of about 2,750 first-graders in the two cities. As we found out, the level of basic mathematical and reading skills correlated most strongly with such factors as sociocultural capital, early childhood education experience, and language spoken at home. Meanwhile, location in a specific region had virtually no impact on the skills analyzed.

Keywords: elementary education, school readiness, mathematical competencies, reading skills, regional differences, sociocultural capital, early childhood education experience.

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There are a number of reasons for addressing the problem of assessing the skills of children starting school. First, the accelerating pace of social life brings substantial changes to the psychophysiological and personality development of children. It is impossible to make well-con-

sidered adjustments to the curriculum and the learning process without knowing the mechanisms of first-grader development. Second, the idea of lifelong learning requires that special attention be paid to providing continuity of preschool and elementary education, which means obtaining objective data on child development in the transitional period. Third, according to the Federal State Standard of Elementary Education, the achievement assessment system should be designed to allow the assessment of performance dynamics, which means that starting-level diagnostic tests are needed. Fourth, the regions of Russia now enjoy substantial autonomy in shaping their own education systems, yet there is extremely little objective data on the specific features of development of preschool and elementary school children in the regions, which makes it difficult to consider local peculiarities while modernizing the education systems.

There are few studies devoted to specific features of present-day Russian first-graders' educational needs, psychophysiological and personality development. The lack of such works and the grave problems that existent works do detect, which complicate the process of orientation, present another reason for investigating the level and nature of child development at the elementary school admission age.

Feldshteyn [2010] provides evidence of the adverse changes in recent decades: a decreased level of preschool cognitive development (creativity, ability to keep the problem statement in mind, and conceptual thinking), lower enthusiasm, excessive emotional discomfort, and low social competence.

A large-scale survey was conducted by the Center for Evaluating the Quality of Education, Institute for Strategy of Education Development, Russian Academy of Sciences [Kovaleva et al. 2011]. Two types of indicators were used: indicators of first-graders' readiness for school and contextual indicators related to individual characteristics of students, specific features of the learning process, school and class peculiarities, and family characteristics. Findings show that 15–20% of first-graders have no adequate background for learning.

In this paper, we assess the levels of basic mathematical and reading skills of first-graders in two regional capitals—Krasnoyarsk and Kazan. The study seeks to answer the following questions:

- What is the development level that first-graders bring to school?
- What are the factors affecting a child's performance at an early stage in school?
- Are there any regional disparities in the level of school readiness and, if so, how do they manifest themselves?

1. International research on academic achievements of school applicants

We relied on the international research experience to identify the factors that would be good to analyze in terms of their relationship with school readiness.

Some countries carry out national monitoring or longitudinal projects to assess the academic achievements of senior preschoolers and elementary school children. For instance, the Netherlands National Institute for Educational Measurement (CITO) has developed an elementary school assessment and monitoring system to consistently measure the level of skills and competencies in a wide range of subject-related and universal domains in children aged 4–12 [Timmermans et al. 2015]. Great Britain's Effective Pre-School, Primary & Secondary Education (EPPSE) project (now closed) studied the influence of family background, homeschooling and preschool experience on the academic achievements of first-graders [Sylva et al. 2010]. International Performance Indicators in Primary School (IPIPS), another major British project, assesses the skills of children starting school and their progress during the first year. We will dwell on this later in this article.

Elementary education has been a subject of interest for politicians and researchers across the world for many years. One way or another, all countries face growing educational inequality driven by the most diverse factors, whether it be capabilities, gender stereotypes, age characteristics, socioeconomic status, cultural differences, or geographical environment [Dee 2015; Hanushek 2013].

Gender differences in academic performance have been the focus of researchers' attention for a few decades [Maccoby, Jacklin 1974; Cornwell, Mustard, van Parys 2013]. For example, Dutch studies on elementary education found no significant discrepancy between boys and girls in mathematical and language proficiency. However, the position of boys in terms of educational level and attitudes and behavior was found to be much more unfavorable than that of girls [Driessen, van Langen 2013]. American researchers revealed that mathematics performance gaps favoring boys appeared soon after children began kindergarten and then widened during elementary grades [Robinson, Lubienski 2011]. Russian researchers have also received evidence of the need for educational techniques considering gender differences at early stages in learning [Buzhigeeva 2002].

Cognitive competencies can also be affected by such factors as socioeconomic status, language spoken at home, and ethnicity at the earliest stage of education. A huge amount of Western studies have been devoted to ethnic differences in academic achievement, whether it be the ethnic issues in the US [Gregory, Skiba, Noguera 2010] or the educational achievement gaps between immigrant and native students in the EU [Azzolini, Schnell, Palmer 2012].

Family characteristics often impact children's academic success [Morrissey, Hutchison, Winsler 2014]. Thus, a longitudinal project examined the influence of socioeconomic status and race on academic achievement in American kindergartens and first grade [Nesbitt, Baker-Ward, Willoughby 2013]. The researchers once again proved

Pierre Bourdieu's theory, demonstrating that both low income and ethnic minority status had negative effects on reading and math achievement. Similar findings were reported in a study on educational achievement at age 7–11 in England [Strand 2014]. Associations between the academic performance of school students and family characteristics, primarily socioeconomic status, have also been confirmed by Russian researchers [Tyumeneva 2008].

The role of parents in their children's education has been brought to the fore by researchers of educational achievement factors in recent years [Polivanova et al. 2015]. Parental involvement is measured by investment in extracurricular activities, active participation in children's learning and development, and interactions with teachers. As a rule, positive parental practices correlate positively with academic success [Driessen, Smit, Sleegers 2005; Phillipson 2010].

Academic performance at school is also associated with early childhood education experience. While some children can benefit from the availability of a kindergarten or child development centers, others may lag behind due to their inability to attend preschool education institutions [Buckrop, Roberts, Lo Casale-Crouch 2016]. Cross-regional differences in the engagement of children in preschool education, and the reasons behind them, have become the subject of dedicated research in Russia [Seliverstova 2008].

Cross-cultural comparative studies help to collect information on the factors that determine academic success in different contexts and analyze the best teaching and learning practices as well as the advantages and drawbacks of various educational systems. Russia participates in the TIMMS (Trends in International Mathematics and Science Study) and PIRLS (Progress in International Reading Literacy Study) on a regular basis [Martin, Mullis 2013]. However, comparative studies in education are not confined to international projects. Many countries conduct cross-regional research studies on the school performance of children [Tomul, Çelik 2009, Danhier, Martin 2014]. Our study is devoted to the region-specific features of early childhood education in the Russian context.

2. Regional elementary education systems

2.1. Kazan elementary education system

Tatarstan features a unique combination of traditions, religious beliefs and value orientations of its people. The Republic is home to 107 ethnicities, but the majority of the population consists of Tatars (53.2%) and Russians (39.7%). Tatars are the second largest ethnic group in Russia (after Russians)[1]. Although Tatarstan is a secular republic, the proportion of the religious population is much higher in this region than the national average. According to the Atlas of Religions and Eth-

[1] Russian Statistical Yearbook. 2014. http://www.gks.ru/bgd/regl/b14_13/IsSWWW.exe/Stg/d01/04–12.htm

nicities of Russia, a survey conducted by Sreda Research Service in 2012, about 32% of Tatarstan's population are Muslims, while around 30% identify themselves as Orthodox[2].

The network of schools in Kazan, the capital of the Republic, is represented by 168 institutions teaching 109,105 children, including 10,317 in high school, 50,861 in middle school, and 47,927 in primary school. In addition, there are 51 preschool education institutions attended by 70,967 children.

The lack of places in preschool institutions is one of the main preschool education problems in Kazan, and which is not dissimilar to other large Russian cities. Only about 69% of preschoolers are covered with some type of educational services in public institutions. As of January 1, 2015, 44,623 children were on the waitlist for Kazan's preschools.

2.2. Krasnoyarsk elementary education system

Krasnoyarsk Krai is one of the largest regions of Russia, having the second largest area in the country. Just like Tatarstan, Krasnoyarsk Krai is a multinational region, yet Russians account for 90% of its population[3].

According to Krasnoyarsk Department of Education[4], in 2015 the network of schools included 126 institutions attended by 90,171 students, including 39,683 in primary school, 39,740 in middle school, and 10,748 in high school. The design capacity of schools is exceeded by 10%.

Krasnoyarsk has 19 preschool education institutions, attended by 22,972 children, which also suffer from a lack of places. About 60% of preschoolers receive educational services in public institutions. As of January 1, 2015, 45,691 children (including 4,857 aged 3–7) were on the waitlist for Krasnoyarsk's preschools.

3. Research design

3.1. Sample

Representative stratified random samples were drawn from the population of all first-graders in Kazan and Krasnoyarsk enrolled in 2014, separately for each city. The stratification was based on school status (regular school or advanced school, such as lyceum or gymnasium) and location (city district). Table 1 presents sampling data for Kazan and Krasnoyarsk districts, and Table 2 shows status-based school distribution.

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[2] http://sreda.org/ru/arena-news/tataryi-v-rossii-musulmane-selskie-zhiteli-schastlivyie-i-religioznyie

[3] Russian Statistical Yearbook. 2014. http://www.gks.ru/bgd/regl/b14_13/IsSWWW.exe/Stg/d01/04–12.htm

[4] Krasnoyarsk Krai General Education System. Education in Krasnoyarsk Krai: http://krao.ru/rb-topic_t_43.htm

Table 1. **Sampling in the districts of Kazan and Krasnoyarsk**

	Krasnoyarsk	Kazan
Districts in the city	6	7
Children population	11,200	10,301
Children in the sample	1,438	1,303
Classes in the sample	63	54

Table 2. **Status-based school distribution**

	Population				Sample			
	Krasnoyarsk		Kazan		Krasnoyarsk		Kazan	
Type of school	Number	Proportion	Number	Proportion	Number	Proportion	Number	Proportion
Regular school	84	70%	75	53%	15	63%	18	48%
Advanced school	37	30%	66	47%	12	37%	16	53%
TOTAL	121	100%	141	100%	27	100%	34	100%

3.2. Assessment tools

Diagnostic tests on the Kazan and Krasnoyarsk first-graders were performed using the IPIPS (international Performance Indicators in Primary School), an assessment tool developed by Durham University (UK) to assess the skills of children starting school and their progress during the first year [Tymms 1999]. Tool adaptation and testing in Russia was provided by the Institute of Education under the National Research University Higher School of Economics (NRU HSE) [Ivanova, Nisskaya 2015].

IPIPS allows for assessing the starting mathematical and reading skills of school applicants and their academic progress in these two key areas during the first year. The tool also includes a parent questionnaire to obtain contextual information on preschool life and the development of children, family characteristics, and educational practices used by parents.

The mathematics module includes counting, simple sums using pictures, digit identification, number manipulations, and more difficult math problems. The reading module consists of tasks assessing the ability to understand text structure, acquaintance with letters, visual perception of words, and reading comprehension skills.

Mathematical processing of starting test scores yields 100-point scales for reading and mathematics.

3.3. Findings

Table 3 shows the average mathematics and reading scores of school children in the two regions, indicating the average age of the first-graders.

Table 3. **Children's scores and age**

Indicators	Krasnoyarsk		Kazan	
	Average score	Standard deviation	Average score	Standard deviation
Mathematics	50.35	9.86	49.62	10.14
Reading	49.96	10.68	50.04	9.19
Age (years)	7.39		7.32	

Table 4. **Variables for regression analysis**

Variable	Description
Dependent variable	Score in mathematics, 2) Score in reading
Independent variables	
Region	Krasnoyarsk = 1, Kazan = 0
School status	Gymnasium/lyceum/specialized school = 1, regular school = 0
Sex	Female = 1, male = 0
Age	Age in years
Kindergarten	Attended a kindergarten before school = 1, never attended a kindergarten = 0
Mother's education	Higher education = 1, no completed higher education = 0
Financial standing	Above-average/good financial standing = 1, other = 0
Books 25	No books/less than 25 books = 1, other = 0, reference category: 25–100 books
Books 100	Big home library (100 or more books) = 1; less than 100 books = 0
Language spoken at home	Russian = 1, other = 0
Formal preschool courses	Attended formal preschool courses during the previous year = 1, attended no formal preschool courses = 0

3.4. Variables for linear regression analysis

We used linear regression analysis to identify the factors associated with the basic mathematical and reading skills of children starting school and to assess cross-regional differences in students' scores. First-graders' starting scores in mathematics and reading were used as dependent variables. Analysis included the following independent variables: region, school status, student's sex and age, mother's education, financial standing, language spoken at home, early childhood education experience, and number of books at home (Table 4).

The regression model with multiple variables can be presented in the following equation:

$$(1) \quad Y_i - \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \ldots + \beta_k X_{ki} + \varepsilon_i,$$

where Y_i is a dependent variable describing first-graders' scores in mathematics or reading; X_i, $i = 1, \ldots, k$ are independent variables; β_0 is a constant; β_i shows the regression coefficient of the i-th independent variable; and ε is standard error.

As we can see, the linear regression analysis allows us to find out how a change by one point in an independent variable is reflected in the dependent variable, as well as the size and sign (positive or negative) of such regression coefficient.

In this research, we constructed 10 regression models with scores in mathematics or reading as dependent variables.

3.5. Descriptive statistics of the key analysis variables

Table 5 demonstrates the initial descriptive statistics on the key variables used in analysis. The socioeconomic status of first-graders' families, assessed by such indicators as the number of books at home, financial standing and parental education, is quite similar between the two regional capitals. In both cities, 20% of parents report having rather small home libraries (up to 25 books), while extensive collections (over 100) are possessed by over 25% of families.

The proportions of first-graders from extremely affluent and poor families are equally small in Kazan and Krasnoyarsk. The financial standing of a family is presented as a binary variable in this study, which takes the "above average" value beginning with the category *We have no difficulty buying new furniture or major appliances...* and "below average" for all the previous choices. Most parents covered by the survey (over 40% in both cities) describe their financial standing as "slightly below average".

Both Kazan and Krasnoyarsk confirm their reputations as highly educated cities: over 50% of parents have higher education levels. We only use the mother's education as an indicator of the family's educational status, as educational background of the parents is usually more or less the same, but mothers traditionally play a greater role in raising children. As in the case of financial standing, the answers are converted into two categories: "higher education level" and "no higher education".

The percentage of non-Russian-speaking families is much higher in Kazan than in Krasnoyarsk, just as we presumed based on Kazan's specific status as a national republic.

The regional capitals differ very little in the percentage of children who attended a kindergarten in the previous year, yet formal preschool courses were attended by 18.8% more children in Kazan than in Krasnoyarsk.

Table 5. **Initial descriptive statistics on the variables**

		Krasnoyarsk	Kazan
Number of books at home	0–25	21.1	22.5
	26–100	50.3	50.1
	Over 100	28.6	27.4
Financial standing	We live very frugally and sometimes don't even have enough money to buy food	1.30	1.30
	We have enough money for daily expenses, but buying clothes is rather difficult	7.40	7.20
	We have enough money for food and clothes, but buying small appliances (e. g. an iron, a hairdryer, etc.) is rather difficult right now	10.10	6.50
	We have enough money for food, clothes and small appliances but would have to borrow money to buy new furniture or major appliances (e. g. a TV, a fridge, etc.)	44.30	42.90
	We have no difficulty buying new furniture or major appliances, but we can't afford a new car (without taking a loan)	26.00	29.40
	We can buy anything except real property (an apartment or a summer cottage) without taking a loan	9.30	11.00
	We have no financial difficulties; if necessary, we can afford to buy a new apartment or build a new house without taking a loan	1.7	1.6
Mother's education	Incomplete secondary education	2.00	2.30
	Complete secondary education	6.50	5.50
	Secondary vocational education	25.60	25.50
	Incomplete higher education	5.90	5.70
	Higher education	55.80	56.30
	Master's degree	3.30	2.80
	Doctoral degree	1.00	2.00
Father's education	Incomplete secondary education	2.90	2.50
	Complete secondary education	7.80	8.10
	Secondary vocational education	31.10	32.30
	Incomplete higher education	7.70	6.30
	Higher education	46.50	46.80
	Master's degree	2.10	2.20
	Doctoral degree	2.00	1.70
Language spoken at home	Russian	97.70	88.30
	Other	2.30	11.70
Preschool experience	Attended a kindergarten in the previous year	89.20	88.50
	Attended preschool classes	67.80	86.60

Table 6. **Regression analysis results: mathematics**

Variable	Model									
	1	2	3	4	5	6	7	8	9	10
Constant	49.62**	48.27**	49.66**	31.31**	27.02**	24.49**	23.68**	24.56**	22.29**	22.54**
Region	0.73	1.13**	1.1**	1.12*	0.91*	0.84*	0.82*	0.67	0.44	0.46
School status		2.58**	2.6**	2.77**	2.51**	1.91**	1.87**	1.71**	1.66**	1.66**
Sex			–2.79**	–2.78**	–2.82**	–3.03**	–3.00**	–3.07**	–3.09**	–3.01**
Age				2.5**	2.68**	2.83**	2.90**	2.93**	2.95**	2.91**
Kindergarten					3.58**	2.7**	2.97**	2.73**	2.53**	2.56**
Mother's higher education						4.26**	4.42**	3.79**	3.76**	3.78**
Financial standing							–0.06	–0.02	–0.08	0.05
Books 25								–2.49**	–2.33**	–2.34**
Books 100								0.75	0.72	0.72
Language spoken at home									2.57**	2.53**
Formal preschool courses										0.02
R^2	0.001	0.02	0.04	0.05	0.06	0.10	0.11	0.12	0.13	0.13

** $p < 0{,}01$; * $p < 0{,}05$.

4. Regression analysis results

Tables 6 and 7 present regression analysis results for all the models constructed[5].

Model 1 uses region as the only independent variable, and no difference is revealed between the regions at this stage. Model 2 includes the type of school: first-graders in schools of an advanced type score 1.5–3 points better than children enrolled in regular schools. Models 3–5 consider some personal characteristics of the children. The gender variable added to Model 3 appears to be significant: girls score about 3 points worse in math and 2 points better in reading than boys. According to Model 4, children aged a little older than their classmates tend to obtain significantly higher grades. Model 5 shows that children who attended a kindergarten in the previous year score almost 4 points better in both math and reading than those who did not. Model 6 includes the mother's education variable. It plays a statistically significant role, with better scores being demonstrated by children whose mothers have higher education levels. Model 7 considers financial standing additionally. This variable remains virtually in-

[5] We use unstandardized regression coefficients showing how many points *y* changesper one point change in *x*.

Table **7. Regression analysis results: reading**

Variable	Model									
	1	2	3	4	5	6	7	8	9	10
Constant	50.05**	48.37**	47.45**	34.11**	29.63**	27.15**	26.37**	27.46**	25.75**	24.69**
Region	−0.09	0.41	0.43	0.42	0.21	0.16	0.13	−0.02	−0.18	0.09
School status		3.22**	3.20**	3.04**	2.75**	2.15**	2.19**	2.00**	1.94**	1.88**
Sex			1.83**	1.98**	1.94**	1.80**	1.81**	1.76**	1.75**	1.77**
Age				1.83**	2.03**	2.17**	2.23**	2.20**	2.20**	2.21**
Kindergarten					3.76**	2.79**	3.15**	2.89**	2.74**	2.64**
Mother's higher education						4.36**	4.40**	3.74**	3.72**	3.66**
Financial standing							−0.09	−0.08	0.04	−0.03
Books 25								−1.77**	−1.66**	−1.61**
Books 100								1.33*	1.34**	1.31*
Language spoken at home									2.00*	1.90*
Formal preschool courses										1.47**
R^2	0.001	0.03	0.03	0.04	0.05	0.09	0.10	0.10	0.11	0.11

** $p < 0{,}01$; * $p < 0{,}05$.

significant, i.e. no correlation exists between the basic skills of children starting school and family income. Model 8 adds the number of books at home as another variable describing socioeconomic status. Children whose families keep few books at home score around 2 points worse in both subjects than those who can boast a large or medium-sized library. Model 9 also considers the language spoken at home. First-graders whose families mostly speak Russian at home perform better in mathematics and reading than students speaking another language to their family, this gap being statistically significant. Finally, Model 10 also contains the variable of formal preschool courses: this factor was found to be significant for reading but not for math.

As we can see, language spoken at home appears to be a significant factor for the development of mathematical and reading competencies in prospective first-graders (Model 9)[6]. Mathematical and

[6] The "language spoken at home" variable is a more significant factor for the development of mathematical competencies than reading skills. This is probably due to the fact that both preschool teachers and parents often recognize the need to compensate for the lack of Russian-speaking practice only in terms of reading. The influence of insufficient proficiency in Russian on

Table 8. **Home preschool learning activities**

Type of activity	Correlation with reading or mathematics
Reading books	Reading
Telling stories or fairytales	Reading
Singing songs	Reading
Playing letter games (e. g. letter cubes, lotto, etc.)	Reading
Discussing what you did together	Reading
Discussing what you read about together	Reading
Playing with words	Reading
Writing letters or words	Reading
Reading aloud names of shops, street signs, etc.	Reading
Learning poems or songs by heart	Reading
Learning counting-out rhymes	Mathematics
Playing number games (e. g. number cubes, dominoes, etc.)	Mathematics
Counting various objects	Mathematics
Playing puzzle games	Mathematics
Playing board games	Mathematics
Playing with model construction toys	Mathematics

reading diagnostic test scores are largely the same for children in both cities, yet there are 10% more non-Russian-speaking families in Kazan. The question arises: how can the gap be closed? The percentage of children who attended formal preschool courses in the previous year differs noticeably between the cities. Besides, families in the two regions may engage in different educational activities and practices.

Let us test the hypothesis that formal preschool courses and family educational practices play an important role in compensating for the impact of the language spoken at home on the development of mathematical and reading skills. To do this, we compare the data on formal and parental preschool practices in families with different language backgrounds across the regions. This data is retrieved from parent questionnaires asking parents how often family members involved children in specific types of play-and-learn activities—like learning poetry by heart, writing letters, or playing with numbers—before bringing them to school (Table 8). Parents were offered a choice of seven answers, from “Never” to “A few times a day”.

mathematical education is not realized, so no compensation attempts are made. Meanwhile, math tasks are always given in Russian, both in starting-level diagnostic tests and throughout the learning process.

Table 9. **Associations between the language spoken at home, home preschool activities, and formal preschool courses**

City	Language	Home activities	Formal preschool courses	Number of students (%)	Average
Krasnoyarsk	Other	Math-oriented	No	12 (40%)	–1.05
			Yes	18 (60%)	–1.04
		Reading-oriented	No	12 (40%)	–1.05
			Yes	18 (60%)	–0.99
	Russian	Math-oriented	No	414 (32%)	–0.09*
			Yes	878 (68%)	0.09*
		Reading-oriented	No	414 (32%)	–0.17*
			Yes	878 (68%)	0.08*
Kazan	Other	Math-oriented	No	25 (18.4%)	–0.56*
			Yes	111 (81.6%)	0.01*
		Reading-oriented	No	25 (18.4%)	–0.69**
			Yes	111 (81.6%)	0.12**
	Russian	Math-oriented	No	129 (12.5%)	0.00
			Yes	899 (87.5%)	0.03
		Reading-oriented	No	129 (12.5%)	–0.08
			Yes	899 (87.5%)	0.08

** $p < 0{,}01$; * $p < 0{,}05$.

We calculate the indices of home preschool learning activities separately for reading and mathematics as a sum of parents' answers to all of the questions. Then, we convert the resulting sums into Z-scores with a mean of 0 and a standard deviation of 1.

Table 9 shows the results of a dispersion analysis performed using Student's t-test for the variables of reading- and math-oriented home preschool activities in the two cities, depending on whether or not the families speak Russian at home and whether or not they give their kids an opportunity to attend formal preschool courses.

As can be seen from Table 9, the percentage of children who did not attend any formal preschool courses in the previous year is much higher in Krasnoyarsk than in Kazan: 32% and 12.5%, respectively. Besides, only 60% of Krasnoyarsk children from non-Russian-speaking families (only about twenty in the sample) attended formal preschool courses, while nearly 82% of children from families with another native language attended such courses in Kazan. The indices of home preschool learning activities are statistically much higher in Krasnoyarsk

Table 10. **Parental practices and formal preschool courses in Kazan and Krasnoyarsk**

Region	Language	Index	Spearman's rho	Reading-oriented parental practices	Math-oriented parental practices	Formal preschool courses
Krasnoyarsk	Other	Reading	Rank correlation N	0.364* 31	0.372* 31	–0.110 30
		Math	Rank correlation N	0.208 31	0.184 31	–0.259 30
		Formal preschool courses	Rank correlation N	–0.020 30	–0.004 30	1.00 30
	Russian	Reading	Rank correlation N	0.222** 1294	0.104** 1294	0.051 1294
		Math	Rank correlation N	0.102** 1,294	0.101** 1,294	0.034 1,294
		Formal preschool courses	Rank correlation N	0.111** 1,292	0.086** 1,292	1.00 1,294
Kazan	Other	Reading	Rank correlation N	0.315** 137	0.262** 137	0.271** 136
		Math	Rank correlation N	0.290** 137	0.369** 137	0.203* 136
		Formal preschool courses	Rank correlation N	0.279** 136	0.168 136	1.00 136
	Russian	Reading	Rank correlation N	0.175** 1,033	0.140** 1,033	0.090** 1,030
		Math	Rank correlation N	0.068* 1033	0.102** 1033	0.049 1030
		Formal preschool courses	Rank correlation N	0.036 1,028	0.006 1,028	1.00 1,030

** $p < 0{,}01$; * $p < 0{,}05$.

Russian-speaking families and Kazan non-Russian-speaking families in cases where parents send their children to formal preschool courses.

Using the index of home preschool activities, we analyze the associations between family educational practices, starting-level first-graders' skills, and attending formal preschool courses in Kazan and Krasnoyarsk separately for Russian-speaking and non-Russian-speaking families (Table 10).

All the indices are insignificant in Krasnoyarsk non-Russian-speaking families (due to the small size of the subsample). In Russian-speaking families, home preschool learning activities correlate positively with attending formal preschool courses and math and reading scores. Yet, these indices are rather low, the possible exception being the correlation between parental practices and reading test scores.

Amongst Kazan's non-Russian-speaking families, parental preschool activities correlate significantly and strongly with both attending formal preschool courses and starting-level first-graders' test scores. Meanwhile, correlations between the variables for Russian-speaking families are almost the same as in the relevant subsample in Krasnoyarsk.

Language spoken at home appears to be a significant factor in regression models. Although non-Russian-speaking families are 9.5% more numerous in Kazan than in Krasnoyarsk, math and reading skills of Kazan first-graders differ little from those of Krasnoyarsk school children. We can explain this compensation by differences in the correlations between attending formal preschool courses and the language spoken at home, on the one hand (children from non-Russian-speaking families attend formal preschool courses more often, and the correlation between attending the courses and the starting-level test scores is stronger), and between parental practices and the language spoken at home, on the other hand. Kazan's non-Russian-speaking families are the most concerned about the academic success of their children and thus try to support them in the preschool period through home learning activities and formal preschool courses, both methods proving effective.

5. Considering region-specific aspects when getting children ready for school

Dispersion of the dependent variable, explained by the regression models constructed, remains low. Obviously, starting-level basic mathematical and reading skills of first-graders are determined by a number of other factors that we did not consider. Among the factors associated with basic mathematical and reading skills analyzed in this study, the most significant are sociocultural capital (mother's higher education and a home library of over 100 books), early childhood education experience, and language spoken at home. We found a correlation between school readiness of first-graders and the status of school they apply for, i. e. there is a certain school demand for applicants to have a high level of basic skills, and a willingness of parents to provide such a level when they decide to send their children to a school of an advanced type.

The region variable was found to be statistically insignificant. First-graders in such different regional capitals as Kazan and Krasnoyarsk demonstrate pretty much the same levels of mathematical competencies and reading skills in diagnostic tests, with the rest of the abovementioned factors controlled. Otherwise speaking, the existing differences are successfully compensated for. Further data analysis designed to identify the means of such compensation has proved the often expressed researchers' belief that family plays the decisive role in getting children ready for school. Home preschool learning practices are especially important for non-Russian-speaking families.

Based on the evidence obtained, we can conclude that taking into account parental demands and the established family traditions of getting children ready for school is a promising method of considering region-specific aspects when building an education system. Thus, the widespread practice of sending children to formal preschool courses in Kazan is most probably the result of a deliberate policy of the local education authorities, adopted to satisfy the demands of parents concerned about their children studying in a non-native language. Therefore, the departments of education should focus more on supporting families in their children's development efforts and increasing their awareness of the factors influencing academic success in school. Searching for efficient ways of increasing parental literacy in preschool education is one of the promising directions for research in this area.

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