

# Relations Between Early Educational and Family Experiences and Academic Results of Elementary School Students

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This article focuses on the issues of low academic results. Research on the role of children's early educational experiences highlights the important role of kindergartens, socioeconomic status (SES<sup>1</sup>), cultural capital (CC<sup>2</sup>), and other family characteristics for future educational outcomes. The goal of this paper is to investigate the relationship of SES and CC with academic achievement of children in elementary school, using a sample of 5235 students of the first ( $n=2574$ ) and fourth ( $n=2661$ ) grades of secondary schools from the Nizhny Novgorod region of Russia. The academic results were measured using the "Start" and "Progress" tests; the information about family and educational experiences was collected using family surveys. The results suggest that children with low academic achievement typically reside in rural areas and mostly come from families with low SES. The results indicated that in the fourth grade, the academic results of the children who didn't attend a kindergarten are higher than the results of the children who did. Nevertheless, this result refers only to a sample of fourth graders with medium and high academic achievement, coming from families with high SES and CC. These results contradict the findings from Russian and foreign studies on the role of early educational experiences. Therefore, the results from this study should be interpreted with caution and require additional rigorous examination.

**Keywords:** early educational experience; academic achievement; school failure; school success; elementary school.

<sup>1</sup> Socio-economic status includes such indicators as level of education of parents, place of residence, family wealth, etc. [17; 19].

<sup>2</sup> Cultural capital includes social attitudes, values, knowledge and educational qualifications [10].

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## Связь раннего образовательного и семейного опыта с академическими результатами детей в младшем школьном возрасте

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Статья посвящена проблеме низких академических результатов. Исследования предпосылок данного явления говорят о позитивной роли раннего образовательного опыта, социально-экономического статуса (далее — СЭС<sup>3</sup>), культурного капитала (далее — КК<sup>4</sup>) и других характеристик семьи. Авторы поставили цель изучить связь указанных факторов с академическими результатами детей в младшей школе на выборке 5235 учащихся первых (n=2574) и четвертых (n=2661) классов общеобра-

<sup>3</sup> Социально-экономический статус включает такие показатели, как уровень образования родителей, место проживания, достаток семьи и пр. [17; 19].

<sup>4</sup> Культурный капитал включает социальные установки, ценности, знания и образовательные квалификации [10].

зовательных школ Нижегородской области. Академические результаты измерены инструментами «Старт» и «Прогресс»; информация о семейном и образовательном опыте получена через опрос родителей школьников. Показано, что дети с низкими результатами чаще живут в сельской местности, а их семьи обладают более низким СЭС. Академические результаты в 4-х классах выше у детей, не посещавших детский сад, однако такой эффект характерен только для подвыборки со средними и высокими академическими результатами, как правило, из семей с высоким СЭС и КК. Данный результат является дискуссионным и не согласуется со значительным числом отечественных и зарубежных исследований, его интерпретация и осмысление требуют дальнейшего изучения.

**Ключевые слова:** ранний образовательный опыт; академические результаты; школьная неуспешность; младшие школьники.

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## Introduction

Low academic results may indicate that children do not receive sufficient knowledge in a certain subject area, which negatively affects their current well-being and becomes a barrier to continuing educational and professional development, the inclusion in economic and social relations. This problem is a consequence of several multi-level factors: education policy and labor market conditions, school characteristics, family context, child behavior, and so on [25].

In this publication, we examine the possible role of early educational experience<sup>4</sup>. A great deal of studies demonstrate its importance for the well-being and future of the child; on the other hand, there are few direct links between early educational experiences with academic results.

Ensuring the availability of high-quality preschool education is the starting point of national goals and modern education policy at the state level [10; 14]. The preschool education of children

presupposes the acquisition of cognitive and behavioral skills that can contribute to academic success at an older age [24]. At the same time, it is important to consider that future academic success may be affected not only by early educational experience or the attendance of preschool educational institutions, but also by contextual factors and external environmental conditions (family's SES, CC, and context) [3; 4; 18; 20; 33]. A multidimensional combination of educational, family, and social conditions in which a preschooler lives can determine academic success or failure in the future.

Academic results<sup>6</sup> and ways to improve or predict them draw the attention of researchers and practitioners. Research shows that students' characteristics (such as motivation, resilience, cognitive, and non-cognitive development), the family's SES, as well as the experience of diverse interactions with society (significant adults, peers, educational organizations, etc.) might affect academic results [15].

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<sup>5</sup> Early educational experience implies a cycle of educational and educational measures aimed at the child, with the aim of comprehensive development until the moment of his admission to school [11].

<sup>6</sup> Academic results are understood as the total indicator of the results of existing knowledge and/or skills in a particular subject area, characterizing compliance with the standards of the Federal State Educational Standard of a given age [12].

### *Modern Preschool Education and its Characteristics*

Preschool education has a variety of positive effects on children's cognitive and social development, the development of executive functions, psychological well-being, the quality of the transition to school, academic achievement and academic success [1].

Research indicated that the educational environment of a preschool contributes to children's successful adaptation to school, while the conditions of homeschooling do not fully enhance adaptation [7].

Longitudinal studies of the role of preschool experience show its impact on children's development and success in the future: the duration of the attendance of a preschool contributes to a higher level of intellectual development; hence, children from vulnerable families benefit significantly from a high-quality preschool educational experience [32].

The state of the education system for children of an early and preschool age is the subject of attention of most countries of the world [26]. One of the central tasks of preschool education is to overcome the inequality of children's starting opportunities before school. According to parents, kindergarten attendance also makes a significant contribution to children's academic success [12].

Thus, the available research evidence suggests that preschool attendance makes a significant contribution to children's success at school. However, it seems that this relationship may be mediated by several factors. These include the goals and qualitative characteristics of preschool education, the characteristics of the family context, and the individual characteristics of the child, to name a few.

### *Characteristics of Preschool Education that can Affect Children's Success in Primary School*

At the level of educational organizations, the quality of education can vary significantly (educational practices and environment, teacher-child interaction, communication with parents, etc.) [26].

Studies examining the relations between an early educational experience and well-being at

school have shown that students in the first grade are more independent, when they have been in a preschool environment where teachers encourage communication, respect between children and adults, promote independent conflict resolution, and focus on positive behavior [8].

The content of programs implemented in preschool affects first-graders attitudes toward learning activities, the teacher, classmates, and the degree of satisfaction with school attendance [6].

The conditions for rest and relaxation in groups, the development of large motor skills, and the encouragement of interaction between children are associated with a higher level of development of the executive functions of preschoolers and are important preschool predictors of academic results at school [1]. Studies have shown that an increase of the teacher's emotional support of children is associated with the development of language skills and speech [27].

### *Child's Success and the Family Context*

The characteristics of the home learning environment are reflected in the cognitive and social development of children, their behavior, readiness for school, and educational achievement, along with the level of parents' education and the family's SES [30].

Parents may not consider themselves as important participants in the children's development, which may reduce their motivation and involvement in primary school [21]. The mechanism underlying this connection is dual — on the one hand, the children of educated parents have higher intelligence; on the other, parents with higher education use more effective communicative and upbringing practices with their children [31].

### *Constellation of Factors of Early Educational and Family Experience*

The combination of family and educational conditions in a preschool creates a special context for children development, which can affect success at school.

Children from families that are less prosperous in terms of SES and CC, for instance, are in

need of a high-quality educational experience. According to researchers, a high-quality preschool education can prevent the development of special needs [29]. At the same time, it is children from low-income families who most often find it difficult to access a high-quality preschool education [19].

As a result, it seems necessary to examine the complex interaction of family and preschool experience and their relation to the academic results of schoolchildren. Thus, the key goal of this study is to understand how the academic achievement of primary school children varies depending on early educational and family experiences.

The purpose of this study is to identify the relationship of academic results in primary school with early educational and family experiences.

This study put forward the following hypotheses:

Hypothesis 1. There are significant differences in the academic results of children who attended and who did not attend preschool in mathematics and reading in the first grade.

Hypothesis 2. There are significant differences between children with preschool experience and without preschool experience in math and reading in the fourth grade.

Hypothesis 3. Early educational experience relates to academic performance at the primary school age.

## Method

The study was conducted as part of the "Longitudinal Study of Academic Failure Factors" (<https://ioe.hse.ru/failure-factors/>) project. In this article, we used the results of surveys of first and fourth grade students, and the parents of each child (mother or father) filled out a questionnaire.

**Sample.** The testing of academic results involved 1,248 responses from first graders

(49,0% — girls, 51,0% — boys) and 1,152 responses from fourth graders (50,2% — girls, 49,8% — boys) as well as their parents.

**Procedures.** To evaluate academic results in the first grade, the "Start" standardized assessment was used, and in the fourth grade — "Progress". On average, students filled out questionnaires for one lesson or about 40 minutes. The adults entered the first-graders' answers into the online platform when filling out the questionnaires. While filling out the questionnaires in the fourth grades, adults were present — a teacher and/or coordinator — in case students had questions or for possible technical difficulties.

**Instruments.** To measure academic results in mathematics and reading, students used the "Start" (1st grade) and "Progress" (4th grade) assessment procedures, based on computer adaptive testing, which automatically selects tasks depending on students' responses (<https://ioe.hse.ru/failure-factors/>).

Data from the parental questionnaires was used to study preschool experience. For the purposes of this study, we used the answers to the following questions: "Did the child attend preschool?". A group of children with low academic results was also identified and data describing such characteristics of the family as location (urban/rural), SES, CC and parental employment status was also used. At the same time, we define the family SES as an integral indicator of social status (education, profession) and financial status (income, expenses), which determine early and further children development<sup>7</sup> [16; 18]. The cultural capital (CC) of the family is an indicator of the worldview and cultural identity of the family, including values, social attitudes, knowledge, and educational qualifications, which are presented

<sup>7</sup> To determine the family SES respondents were asked to answer the following question: "How would you assess the financial situation of your family?". The respondents could choose from the following options: 1 — We do not have enough money for necessary food sometimes. 2 — We do have enough money for food, but we have to limit ourselves in other daily expenses. 3 — We do have enough money for daily expenses, but buying clothes can be difficult. 4 — We do have enough money for food and clothes, but buying a TV, a refrigerator or other home appliances can be difficult. 5 — We are financially secure enough, but we cannot afford to buy a car or an expensive trip without a loan. 6 — We are financially secure, we can afford an expensive trip or the purchase of a car.

as a basis for children in the process of their upbringing, education, and development<sup>8</sup> [9].

**Data analysis.** The analyses were done in the R Studio statistical analysis program. The *psych* package was used to calculate descriptive statistics and a statistical analysis of *t* test [28], and linear regression in the *stats* (R, n.d.) and *rstatix* packages were used to run other parametric tests [22].

## Results

Hypothesis 1 was not confirmed. The results did not reveal significant differences between a child's preschool attendance and the academic achievement in mathematics and reading of first

graders. As a result, we assumed that the difference in academic results could be explained by different family experiences. As indicators, we identified SES, CC, and the mother's employment. At the same time, we assumed that high SES, CC, and the ability of a parent to stay at home with children may be the factors of higher academic results for children who attended and did not attend preschool.

The results of a detailed analysis through the categories of SES, CC, and parental employment status are presented in Table 1.

The academic performance of children from two groups was checked: 1) from families with low SES, CC and with a working parent

Table 1

### Results of First Graders in Math and Reading Based on Preschool Experience

| Family Socio-Economic Status (SES) of Children with Preschool Experience    |                                      |  |                |         |           |
|---|--------------------------------------|--|----------------|---------|-----------|
| Subject   | Average score<br>Low SES<br>(n = 81) | Average score<br>High SES<br>(n = 649) | t test (df)    | p-value | Cohen's D |
| 1. Mathematics  | 44.94                                | 48.77                                  | -3.52(100.63)  | 0.00076 | -0.42     |
| 2. Reading  | 50.39                                | 52.04                                  | -1.88 (100.08) | 0.12    | -         |
| Family Socio-Economic Status (SES) of Children without Preschool Experience |                                      |  |                |         |           |
| Subject   | Average score<br>Low SES<br>(n = 6)  | Average score<br>High SES<br>(n = 46)  | t test (df)    | p-value | Cohen's D |
| 1. Mathematics  | 44.17                                | 49.39                                  | -1.18 (6.37)   | 0.28    | -         |
| 2. Reading  | 43.50                                | 50.70                                  | -1.34 (5.94)   | 0.23    | -         |
| Cultural Capital (CC) of a Family with Preschool Experience                 |                                      |  |                |         |           |
| Subject   | Average score<br>Low CC<br>(n = 423) | Average score<br>High CC<br>(n= 309)   | t test (df)    | p-value | Cohen's D |
| 1. Mathematics  | 46.54                                | 50.84                                  | -6.19 (590.29) | 0.0001  | -0.48     |
| 2. Reading  | 50.16                                | 54.14                                  | -6.34 (689.94) | 0.0001  | -0.47     |
| Cultural Capital (CC) of a Family without Preschool Experience              |                                      |  |                |         |           |
| Subject   | Average score<br>Low CC<br>(n = 31)  | Average score<br>High CC<br>(n = 21)   | t test (df)    | p-value | Cohen's D |
| 1. Mathematics  | 46.81                                | 51.71                                  | -1.84 (49.62)  | 0.07    | -         |
| 2. Reading  | 47.22                                | 53.76                                  | - 2.37 (50)    | 0.02    | -0.62     |

<sup>8</sup> To determine the CC respondents were asked to answer the following question: "How many hardcover books do you have at home? One standard shelf holds approximately 25 books." The respondents could choose from the following options: 1 — 0-10 books. 2 — 11-25 books. 3 — 26-100 books. 4 — 101-200 books. 5 — 201-500 books. 6 — More than 500 books.

| <b>Parental Employment for Children with Preschool Experience</b>   |                                       |  |                    |                |                  |
|---|---------------------------------------|--|--------------------|----------------|------------------|
| <b>Subject</b>  | <b>Average score Works (n = 579)</b>  | <b>Average score Does not work (n = 152)</b> | <b>t test (df)</b> | <b>p-value</b> | <b>Cohen's D</b> |
| 1. Mathematics  | 48.50                                 | 47.83  | 0.78 (234.5)       | 0.44           | -                |
| 2. Reading  | 52.13                                 | 50.77  | 1.49 (203.28)      | 0.14           | -                |
| <b>Parent Employment for Children without Preschool Experience</b>  |                                       |  |                    |                |                  |
| <b>Subject</b>  | <b>Average score Works (n = 28)</b>   | <b>Average score Does not work (n = 24)</b>  | <b>t test (df)</b> | <b>p-value</b> | <b>Cohen's D</b> |
| 1. Mathematics  | 49.93                                 | 47.46  | 0.86 (46.06)       | 0.40           | -                |
| 2. Reading  | 48.54                                 | 51.41  | -0.96(49.87)       | 0.34           | -                |
| <b>Group 1 (Low SES, KG and a Working Parent) and Group 2 (High SES, K and a Non-Working Parent) of Children with Preschool Experience</b>    |                                       |  |                    |                |                  |
| <b>Subject</b>  | <b>Average score Group 1 (n = 30)</b> | <b>Average score Group 2 (n = 56)</b>        | <b>t test (df)</b> | <b>p-value</b> | <b>Cohen's D</b> |
| 1. Mathematics  | 45.33                                 | 51.38  | -3.05 (58.55)      | 0.003          | -0.69            |
| 2. Reading  | 51.00                                 | 55.14  | -2.24 (58.68)      | 0.03           | -0.51            |
| <b>Group 1 (Low SES, KG and a Working Parent) and Group 2 (High SES, K and a Non-Working Parent) of Children without Preschool Experience</b> |                                       |  |                    |                |                  |
| <b>Subject</b>  | <b>Average score Group 1 (n = 4)</b>  | <b>Average score Group 2 (n = 8)</b>         | <b>t test (df)</b> | <b>p-value</b> | <b>Cohen's D</b> |
| 1. Mathematics  | 44.50                                 | 55.13  | -1.64(6.01)        | 0.15           | -                |
| 2. Reading  | 40.00                                 | 54.63  | -2.06(3.80)        | 0.11           | -                |

and 2) from families with high SES, CC and with a non-working parent. The results of the analysis revealed that the children who attended preschool from the second group received higher scores in mathematics [ $t(58.548) = -3.0527, p = 0.003, d = -0.69$ ] and reading [ $t(58.678) = -2.2359, p = 0.03, d = -0.51$ ], the effect size is average, than children from the first group. The difference in academic results in children who did not attend preschool was not significant.

In fact, a high level of SES and family CC are associated with the academic results of children, and the availability of free time of parents allows them to devote more time to teaching and raising children of preschool age, which also affects their learning ability [15; 20]. The feeling of social inequality, financial deprivation, in terms of psychoemotional influence, can act as a stress factor. As a result, children in these families may experience anxiety, and this experience can be associ-

ated with a negative image of the family and can affect various spheres of children's lives [16].

Hypothesis 2 was confirmed, however, in a peculiar way. The results of the statistical analyses indicated that children who did not attend preschool have higher results in mathematics [ $t(76.32) = -3.21, p = 0.0002, d = -0.44$ ] and in reading [ $t(79.08) = -3.45, p = 0.0002, d = -0.41$ ] in fourth grade, than children who attended preschool. The effect size is average. In order to understand to what extent preschool attendance and family experiences contribute to academic results, a further analysis was performed.

The results of a detailed analysis through the categories of SES, CC and parental employment are presented in Table 2.

The academic indicators of children from two groups of the fourth graders were compared: 1) from families with low SES, CC and a working parent and 2) from families with high SES, CC and a non-working parent. The



TTable 2

**Results of Fourth-Graders in Math and Reading, Depending on Preschool Experience**

| <b>Family's Socio-Economic Status (SES) of Children with Preschool Experience</b>  |   |  |                    |                |                  |
|--|---|--|--------------------|----------------|------------------|
| <b>Subject</b>   | <b>Average score<br/>Low SES<br/>(n = 96)</b> | <b>Average score<br/>High SES<br/>(n = 580)</b>      | <b>t test (df)</b> | <b>p-value</b> | <b>Cohen's D</b> |
| 1. Mathematics   | 48.12   | 50.78  | -2.35(131.32)      | 0.02           | -0.25            |
| 2. Reading   | 47.81   | 51.24  | -3.12(127.18)      | 0.002          | -0.35            |
| <b>Family's Socio-Economic Status (SES) of Children without Preschool Experience</b>   |   |  |                    |                |                  |
| <b>Subject</b>   | <b>Average score<br/>Low SES<br/>(n = 10)</b> | <b>Average score<br/>High SES<br/>(n = 35)</b>       | <b>t test (df)</b> | <b>p-value</b> | <b>Cohen's D</b> |
| 1. Mathematics   | 50.7  | 58.11  | - 1.85(16.71)      | 0.08           | -0.61            |
| 2. Reading   | 49.7  | 57.11  | -2.7(20.29)        | 0.01           | -0.8             |
| <b>Cultural Capital (CC) of a Family with Preschool Experience</b>   |   |  |                    |                |                  |
| <b>Subject</b>   | <b>Average score<br/>Low CC<br/>(n = 385)</b> | <b>Average score<br/>High CC<br/>(n = 289)</b>       | <b>t test (df)</b> | <b>p-value</b> | <b>Cohen's D</b> |
| 1. Mathematics   | 47.43   | 54.35  | -8.72(560.37)      | 0.0001         | -0.69            |
| 2. Reading   | 48.89   | 53.18  | -5.62(609.52)      | 0.0001         | -0.44            |
| <b>Cultural Capital (CC) of a Family without Preschool Experience</b>  |   |  |                    |                |                  |
| <b>Subject</b>   | <b>Average score<br/>Low CC<br/>(n = 22)</b>  | <b>Average score<br/>High CC<br/>(n = 25)</b>        | <b>t test (df)</b> | <b>p-value</b> | <b>Cohen's D</b> |
| 1. Mathematics   | 50.95   | 61.80  | -3.24(38.83)       | 0.002          | -0.97            |
| 2. Reading   | 51.45   | 58.840   | -2.85(41.5)        | 0.006          | -0.84            |
| <b>Parental Employment for Children with Preschool Experience</b>  |   |  |                    |                |                  |
| <b>Subject</b>   | <b>Average score<br/>Works<br/>(n = 561)</b>  | <b>Average score<br/>Does not work<br/>(n = 112)</b> | <b>t test (df)</b> | <b>p-value</b> | <b>Cohen's D</b> |
| 1. Mathematics   | 50.69   | 49.64  | 0.77(144.87)       | 0.44           | -                |
| 2. Reading   | 51.08   | 49.00  | 1.77(142.19)       | 0.08           | -                |
| <b>Parental Employment for Children without Preschool Experience</b>   |   |  |                    |                |                  |
| <b>Subject</b>   | <b>Average score<br/>Works<br/>(n = 34)</b>   | <b>Average score<br/>Does not work<br/>(n = 13)</b>  | <b>t test (df)</b> | <b>p-value</b> | <b>Cohen's D</b> |
| 1. Mathematics   | 57.00   | 56.00  | 0.27(27.67)        | 0.79           | -                |
| 2. Reading   | 55.70   | 54.53  | 0.41(27.62)        | 0.68           | -                |
| <b>Group 1 (Low SES, CC, and a Working Parent) and Group 2 (High SES, CC, and a Non-Working Parent) of Children with Preschool Experience</b>    |   |  |                    |                |                  |
| <b>Subject</b>   | <b>Average score<br/>Group 1<br/>(n = 62)</b> | <b>Average score<br/>Group 2<br/>(n = 38)</b>        | <b>t test (df)</b> | <b>p-value</b> | <b>Cohen's D</b> |
| 1. Mathematics   | 46.78   | 55.57  | -4.28(59.94)       | 0.0001         | -0.95            |
| 2. Reading   | 47.43   | 53.63  | -2.92(63.98)       | 0.005          | -0.64            |
| <b>Group 1 (Low SES, CC, and a Working Parent) and Group 2 (High SES, CC, and a Non-Working Parent) of Children without Preschool Experience</b> |   |  |                    |                |                  |



| Subject        | Average score<br>Group 1<br>(n = 4) | Average score<br>Group 2<br>(n = 8) | t test (df)  | p-value | Cohen's D |
|----------------|-------------------------------------|-------------------------------------|--------------|---------|-----------|
| 1. Mathematics | 42.00                               | 60.38                               | -6.91 (9.65) | 0.0001  | -3.19     |
| 2. Reading     | 50.25                               | 59.13                               | -3.75(6.11)  | 0.009   | -2.29     |

results of the analysis revealed that the children who attended preschool from the second group received higher scores in mathematics [ $t(59.939) = -4.2796, p < 0.001, d = -0.95$ ] and reading [ $t(63.982) = -2.9216, p = 0.04, d = -0.64$ ], the effect size is high and above average, than children from the first group. For children who have not attended preschool, the size of the effect is very high. Thus, the 4<sup>th</sup> grade students who did not attend preschool had higher academic results than the students who attended preschool, thus hypothesis 2 was fully confirmed. The results of this study show that children who did not attend preschool study a little better than children who attended preschool, but it should be noted that this group of children is small. Such an abnormal result requires additional investigation.

Hypothesis 3 was partially confirmed. The results of regression analysis show that children's non-attendance of preschool significantly predicts academic achievement in mathematics [ $\beta = 4.525, t(1150) = 3.543, p = 0.0004, d = -0.44$ ] and in reading in the fourth grade, [ $\beta = 3.992, t(1140) = 3.328, p = 0.0009, d = -0.41$ ], the effect size is average.

The absence of a positive contribution of preschool attendance to the academic results of primary school children contradicts the results of a wide range of studies demonstrating the positive effect of preschool attendance. In this regard, it was suggested that the negative effect may not be total, but characteristic only for certain groups of respondents.

To characterize a group potentially vulnerable to academic failure, the family and educational experience of children with low cumulative academic results was analyzed.

It is shown that unsuccessful first graders more often live in rural areas, less often in a big

city ( $p < 0.0001$ ). Their mothers and fathers have a lower level of education ( $p < 0.0001$ ), their families have a generally lower SES ( $p = 0.006$ ) and cultural capital ( $p = 0.0006$ ). However, it is important to note that preschool attendance does not differ between children with low results and the entire sample.

The group of respondents who showed low academic results in 4<sup>th</sup> grades show similar features: They live in rural areas, less often in a big city ( $p < 0.0001$ ), their mothers and fathers have a lower level of education ( $p < 0.001$ ), in the families with low CC ( $p < 0.0001$ ). Preschool attendance does not differ between children with low results and the entire sample. The family's socio-economic status in fourth grades does not differ among children with low results and the entire sample.

These results are consistent with the results of studies of academic failure conducted in different countries: children from families with low cultural capital and socio-economic status living in rural areas may be at risk for low academic results at school, regardless of early educational experience [20; 21; 30, 32; 34]. Perhaps a detailed study of the features of this experience, the child's attitude towards it could show certain connections, but this research question remained outside the scope of this study.

## Discussion

According to the results of this study, students with low academic results more often than in the sample as a whole:

- live in rural areas, less often — in a big city;
- are brought up in families with low socio-economic status and cultural capital.

At the same time, the academic results of the selected group of unsuccessful students are not affected by attending /not attending preschool.

Based on the purposes of this study, and guided by the hypotheses, it was established:

1. There were no differences in academic results (in mathematics and reading) among first graders who did and did not attend preschool. At the same time, children who attended preschool from families with high SES and CC, as well as with non-working parents, received higher scores on academic results (in mathematics and reading) than children from families with low SES, CC and working parents.

2. The fourth graders who did not attend preschool had higher academic results (in mathematics and reading) than children who attended kindergarten.

3. For the first and fourth-grade students, educational experience at the preschool age predicts their academic performance in primary school. Presumably, receiving preschool education during the COVID-19 pandemic and data collection in September (the adaptation period) could have offset both the positive and negative effects in this study.

4. First and fourth grade students from families with low socio-economic status and cultural capital living in rural areas may be at risk of academic failure in school, regardless of early educational experience.

## **Conclusion**

Within the framework of this study, we saw a contradictory result about the absence and even the presence of a negative connection between the experience of attending preschool and academic results, which does not support findings from international and domestic research studies. It should be emphasized that this result should not be interpreted as if the preschool is a factor leading to failure, since the group of children with low academic results did not differ from the entire sample in the degree of involvement in preschool education.

A negative effect is observed for children from families with high SES and CC, demonstrating average and high academic results. The study of the nuances of this connection involves studying the role of parental involvement, their

employment status, and other factors that lead children from more resourced families without preschool experience to the highest results in the sample.

Another possible reason for the results could be the peculiarity of the educational experience of children whose preschool education fell on the coronavirus pandemic. Limited access to preschool education could have offset the positive effects [23]. In urban families with a non-working parent, high SES and CC, children could have access to significant and diverse developmental resources, unlike families living in rural areas with fewer starting opportunities, where children could not fully take advantage of preschool education. In such cases, the features of academic results will be determined more by the family context, the quality of education in the first grade, and the characteristics of the student-teacher relationship, rather than preschool experience.

In addition, the quality of preschool education received by the child might not always be high, especially in rural areas and for families with low SES and CC, which could have impacted the academic results.

Studies focused on the deficits of modern preschool education suggest that low-quality education may not help, but harm the development of a child and their future academic results. One of the risk factors is that educators often fail to build educational work considering the specifics of age, to create conditions for the amplification of development [2]. Also, the quality of preschool experience may decrease due to the transformation of the game into a didactic tool for acquiring new skills, ideas, for the formation of useful skills, due to the impoverishment of the "natural" environment for preschool childhood, caused by the desire for the complete safety of children, restrictions to the physical activity of children etc., which can lead to "a reduction of independence, initiative and, as a result, a deficit of self-control" [13]. Finally, the preschool experience can become extremely negative if its conditions are unsafe, adults show cruelty, aggressiveness, and intolerance [5].

Families of children with low academic results live in rural areas and have low cultural capital, and parents do not have a higher education. These children, more than others, should receive a high-quality early educational experience. To solve this problem, it is necessary both to support and develop preschool education in rural areas and small towns, and to organize a diverse, accessible, and attractive additional education for children of an early and preschool age.

### Limitations

Beyond the scope of this study, there were a number of additional variables that could affect the educational results of primary school children. These include the quality and regularity of the educational experience before school, the individual and psychological characteristics of children, the well-being of the adaptation to learning in the first grade, the characteristics

of child-parent relations, and the impact of the pandemic on the early educational experience of a child, including the practices of parents to fill its deficit. There is no data on the experience of obtaining additional education (developmental classes, preparation for school, etc.) by children who did not attend preschool. We collected data at the beginning of the school year, when children face the challenges of the adaptation period. During this period, the psychological climate in the classroom, the behavior of the teacher, the age-psychological and individual characteristics of the child could affect academic results. These and other factors should be considered in future studies of the role of preschool experience in the study of academic success and failure. Nevertheless, the results of this study can contribute to the expansion of research experience in the study of academic failure in general and can be useful to experts in the field of preschool and primary school education.

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