

# Third-Grade Parent Involvement in Schools

I. Antipkina, K. Lyubitskaya, A. Nisskaya

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**Inna Antipkina**

Junior Researcher, Center for Monitoring the Quality in Education, National Research University Higher School of Economics. Email: [iantipkina@hse.ru](mailto:iantipkina@hse.ru)

**Kristina Lyubitskaya**

Intern Researcher, Center for Modern Childhood Studies, National Research University Higher School of Economics. Email: [klyubitskaya@hse.ru](mailto:klyubitskaya@hse.ru)

**Anastasiya Nisskaya**

Candidate of Sciences in Psychology, Research Fellow, Center for Modern Childhood Studies, National Research University Higher School of Economics. Email: [anisskaya@hse.ru](mailto:anisskaya@hse.ru)

Address: 20 Myasnitskaya St, 10100 Moscow, Russian Federation.

**Abstract.** The significance of the problem of parental involvement in children's education has to do with the proven positive effects of parental involvement in schools on children's wellbeing. However, no universal comprehensive idea of family involvement types and strategies has been developed so far, and the jury is still out on the efficiency of various family-school interactions in use today. This study is designed to shed light on the forms of parental involvement, which may differ depending on family, student and school characteristics. The study seeks to operationalize the concept of parental

involvement, describe parental involvement based on the findings of a large-scale survey, evaluate the dependence of parental involvement on family, student and school characteristics, suggest models to predict the level of parental involvement in the third grade, and develop recommendations for schools. Parents of 1,447 students from Krasnoyarsk and Kazan secondary schools involved in the iP-IPS project were surveyed twice, first at baseline and then at the beginning of the third grade. The survey contained questions on family demographic characteristics, parents' at-home and at-school academic involvement, and parental satisfaction with school communication. It was established that parental perception of school communication climate is a much more important predictor of third-grade parental involvement in schools than family sociodemographic characteristics or the level of children's development assessed at baseline. On the whole, the results obtained do not confirm the benefit of using universal strategies to encourage parental involvement.

**Keywords:** elementary school, parental involvement, school communication climate, parental satisfaction with family-school communication.

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## 1. Problem Statement

The positive role of parental involvement in education has been proved in a number of meta-analytical studies across the globe [Wilder 2014, Freund et al. 2018]. However, the existing mechanisms and effects of parental involvement in Russian schools have been described poor-

ly so far [Antipkina 2017]. It has been established that teachers' attitudes toward parental involvement in school life as well as parental behavior are affected by perceived and unperceived beliefs of teachers and parents, legal standards, and everyday reality that can either create barriers to or promote parental involvement.

If a school has been sticking to teaching practices that date back to the era where social education was a priority, teachers may tend to assign a secondary role to the family in children's education and parents may tend to disengage from schooling. The family was long seen as a less-than-reliable partner of school, if not a hindrance: "There are good and bad families. We can neither go bail for parenting practices or say that families are free to rear their children as they wish. Parenting practices should be structured." [Makarenko 1990, p. 416]

Parental involvement in education is not only legislatively encouraged today but it is also formalized as a family's right and responsibility. Pursuant to the Federal Law *On Education*, "parents (legal guardians) of minors have the right of first refusal to educate and bring up their children" (Art. 44, par. 1)<sup>1</sup>, while the role of educational institutions is restricted to "helping parents (legal guardians) of minors rear their children, protect and improve their physical and mental health, develop their individual potential and address developmental delays when necessary" (Art. 44, par. 2). "Parents (legal guardians) are entitled to be involved in school governance to the extent and under the conditions stipulated in the educational institution's statute" (Art. 44, par. 3.7). "Parents (legal guardians) of minors have the right to familiarize themselves with the content of school education, the teaching practices and educational technology used at school, and the results of assessing their children's academic achievement" (Art. 44, par. 3.4), which makes them a party to the educational relationship (Art. 2).

The transition from the universal "expert" model of family-school interactions to a great variety of models (expert model, sponsorship model, consumer model, partnership model, etc.) [Mertsalova, Goshin 2015] has produced a number of problems in family-school relationships. For example, teachers complain about difficulties in scheduling family-school partnership activities. They also report that parents are unwilling to communicate with class teachers, psychologists and school counselors on a regular basis or to learn and improve their own pedagogical competence [Alieva, Zagladina 2012, p. 76].

The proposed study of parental motivations will provide an insight into the specific features of parental involvement in Russia and reduce the shortage of quantitative studies in this domain.

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<sup>1</sup> Federal Law of the Russian Federation No. 273-FZ *On Education* of December 29, 2012 <https://fzakon.ru/laws/federalnyy-zakon-ot-29.12.2012-n-273-fz/statya-1/>

## 2. International Research in Parental Involvement

Recent educational research findings encourage teachers to engage parents in school life. Parent involvement in education has positive effects on student achievement and motivation, promotes teacher involvement, reduces school violence, and improves the school's reputation in the professional community and in the neighborhood [Fan, Chen 2001; Hill, Tyson 2009]. In urban schools with heterogeneous socioeconomic backgrounds, parental support has a positive impact on attendance, students' attitude towards school, their self-confidence and motivation [Jeynes 2005; 2007].

Parental involvement in schools is a multidimensional construct, which embraces direct involvement in learning, volunteering for events, participation in parent-teacher conferences, discussion of schooling and parenting issues with teachers, and adjustment of families' educational expectations with those of the school [Epstein, Sanders 2002; McWayne et al. 2004].

Attempts have been made to differentiate between parents' at-home and at-school academic involvement [Eccles, Harold 1996; Sui-Chu, Willms 1996]. At-home involvement is assessed based on learning-oriented parent-child interactions, and at-school involvement is measured by parents' ability to initiate and maintain contact with school personnel [Shumow, Miller 2001]. There is empirical evidence that at-home parental involvement, e. g. in homework or preparation for tests and exams, is critical for children's academic achievement [Desforges, Abouchaar 2003; Emerson et al. 2012; Hattie 2009; Izzo et al. 1999; Sheldon, Epstein 2005]. Researchers hold that teachers tend to underestimate the role of parents' at-home academic involvement, as they often believe that parents do not care about their children's education unless they participate in school life directly [Auerbach 2007]. However, even being inconspicuous for teachers, parental involvement in discussing school life and educational trajectories with their children has a dramatic impact on academic performance [McNeal 1999].

The importance of different types of parental involvement for school students' academic and social achievement makes it vital to examine the motivations of parents' at-home and at-school academic involvement as well as the predictors of the level and type of such involvement [Niia et al. 2015; Grolnick et al. 1997; Hoover-Dempsey, Sandler 1995; 1997; 2005; Freund et al. 2018].

The effects of socioeconomic status as a predictor of the quality and level of parental involvement in education have been confirmed in a number of studies. For instance, lower-educated parents have been found to engage less in their children's education both at home and at school [Dauber, Epstein 1993] as they do not feel that their support will be productive enough [Lee, Bowen 2006]. Parents' busy schedules and/or low educational backgrounds may become barriers to meaningful parent involvement. Families may lack time and money to render assistance and psychological support to their children, en-

courage their self-help skills, organize and enrich their home learning environment. Family composition can also be a predictor of parental involvement. Parents who have fewer children demonstrate higher levels of at-home involvement in education, yet family size does not appear to have any influence on parents' at-school academic involvement [Dauber, Epstein 1993].

Employment and income are two more predictors of parental involvement. Mothers who work outside the home are less likely to be involved in school life, but their level of at-home academic involvement is the same as among mothers who do not work outside the home [Dauber, Epstein 1993; Eccles, Harold 1996]. Parents engage differently in the school life of sons and daughters, meaning that girls are usually nurtured more and face restrictions more often, while boys are more likely to receive harsh discipline [Eccles, Harold 1996]. Higher-income parents often build and maintain personal relationships with school teachers, which makes it easier to exchange information and allows parents to make informed decisions concerning their children's academic needs and progress [Cucchiara, Horvat 2009; McGrath, Kuriloff 1999; Weininger, Lareau 2003]. Lower-income parents normally focus their efforts on helping their children at home as they believe that school is responsible for education and family for providing emotional support and preparing children for adult life [Auerbach 2007; Ingram, Wolfe, Lieberman 2007; Ji, Koblinsky 2009; Lareau 1987]. Parental involvement in schools can also be influenced by certain community traditions. In the United States, for example, a lot of Latino immigrant parents hold that their role in children's education consists in fulfilling their basic parental responsibilities and providing general support to their children [Carrasquillo, London 1993; Delgado-Gaitan 1992; 1996] but they should not intervene in education if they want to avoid the risk of losing the respect of teachers [Garcia Coll et al. 2002; Holloway et al. 1995].

A separate domain is represented by psychological research in parental involvement in school life. Such studies evaluate, in particular, how parents' involvement can be affected by their personal characteristics, such as perceived competence [Hoover-Dempsey, Sandler 1995, 1997; Hoover-Dempsey, Whitaker, Ice 2010; Walker et al. 2005], or analyze the importance of school communication climate and teacher-student relationship as factors of parental motivation for involvement in children's education [Kerr, Stattin, Ozdemir 2012].

### **3. Russian Research on Parental Involvement**

Russian studies largely analyze the role of parents in education in the psychological and sociological frameworks. It is not the effects of parental involvement that they focus on but the conditions (at home and at school) that promote their interest in their children's education, the preferred types of parent-school interaction [Nisskaya, Savina 2018], and the factors affecting school choice [Nisskaya 2016]. Important

information about parenting practices can be obtained from international comparative assessments of education quality (PIRLS, PISA, TIMSS), which involve parent surveys [Zakharov, Kapuza 2017].

In addition to research papers, there is a body of methodological literature for teachers in Russia, who are advised to educate parents, enlighten them pedagogically and even “pedagogize” their minds. This term is not restricted to educating parents and involving them in school life; it also implies making parents interested in their own pedagogical competence, enriching them with knowledge in psychology, pedagogy and hygiene, involving them in schooling, school life and school problems as well as in discussing family conflicts and searching for ways out of them together [Kruzhilina 2009].

Pedagogical enlightenment and translation of purposes, forms and methods of educating children and stimulating their development are recommended as the most effective ways of working with parents. Another important set of policies to integrate the efforts of school and family has to do with promoting openness in education and enabling parents to express their expectations, monitor the quality of education and engage in the teaching process. Family-school relationships depend a lot on the joint activities of teachers, students and parents both at school and outside of it, such as events, performances, socially important projects, etc. Pedagogical literature also stresses the importance of personalized strategies in working with dysfunctional families and families where children have learning disabilities or behavior problems [Asrieva, Kovalenko 2012]. Analysis of methodological literature for school teachers allows for assuming that the recommendations available are based on an implicit belief that parental involvement in education is affected by the level of parents’ awareness, pedagogical literacy and willingness to share the school’s mission. Additional factors of parental involvement include school openness and community cohesion.

The nature of measures that schools undertake to engage parents in cooperation suggests that involvement of parents is based on the principles of uniform hierarchical translation of knowledge and behavior models from teachers. Such strategies are not sensitive enough to individual family and parent characteristics; they provide no opportunity to unlock and develop the potential of parental involvement in learning.

#### **4. Aims and Objectives**

The study in question gleans the lack of information on the types of parental participation (involvement) in learning, which may vary depending on family characteristics (socioeconomic status, parents’ busyness, interests and education), child characteristics, and the degree of school openness.

The theoretically significant aim of this study consists in assessing the prognostic value of factors affecting parental involvement, while

the practically significant one is in developing recommendations on personalizing teacher-parent communication to avoid excessive pressure on vulnerable (deficient) family resources and activate family's strengths.

Achievement of these aims involves the following objectives: (i) propose a model for operationalizing the notion of "parental involvement" and specific measurement scales; (ii) describe parental involvement based on the results of a large-scale survey; (iii) assess the relationship between parental involvement and family, student and school characteristics; (iv) propose models to predict levels of parental involvement half way through elementary school; and (v) adjust and improve the existing guidelines on family-school communication based on the models constructed.

## **5. Research Hypotheses**

1. College-educated parents from higher-income families are involved more in their children's education as they have more financial and cultural resources to do so.
2. At the beginning of school education, parents of children with better cognitive and non-cognitive abilities have lower levels of at-home academic involvement (as children need less assistance from parents) and higher levels of at-school academic involvement (as higher levels of child development make it more comfortable to discuss learning progress with the teacher) as compared to parents of children with lower abilities.
3. Parents of two or more children engage less in learning both at home and at school than one-child parents.

## **6. Parent Sampling**

The sample consists of parents of students attending schools in Krasnoyarsk and Kazan, 115 males and 1132 females. The respondents' children took part in the 2014 iPIPS survey which tested school readiness of first-graders and their progress across the first grade [Ivanova, Nisskaya 2015]. The iPIPS instrument is designed to measure reading and mathematical literacy, phonological awareness and the vocabulary of children at the beginning and at the end of the first grade. The survey represents a game that uses adaptive assessment algorithms. The parents filled out questionnaires twice, first at the beginning of the first grade (fall 2014) and then at the beginning of the third grade (fall 2016). Because the questionnaires were completed by parents of only 45 percent of the children who had originally made a representative sample, the resulting data cannot be considered representative.

## **7. iPIPS**

The questionnaires, filled out by parents when their children were first- and third-graders, were designed to collect contextual information on the children's development. They contained demographic questions

about family (parental education and occupation, family income, educational resources, kindergarten attendance, preschool education experience, attendance of local classes, groups and activities) as well as questions that formed parenting scales. The parents' responses to questions of all the scales were processed within the framework of Item Response Theory (IRT) procedure using the Rasch Rating Scale Model and Winsteps software [Linacre 2017]. All the scales constructed and described below are unidimensional, and their items show a good match with the model. Using IRT to process questionnaire responses offers the advantage of interpreting results in the logit metric, which expands the scope of using statistical analysis methods.

### **7.1. First-Grade Parenting Scales**

First-grade parents were asked how often they had engaged in various educational games with their preschool children, the number of such questions totaling 17. Annette Lareau showed that formal and informal parenting practices can be related differently to academic achievement at school [Lareau 2011]. Considering Lareau's theory, scales of formal and informal parenting practices were identified, formal practices being understood as activities specifically designed to educate and prepare a child for school.

The formal parenting practices scale included the following questions: "How often did you or other members of your family engage in the following activities with your child: (i) alphabet games, (ii) word games, (iii) writing letters and words, (iv) counting objects, (v) learning poems by heart?" Parents assessed the frequency of engaging in those activities on a seven-point Likert scale ranging from "never" to "more than once a day". Cronbach's alpha as an indicator of scale reliability was estimated to be 0.78.

The informal practices scale offered the following items: "How often did you or other members of your family engage in the following activities with your child: (i) reading books, (ii) telling fairytales and stories, (iii) discussing daily chores, (iv) reading street signs aloud, (v) solving puzzles, (vi) playing board games, (7) drawing?" Cronbach's alpha of this scale was 0.85.

Figures 1 and 2 show the distribution of responses across the two scales and the histograms representing the distribution of responses on a logit scale, where 0 corresponds to average difficulty of all the scale items, positive values correspond to more involved parents and negative ones to those less involved.

### **7.2. Third-Grade Parenting Scales**

The parental involvement scale included six statements, agreement with which was assessed by parents on a five-point Likert scale: "I ask the teacher or tell them any special things about my child", "I donate books or some other stuff to be used in the classroom", "I volunteer for school activities", "I volunteer for school or extracurricular events that my child participates in", "I have messaged my child's teacher",



Figure 1. **Distribution of Scores on the Informal Parenting Practices Scale**

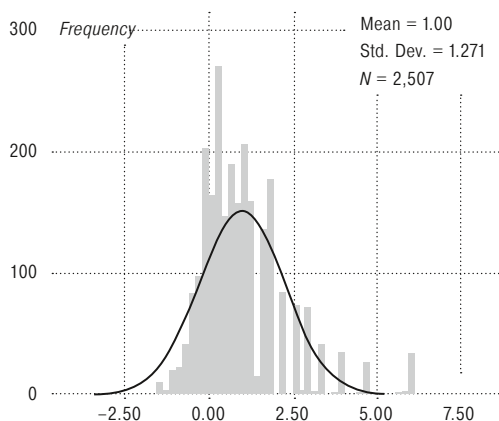
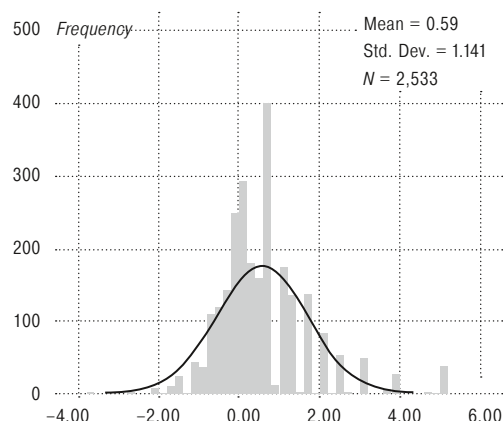


Figure 2. **Distribution of Scores on the Formal Parenting Practices Scale**



“I have visited the school to have a talk with my child’s teacher.” Cronbach’s alpha of the parental involvement scale was calculated to be 0.65. The distribution of scores on a logit scale is shown in Figure 3. A slight leftward (negative) shift of the responses demonstrates that a lot of parents were more likely to select the “seldom” and “very seldom” options.

The at-home academic involvement scale included the following statements: “I make sure that my child does his/her homework”; “I play games with my child or engage in activities that are of interest to her/him”; “I ask my child how their day at school was”; “I take my child to supplementary classes or special school events”; “I help my child do their homework in the subjects that are hard for them”; “I engage in friendly conversations with my child”; “I ask my child about his/her plans for the upcoming day”; “I talk to my child about her/his friends”. The respondents assessed their agreement with the statements on a five-point Likert scale. Cronbach’s alpha for the at-home academic involvement scale was 0.85. The distribution of scores on a logit scale is shown in Figure 4. A conspicuous rightward (0–5) shift of the responses demonstrates that the overwhelming majority of parents reported being involved in their children’s at-home learning activities “often” or “very often”.

The school communication climate scale (Fig. 5) is designed to evaluate how comfortable parents felt communicating with the child’s teacher. The scale includes five statements: “I feel welcomed at my child’s school”; “I feel that the teacher listens attentively to what I have to say”; “I like talking to my child’s teacher”; “I feel that the teacher cares about what is going with my child”; “I feel that the teacher is interested in getting to know me better.” Cronbach’s alpha of the school communication climate scale is 0.9.



Figure 3. **Distribution of Scores on the At-School Parents' Academic Involvement Scale**

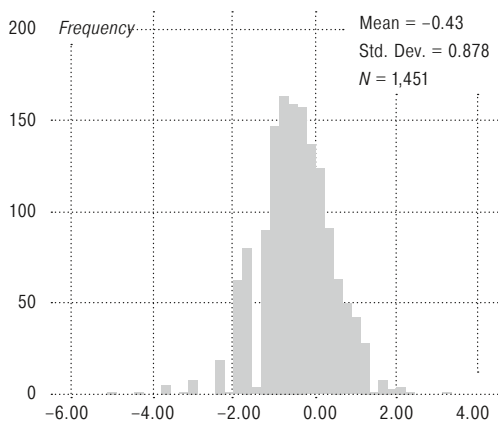


Figure 4. **Distribution of Scores on the At-Home Parents' Academic Involvement Scale**

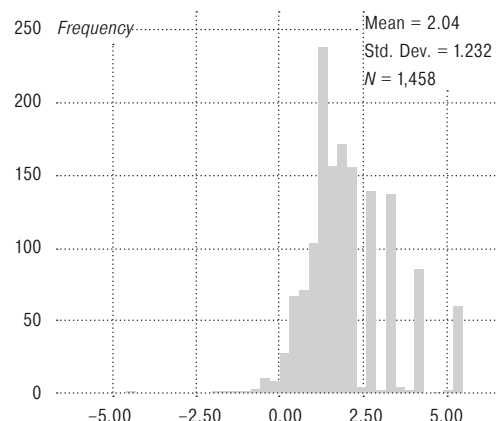
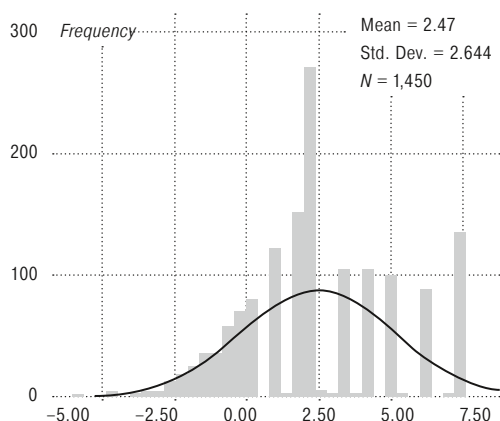


Figure 5. **Distribution of Scores on the School Communication Climate Scale**



Despite matching well with the model, distributions in all the scales are different from normal (Kolmogorov–Smirnov test), so non-parametric methods will be used to analyze the statistical differences across the scales.

The resulting scales correlate weakly with one another (Table 1), except for the moderate relationship (0.4) between the scale of at-school parents' academic involvement and that of school communication climate (parents who engage in school activities more often tend to have higher levels of perceived satisfaction with family-school communication).

Table 1. **Correlations among the First- and Third-Grade Parenting Scales**

	Formal Educational Parenting Practices (1st Grade)	Informal Educational Parenting Practices (1st Grade)	At-Home Parents' Academic Involvement (3rd Grade)	At-School Parents' Academic Involvement (3rd Grade)	School Communication Climate (3rd Grade)
Formal Educational Parenting Practices (1st Grade)	1				
Informal Educational Parenting Practices (1st Grade)	0,811**	1			
At-Home Parents' Academic Involvement (3rd Grade)	0,233**	0,208**	1		
At-School Parents' Academic Involvement (3rd Grade)	0,188**	0,188**	0,297**	1	
School Communication Climate (3rd Grade)	0,172**	0,161**	0,290**	0,435**	1

\*\* Correlation significance level:  $p = 0,01$ .

## 8. Factors Affecting Parental Involvement

The findings reveal that parental involvement in school life in both the first and third grades varies depending on the sociodemographic characteristics of families and students.

*Student gender.* Significant differences ( $p < 0.001$ , Mann–Whitney U test) are observed on the “formal practices (1st grade)” and “communication climate (3rd grade)” scales: girls’ parents were significantly more likely to report having purposefully prepared their children for school. Meanwhile, there is no significant gender-related difference on the informal practices scale. Girls’ parents also felt on average more comfortable when visiting the school and gave higher estimates of the quality of family-school communication.

*Number of children in a family.* At-home parents’ academic involvement was significantly higher in families that had two or more children ( $p < 0.05$ , Mann–Whitney U test).

*Parental education.* Respondents were free to specify the level of the other parent or step-parent’s education. The distribution of educational levels in the sample is displayed in Table 2.

Since 66 percent of the mothers and 55 percent of the fathers had college degrees, further analysis compared the consolidated groups of college-educated and non-college-educated parents.

College-educated mothers score better in all the scales in both the first and third grades: they engage more in formal and informal school preparation activities, demonstrate higher at-home and at-school ac-

Table 2. **Distribution of Parental Education Levels in the Sample**

	Mother's Education		Father's Education	
	N	%	N	%
Some high school	12	1	20	2
High school	44	3	70	6
Vocational school	317	26	366	31
Some college education (at least three years of college)	45	4	73	6
College degree (Bachelor's/Specialist's)	728	59	587	49
Master's degree	58	5	52	4
PhD or higher	19	2	22	2
Total	1,223	100	1190	100

ademic involvement and tend to be more satisfied with teacher-parent communication.

*Family's financial situation.* The questionnaire asked parents to evaluate their family's financial situation on a seven-point scale. Next, their answers were divided into two groups: parents who selected the items "We hardly make the ends meet. We do not have enough money even for food" (3%); "We have enough money to buy food but buying clothes causes financial difficulties" (11%); or "We have enough money to buy food and clothes. But purchase of durable goods (a TV-set, a refrigerator) is problematic" (43%) were assigned to the lower-income group, and those who answered, "We have no trouble buying durable goods, but purchase of really expensive things like a car is hard without getting a loan" (17%); "We can afford everything except real estate (apartment, dacha) without getting a loan" (4%); or "We can afford everything including apartment, dacha and other things without getting a loan" (1%) to the higher-income group. Questions about financial situation are ranked among the most sensitive ones, being omitted more often than others. In our sample, this question was left unanswered in 48 percent of the questionnaires. Parental involvement in learning varies significantly across wealth levels in all the scales except "at-school parents' academic involvement (3rd grade)".

*Involvement in preparation for the first grade.* The respondents were divided into three groups based on the indicators of formal and informal involvement in children's education in the first grade: the 30th percentile (low involvement), the 31st-69th percentile (medium-level involvement), and above the 70th percentile (high involvement). These three groups keep differing significantly ( $p < 0.05$ ) in the third grade, i. e. parents who were more involved in school in the first grade remain so two years later.

*First-grade non-cognitive abilities: obedience to rules.* Apart from testing cognitive skills, the iPIPS system was used to obtain, via IRT modelling, children's scores on the scales of "obedience to rules" and "communication". Non-cognitive skills of first-graders were assessed using a teacher survey. In October, as teachers had already had a chance to get to know children better, they were asked to complete questionnaires in which they assessed children's non-cognitive skills based on highly detailed items. The "classroom behavior" scale includes such items as obedience to classroom rules, self-help skills, level of adjustment, and concentration in self-directed and teacher-directed learning activities. Parents of children who scored low on the "classroom behavior" scale in the first grade (the 30th percentile) were less likely to evaluate communication climate at school as supportive and reported significantly higher levels of at-home academic involvement than parents of children who scored better on the non-cognitive abilities scale (above the 70th percentile).

*First-grade non-cognitive abilities: communication.* Another scale of non-cognitive abilities assessed at baseline—"communication"—measures the child's ability to make new friends, behave and interact appropriately with adults and peers, and respect basic communication rules (e.g. wait for their turn to speak). Poorly-developed communication skills in the first grade (the 30th percentile) correlate with significantly higher levels of at-home parents' academic involvement in the third grade. It might be that the lack of communication skills makes parents pay more attention to homework and offer some learning activities within the family, i. e. in the communication field that the child is used to. Hence, low at-home parents' academic involvement is probably not always a negative characteristic, as sometimes it is the result of the child doing well at school.

*Cognitive skills: first-grade reading and mathematics, third-grade reading.* Perception of the school communication climate differs between the parents whose children had low reading and basic mathematics scores in the first grade (the 30th percentile) and the parents of high-scorers (above the 70th percentile). It can be thus assumed that low academic performance of children makes their parents perceive school as a hostile environment. However, no difference in parental involvement is observed depending on third-grade academic achievement.

As we can see, the characteristics of parental involvement in elementary school are affected by a number of factors, some of which can be influenced.

## **9. Regression Analysis**

Regression analysis was conducted to provide a comprehensive assessment of the factors of parental involvement. When analyzing samples divided into groups (classes of students in this case), it is important to remember that respondents within the same group may be

more homogeneous in terms of the indicator measured than across the groups, which means that multilevel regression models should be applied. However, it is hard to predict theoretically whether parental behavior is affected by which class their child is in, so the choice of analysis method implied testing whether the available data is fitted better by a one- or two-level nested null model. Analysis was run using R1.1.423 software and nlme package [Pinheiro et al. 2018]. The random intercept (two-level) model was statistically significantly more suitable for analyzing all the three parenting scales (at-home parents' academic involvement, at-school parents' academic involvement, and school communication climate) based on the  $-2LL$  indicator ( $p < 0.001$ ) as well as AIC and BIC indices. Consequently, it is advisable to assess parenting scales using two-level models, with parents on the first level and student classes on the second.

#### **10. Predicting At-Home Parents' Academic Involvement**

Table 3 presents the results of two-level regression analysis of the factors of at-home parents' academic involvement. Model 1 only uses the baseline predictors: mother's education, financial situation, first-grade parental involvement, level of cognitive and non-cognitive development in the first grade, number of children in the family, and type of school. First-grade parental involvement in school is estimated as the arithmetic mean between formal and informal practices, as these two scales correlate at 0.8 and including them into the model separately is undesirable. The level of cognitive development in the first grade is estimated as the arithmetic mean between reading literacy and mathematics literacy, and that of non-cognitive skills as the arithmetic mean between the scales of "communication" and "obedience to rules". The final model also includes the third-grade predictors of "communication climate" and "at-school parents' academic involvement".

The significant predictors of third-grade at-home parents' academic involvement (Model 2) included financial situation, first-grade parental involvement in learning, school communication climate, and third-grade at-school parental involvement. The variable "mother's education" was introduced to the model with a random slope, as its relationship with at-home involvement varies across student classes.

The model includes a few significant variables describing the interaction:

- (i) Between mother's education and children's non-cognitive abilities: across the sample, parents of more outgoing and obedient children have significantly lower levels of at-home academic involvement, yet non-cognitive development correlates positively with at-home involvement in learning among college-educated mothers;
- (ii) Between parental perception of school communication climate and non-cognitive skills in the first grade: on the whole, the more

Table 3. **At-Home Parents' Academic Involvement: Regression Analysis**

	Null model	Model 1 First-Grade Predictors (Standard Deviation)	Model 2 First- and Third- Grade Predictors (Standard Deviation)
Fixed effects			
Intercept	–0.01 (0.04)	–0.11 (0.08)	–0.07 (0.08)
Mother's education (1—college degree, 0—college degree)		0.03 (0.07)	–0.004 (0.07)
Financial situation (3rd grade: 1—high income, 0—low income)		0.22 *** (0.06)	0.17*** (0.06)
Parenting practices (1st grade, z-scores)		0.25*** (0.03)	0.19*** (0.03)
Cognitive skills (1st grade, z-scores)		–0.06 (0.04)	0.02 (0.05)
Non-cognitive skills (1st grade, z-scores)		–0.17** (0.06)	–0.21*** (0.06)
Siblings (1—yes, 0—no)		–0.08 (0.06)	–0.08 (0.06)
Type of school (0—regular, 1—gymnasium/lyceum)		0.04 (0.07)	0.04 (0.07)
Communication climate (3rd grade, z-scores)			0.18*** (0.03)
At-school parents' academic involvement (3rd grade, z-scores)			0.11** (0.04)
Interaction: mother's education * first-grade non-cognitive skills		0.14* (0.07)	0.16* (0.07)
Interaction: first-grade non-cognitive skills * school climate			–0.07* (0.03)
Interaction: first-grade cognitive skills * siblings			–0.15* (0.06)
Interaction: financial situation * at-school parents' academic involvement			0.12* (0.06)
Random effects			
Parents level	0.86	0.87	0.83
Classes level	0.05	0.39	0.39
Mother's education		0.30	0.25
Covariance between the intercept and the random slope "mother's education"		–0.904	–0.927
Model characteristics			
AIC	2,824.45	2,741.203	2,646.165
BIC	2,839.27	2,805.426	2,735.089
logLik	–1,409.22	–1,357.602	–1,305.083
Pseudo R2		0.07	0.18

satisfied parents are with the communication climate at school, the more actively they engage in at-home learning activities, but parents of children who demonstrated high baseline levels of non-cognitive skills tend to get involved less in the third grade of elementary school;

- (iii) Between cognitive skills in the first grade and the number of siblings: higher baseline levels of cognitive development in children who have siblings is related to statistically significantly lower levels of parental involvement in the middle of elementary school;
- (iv) Between financial situation and at-school parents' academic involvement: as at-school parental involvement in learning goes up, the increase in at-home involvement is significantly greater in higher-income families than in the lower-income subgroup.

The fact that the covariate "type of school" (regular school or gymnasium/lyceum) turned out to be insignificant appears to be an important finding, which shows that parents of elementary school students attending schools of different types demonstrate the same levels of at-home academic involvement, all other factors being controlled for.

### **11. Predicting At-School Parents' Academic Involvement**

Table 4 presents the results of regression analysis for the variable "at-school parents' academic involvement". Among the first-grade predictors (Model 1), statistically significant variables included mother's education, first-grade parenting practices, and two variables of interaction:

- (i) Between financial situation and the number of siblings: at-school parental involvement tends to be higher in wealthier multi-child families, while having two or more children in a lower-income family is related to lower levels of at-school parents' academic involvement;
- (ii) Parenting practices and non-cognitive development in the first grade: parents who invested more time and effort in preschool activities and whose children demonstrated high levels of non-cognitive development at baseline normally tend to get involved in education less by the middle of elementary school. The coefficient of this relationship is low, rather revealing a curious tendency than being a good predictor. Model 2 assessed, among other things, the third-grade predictors. The significant variables included mother's education, financial situation, the number of siblings, communication climate, and third-grade at-home parents' academic involvement.

Some of the variables show significant interactions:

- (i) Between financial situation and the number of children in a family,



Table 4. **At-School Parents' Academic Involvement: Regression Analysis**

	Model 0	Model 1 First-Grade Predictors (Standard Deviation)	Model 2 First- and Third- Grade Predictors (Standard Deviation)
Fixed effects			
Intercept	0.01 (0.08)	−0.03 (0.08)	0.02 (0.08)
Mother's education (1—college degree, 0—college degree)	0.20* (0.08)	0.16* (0.06)	0.21** (0.08)
Financial situation (3rd grade: 1—high income, 0—low income)		−0.06 (0.09)	−0.16* (0.08)
Parenting practices (1st grade, z-scores)		0.19*** (0.03)	0.09*** (0.03)
Cognitive skills (1st grade, z-scores)		0.19 (0.03)	−0.03 (0.03)
Non-cognitive skills (1st grade, z-scores)		0.03 (0.04)	0.02 (0.03)
Siblings (1—yes, 0—no)		−0.11 (0.08)	−0.15* (0.07)
Type of school (0—regular, 1—gymnasium/lyceum)		−0.01 (0.08)	0.17 (0.11)
Communication climate (3rd grade, z-scores)			0.46*** (0.05)
At-home parents' academic involvement (3rd grade, z-scores)			0.08 (0.04)
Interaction: financial situation * siblings		0.27* (0.12)	0.26* (0.11)
Interaction: first-grade parent involvement * non-cognitive skills in the first grade		−0.08* (0.04)	
Interaction: mother's education * communication climate			−0.14* (0.06)
Interaction: at-home parents' academic involvement in the third grade * siblings			0.13* (0.06)
Interaction: mother's education * type of school			−0.24* (0.12)
Random effects			
Level 1 (parents) variance	0.87	0.88	0.81
Level 2 (classes) variance	0.08	0.27	0.28
Cognitive skills in the first grade		0.25	
Correlation between level 2 variance and the variable "cognitive skills in the first grade"		−0.004	
AIC	2,857.14	2,809.749	2,597.556
BIC	2,871.97	2,878.912	2,676.599
logLik	−1,425.57	−1,390.874	−1,282.778
Pseudo R2		0.05	0.24

- just as in Model 1: having two or more children is related to higher at-school parental involvement in higher-income families;
- (ii) Between mother's education and communication climate: college-educated mothers who are more satisfied with the communication climate at school are less involved in school life. This is a critical finding, as the covariate "communication climate" alone yields the highest positive regression coefficient, yet the direction of the relationship changes as soon as mother's education comes into play;
  - (iii) Between third-grade at-home parental involvement and having two or more children: overall, parents in multi-child families tend to engage less in their children's school life (the negative coefficient of the "siblings" covariate), but the more such parents are involved in at-home learning activities, the higher their at-school academic involvement;
  - (iv) Between mother's education and the type of school: college-educated mothers whose children attend gymnasiums/lyceums are less likely to get involved in schools.

## 12. How to Predict Parental Perception of School Communication Climate

Table 5 presents the results of regression analysis for the "communication climate" scale. Among the first-grade predictors (Model 1), the significant variables included mother's education, financial situation, preschool parenting practices and the number of children in a family. In Model 2, which also included third-grade variables, only at-school involvement, at-home involvement and having two or more children were significant. Therefore, parents tend to rate the overall school climate and the quality of family-teacher communication higher when they engage in their children's at-home and at-school academic activities. In cases where parents with high levels of at-school academic involvement had engaged in preschool activities with their children, they tend to be even more satisfied with family-school communication (the significant interaction variable: first-grade parenting practices \* at-school third-grade parent involvement). There is a curious thing about the variable of interaction between first-grade cognitive skills and family's financial situation: in higher-income families, higher baseline levels of children's cognitive development are related to greater satisfaction with school communication climate.

## 13. Results and Discussion

The findings show that the level of parental involvement in schools is affected by a number of family and school characteristics. Moreover, the same factor may affect parental involvement in different ways depending on other circumstances. For instance, having two or more children in a family was expected to correspond to lower levels of all types of parental involvement (Hypothesis 3). This assumption was confirmed only partially: parents of two or more children were involved

**Table 5. Communication Climate as Perceived by Parents: Multilevel Regression Analysis**

	Model 0	Model 1 First-Grade Predictors (Standard Deviation)	Model 2 First- and Third- Grade Predictors (Standard Deviation)
Fixed effects			
Intercept	0.002 (0.04)	–0.33** (0.09)	–0.20** (0.07)
Mother's education (college degree—1, no college degree—0)		0.29** (0.09)	0.09 (0.06)
Financial situation (3rd grade: high income –1, low income—0)		0.16* (0.06)	0.08 (0.06)
Parenting practices (1st grade, z-scores)		0.18*** (0.03)	0.05 (0.03)
Cognitive skills (1st grade, z-scores)		0.05 (0.04)	0.02 (0.05)
Non-cognitive skills (1st grade, z-scores)		–0.01 (0.05)	0.06 (0.04)
Siblings (1—yes, 0—no)		0.30** (0.10)	0.12* (0.05)
Type of school (0—regular, 1—gymnasium/lyceum)		–0.0002291 0.08427175	–0.0002 (0.08)
At-school parents' academic involvement (3rd grade, z-scores)			0.38*** (0.03)
At-home parents' academic involvement (3rd grade, z-scores)			0.17*** (0.03)
Interaction: first-grade parenting practices * third-grade at-school parents' academic involvement			0.07* (0.03)
Interaction: financial situation * first-grade cognitive skills			0.13* (0.06)
Interaction: mother's education * siblings		–0.28* (0.13)	
Interaction: financial situation * first-grade non-cognitive skills		0.16* (0.07)	
Random effects			
Level 1 (parents) variance	0.96	0.92	0.68
Level 2 (classes) variance	0.28	0.28	0.07
Model characteristics			
AIC	2,905.951	2,852.378	2,636.883
BIC	2,920.771	2,911.661	2,706.046
logLik	–1,449.975	–1,414.189	–1,304.441
Pseudo R2		0.07	0.24

less in at-home learning activities in the third grade only if their child had shown a high level of cognitive skills assessed at baseline. In addition, at-school academic involvement among multi-child parents was only decreasing in lower-income families and in families with lower levels of at-home parents' academic involvement. On the contrary, having two or more children increased the level of at-school academic involvement among wealthier parents or those involved in at-home academic activities. Satisfaction with school climate was significantly greater in multiple-child families; it is probable that parents who have two or more children interact more often with educational institutions, which makes them more experienced in parent-teacher communication and helps them avoid unrealistic expectations.

Mother's education was expected to be related positively to all types of parental involvement (Hypothesis 1). However, it turned out to be an insignificant predictor of at-home parents' academic involvement. What is more, college-educated mothers of obedient and outgoing children (i. e. those with higher levels of non-cognitive abilities) tended to engage significantly less in at-home learning activities. The role of the mother's education in at-school parents' academic involvement was proved to be significant, with some exceptions though. Some college-educated mothers were less likely to get involved in their children's school life, namely those satisfied with school communication climate and those whose children attended gymnasiums/lyceums. Some rational explanations could be found to support this finding: it might be that college-educated mothers let themselves "relax" a little and engage less in school activities as soon as they are on good terms with the school, but further qualitative research is required to test assumptions like that.

As for the level of children's skills assessed at baseline (Hypothesis 2), the relationship with at-home parents' academic involvement was only negative for non-cognitive skills: parents of obedient, outgoing and self-organized children tend to engage less in at-home learning activities, all other variables being controlled for. The hypothesis that higher levels of cognitive development would be related to lower levels of at-home parents' academic involvement was only confirmed for the subgroup of parents who had two or more children, hence less time resources. The predictive power of cognitive and non-cognitive abilities for at-school parents' academic involvement was found to be insignificant. Neither was Hypothesis 2 confirmed in assessing school communication climate: all other variables being controlled for, the level of cognitive and non-cognitive development was found to be an insignificant predictor of satisfaction with school climate for all parents except the higher-income subgroup, where higher baseline levels of mathematics and reading literacy were positive predictors of satisfaction with teacher-parent communication.

The analysis results indicate that parental involvement in schools is largely dependent on school characteristics. The extremely high re-

gression coefficient for the covariate “communication climate” (nearly 50 percent of the standard deviation) in explaining at-school parents’ academic involvement and the coefficient of at-home involvement comparable to that of parental involvement at the start of schooling show that parental behavior relevant to children’s education depends very heavily on a set of school-related factors.

The absence of differences in parental involvement depending on the type of school (regular school or gymnasium/lyceum) allows for the conclusion that parental practices in elementary school vary very little across schools of different types.

The differences in  $R^2$  (coefficient of determination) between Models 1 (only first-grade predictors) and Models 2 (first- and third-grade predictors) on the three scales analyzed are of particular interest. A few indicators similar to  $R^2$  in linear models, often referred to as “pseudo- $R^2$ ”, have been designed specifically to be used in multilevel models. This study uses the coefficient proposed by Shinichi Nakagawa and Holger Schielzeth, which “can be interpreted as variance explained by the model as a whole” [Nakagawa, Schielzeth, 2013]. The fact that first-grade variables explain a very small proportion of the variance in parent-related variables (5–7%) allows for the assumption that it is more appropriate to explain levels of at-home and at-school parents’ academic involvement by the circumstances that develop during school years instead of baseline student and parent characteristics. Adding the third-grade variables, particularly communication climate, to the model increases the proportion of explained variance considerably.

The diversity of interaction variables in the models indicates that there are no universal patterns of parental involvement in schools. It is highly likely that the school’s ability to “shape” parental behavior is more limited than researchers seem to believe—as long as the process of such “shaping” is approached through a uniform set of practices, without making allowance for the diversity of family, personal and social characteristics of parents. A more comprehensive explanation of parent-related variables requires gathering more information about schools and the existing teacher-student and family-school relationships in order to expand the scope of predictors of parental involvement.

#### **14. Recommendations**

The results obtained in this study provided the basis for developing a set of practical recommendations designed to improve the school learning environment by involving parents in schools.

It appears vital to consider the relationship between different types of parental involvement in practice. At-school parents’ academic involvement is related to school climate, so improving informal teacher-parent communication might be effective.

The relationship between at-school and at-home parental involvement cannot be called strong. Chances are, not every parent involved in at-school academic activities will engage actively in at-home learning, and vice versa. Parents cannot be characterized as uninvolved only because they participate little in school life, since they may invest a lot of effort into their child's learning and motivation at home.

It is important to take into account the differences in involvement between parents with different educational backgrounds when building family-school relationships. Non-college-educated parents are more likely to feel uncomfortable and unconfident at school as they lack energy, time and sometimes motivation to keep track of all the different aspects of their children's lives. It is critical that teachers and school administrators be patient, tactful and friendly in dealing with such families. To involve them in school life, it might be better to start with activities that they will find positively pleasant to participate in as well as projects that will help them use their strengths. Teachers must assess family resources adequately and avoid situations that unearth the weak points or deficiencies of such families. It is also vital that families of different backgrounds and with different levels of involvement in school should be treated equally.

Differences in the academic involvement of parents whose children performed differently in the first grade should also be taken into account when developing personalized strategies to improve parental involvement. Parents of children with lower levels of self-regulation and sociability tend to demonstrate higher levels of at-home academic involvement. It is very important to perceive such parents' attitude to the school adequately: they are willing to invest in their child's academic performance at home but may feel extremely uncomfortable participating in everyday school life directly. It would be reasonable to propose acceptable formats of involvement to such parents and, most importantly, to support their efforts in promoting their child's academic achievement.

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