August 2020

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Working Paper

August 2020

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In response to the COVID-19 epidemic, many education systems have relied on distance learning and educational technologies to an unprecedented degree. However, rigorous empirical research on the impacts on learning under these conditions is still scarce. We present the first large-scale, quantitative evidence detailing how school closures affected education in China. The data set includes households and teachers of 4,360 rural and urban primary school students. We find that although the majority of students engaged in distance education, many households encountered difficulties including barriers to learning (such as access to appropriate digital devices and study spaces), curricular delays, and costs to parents equivalent to about two months of income. We also find significant disparities across rural and urban households.

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In response to the COVID-19 pandemic, 195 countries have mandated school closures, leaving 91% (1.6 billion) of enrolled students out of school (UNESCO, 2020a). These worldwide school closures have resulted in an abrupt transition from traditional school-based education to distance education (World Bank, 2020a), in which students learn without a teacher physically present. In carrying out distance education, school districts around the world have primarily relied on various forms of educational technology or EdTech (OECD, 2020).

This unprecedented, large-scale shift towards distance education has raised at least five inter-related concerns. First, one concern is that there was no or only a limited *opportunity to learn* among some students during the pandemic. What share of students were able to receive distance education and for what duration and frequency (Reimers et al., 2020)? A second concern is that some student faced substantial *barriers to the opportunity to learn*. Were there infrastructural barriers such as access to internet and technology as well as instructional barriers such as the receipt of educational materials and sufficient guidance from teachers and parents (Owusu-Fordjour et al., 2020)? A third concern is that *learning progress*—the extent to which students keep pace with and learn the regular school curriculum—was severely hampered during the pandemic. Losses to learning in the short term can lead to longer term negative effects on student development (Psacharopoulos et al., 2020). Fourth, distance education may create *additional costs to parents and teachers,* including money and time, especially through lost earnings among parents. Finally, there are concerns that socioeconomic differences in access to technology, supportive home environments, and quality of instruction can exacerbate existing disparities in *educational equity* (World Bank, 2020b).[1]

In this study, we systematically explore these five concerns surrounding distance education during the COVID-19 pandemic. Focusing on China, the first country to face the pandemic, we collect and analyze survey data from representative samples of households and teachers of 4,360 rural and urban primary school students who were forced to stay at home for much of the second semester of the academic year. Our large-scale survey covers both rural and urban schools because nearly three quarters of China's 200 million schoolchildren are from rural areas and significant rural-urban gaps exist in educational opportunities in developing countries (National Bureau of Statistics of the People's Republic of China [NBSC], 2010; Zhang et al., 2015).

We present the first large-scale quantitative evidence of how the school-closures and related restrictions from COVID-19 affected education in China. First, the large majority of students (87% of the rural sample and 92% of the urban sample) engaged in distance education during the pandemic. While the data suggest that China's distance education measures were successful in ensuring that most students had opportunities to learn, the families of approximately 1 out of 8 students in rural schools and 1 out of 12 students in urban schools reported that they did not engage in any form of distance education. Second, many households encountered limited access to and use of larger devices such as computers and tablets (3 out of 4 rural students and 2 out of 3 urban students mainly used smartphones for learning), poor internet connections (over one quarter of students), and a lack of basic study space conditions such as a table or quiet environment (approximately 1 out of 10 students). Third, compared to the previous year and despite distance education, teachers reported substantial delays in curricular coverage and losses in student learning. Fourth, parents bore substantial costs with over one third reporting that the additional time spent involved in their children's learning at home resulted in wage losses of around two months of an average migrant worker's income. Fifth, we document large and significant rural-urban disparities in most of the above dimensions, highlighting the extent to which educational inequities were exacerbated during the pandemic.

2. Methodology

2.1 Sampling

We collected survey data from rural and urban students from two prefectures in Henan province, central China.[2] Per capita disposable income in Henan (3,206 USD in 2019) is similar to that of China as a whole (4,120 RMB in 2019 – NBSC, 2019). In addition, school closure and distance education policies from the Ministry of Education were uniformly applied across Henan and the rest of China (Education Department of Henan Province, 2020).

The sampling procedure consisted of several steps. We took representative samples of rural schools (130) and urban schools (12) from the two prefectures.[3] We then randomly sampled one grade 6 class per rural school and multiple classes of grade 6 students per urban school.[4] In all sampled classes, we reached out to each student's parents and math teachers. Altogether, the parents and teachers of 2,928 students from the rural sample (response rate: 72%) and the parents and teachers of 1,432 students from the urban sample (response rate: 95%) participated in the survey.

Appendix Table 1 displays the background characteristics of the grade 6 students from the rural and urban samples. The mean age of the sample children was 12 years, with a small but statistically significant difference between the rural and urban samples (rural sample = 12.44 years, urban sample = 12.32 years, significant at the 1% level). Slightly more than half of the sample students were male (rural sample = 52%, urban sample = 54%). Students in the rural sample were significantly more likely to have parents that were migrants who worked outside of their home counties (52% of students in the rural sample had migrant fathers, compared to only 17% in the urban sample; 21% of students in the urban sample had migrant mothers, compared to only 4% in the urban sample). Both differences were significant at the 1% level.

2.2 Data collection

Following nationwide school closures and the implementation of strict isolation measures, households were asked to fill out online questionnaires. Household questionnaires were directed to the child's primary caregivers, usually parents. Teachers were asked to fill out questionnaires at the end of the school year (after both the period of school closures and the period in which schools reopened for an extended semester).

The questionnaires, which were identical for the rural and urban samples, were designed with our five major research questions in mind. To assess opportunity to learn, parents answered a series of questions including whether their child received any distance education, what share of education was conducted on electronic devices, as well as whether (and how much) students engaged in interactive conversations with their teachers. To understand barriers to the opportunity to learn, parents answered questions about (a) devices, internet connection, and technical issues; and (b) study space conditions. To measure learning progress, teachers were asked to report curricular coverage and student knowledge acquisition in math relative to grade 6 students in the prior 2018-2019 cohort. Finally, we asked whether distance education put a strain on parents in terms of time and finances (Table 4). Specifically, we asked parents about the need to purchase electronic devices for distance education, the time they spent helping their child with distance education, and the opportunity costs (lost wages) of additional time spent with children as a result of distance education.

2.3 Analysis

We produced summary statistics (i.e. means and standard deviations) for key variables for both the rural and urban samples. We also conducted t-tests (and reported cluster-adjusted standard errors) to determine whether there were statistically significant differences across the two samples.

3. Results

3.1 Opportunity to Learn

The majority of students did have opportunities to learn during school closures, and these opportunities were mostly through digital devices. As shown in Table 1, 87% of rural and 92% of urban school students participated in distance education. According to caregivers, approximately 1 out of 8 students in the rural sample and 1 out of 12 students in the urban sample did not receive distance education from their schools. Roughly two thirds of distance education time was conducted using an electronic device, with a higher proportion of students in the urban sample using electronic devices to carry out distance education than students in the rural sample (rural = 63%, urban = 71%, significant at the 1% level).

Most students engaged in interactive conversations with their teachers, though there were significant differences between the rural and urban samples (Table 1). Four fifths (80%) of rural students engaged in interactive conversations with teachers, compared to 88% of urban students (statistically different at the 1% level). The difference in the length of teacher-student conversations per week was much starker: 61 minutes per week for rural sample students and 98 minutes per week for urban sample students (61% more in the urban sample—significant at the 1% level).

3.2 Barriers to the Opportunity to Learn

There were some significant differences in access to and use of electronic devices between the rural and urban samples (Table 2, Panel A). Students in the rural sample had significantly less access to large devices such as desktop and laptop computers (rural = 35%, urban = 58%) and tablets (rural = 9%, urban = 28%). Although rural and urban school students had similar access to smartphones (94% and 92%), close to three-fourths of students in rural schools (74%) used smartphones for distance education, while only about one-fourth of students in urban schools (26%) did. In contrast, urban students were much more likely to use large devices such as computers (rural = 4%, urban = 29%) and tablets (rural = 3%, urban = 15%). In using their devices, about one quarter of students encountered technical issues with internet connectivity (rural = 29%, urban = 25%). A much higher share – nearly two thirds of households – reported problems with interactive video sessions (rural = 64%, urban = 69%).

Students also often lacked suitable study conditions (Table 2, Panel B). A nontrivial proportion of students lacked a table (rural = 29%, urban = 16%); an isolated room (rural = 28%, urban = 15%); a quiet study environment (rural = 33%, urban = 19%); basic learning tools (rural = 17%, urban = 15%); or an independent learning space (rural = 16%, urban = 5%). With the exception of basic learning tools, rural-urban differences were statistically significant at the 1% level. In other words, students in rural schools had categorically worse learning conditions than their urban peers.

3.3 Learning Progress

According to teacher reports, student learning suffered as a result of school closures (Table 3, Panel A).[5] During the school closure period, a large percentage of students fell behind in their math lessons (rural = 62%, urban = 43%) and for a substantial number of weeks on average (rural = 3.37, urban = 3.65). Even after students returned to school for an extended period, by the end of the school year, they learned significantly less than the previous cohort of grade 6 students (rural = 88%, urban = 91%).

Just as concerning, parents reported that the quality of learning was low (Table 3, Panel B). Over three-quarters of parents indicated that they believed the COVID-19 epidemic had a negative effect on their child's learning (rural = 77%, urban = 78%). An even higher percentage of parents reported that their child was distracted while engaging in distance education (rural = 82%, urban = 81%). That being said, a majority of parents still claimed that they would have liked greater access to online (math) resources during the pandemic (rural = 87%, urban = 84%, significant at the 1% level).

3.4 Costs

A majority of families purchased electronic devices for distance education (Table 4, Panel A). Specifically, 74% of rural students and 56% of urban students purchased an extra device for distance education during school closures (statistically different at the 1% level). Of these, the majority of households purchased a new smartphone (rural = 89%, urban = 79%) or TV (rural = 59%, urban = 47%). Purchases of desktop and laptop computers were also high among urban households (rural = 25%, urban = 44%) and tablets (rural = 9%, urban = 24%).

Families, moreover, spent considerable time assisting their children with distance education (Table 4, Panel B). Parents in the rural sample spent an average of 38 minutes per day assisting students with schoolwork, compared to 43 minutes in the urban sample. Parents also spent approximately 11 minutes per day troubleshooting EdTech.

As a result of increased engagement with distance education, approximately one third of parents reported delaying employment (Table 4, Panel C). Parents from the rural and urban samples reported similar delays (rural sample = 32%, urban sample = 34%) and similar losses in average income (rural = 1,147 USD, urban = 1,232 USD—equivalent to about two months of the average income of rural-urban migrant workers in China— NBSC, 2019).

4. Discussion

This study provides some of the first available empirical evidence on the effects of distance education measures enacted by China during school closures in the COVID-19 pandemic. The most encouraging finding from our analysis is that the vast majority of students (rural = 87%, urban = 92%) participated in distance education during school closures. The distance education was moreover mostly conducted on digital devices and involved interaction with teachers (rural = 80%, urban = 88%). China's provision of wide coverage is laudable, as it was the first nation to undergo a comprehensive shift to distance education and had no precedent to follow.

On the other hand, our analysis reveals that distance education was still not universal nor evenly distributed across rural and urban areas. Approximately 1 out of 8 rural students and 1 out of 20 urban students did not receive any distance education at all, and 2 out of 10 rural students and 1 out of 10 urban students had no interaction with their teachers. If we use these results to extrapolate opportunities to learn on a national scale (estimating that China has 238 million school-aged children (Ministry of Education of the People's Republic of China [MOE], 2018) and about 70% of these attend schools in rural areas (NBSC, 2010), this means that about 22 million rural and 10 million urban students (32 million total) did not engage in any learning at all during the COVID-19 crisis, while about 33 million rural and 8 million urban students (41 million total) had no interaction with their teachers. Although we cannot fully generalize our findings in these two prefectures of Henan to the rest of China, it would be surprising if other prefectures did not also face major problems similar to those found here.

Our results also indicate that many students encountered infrastructural barriers that may have affected their access to and quality of their learning. These barriers included both those related to digital device access and connectivity as well as study space conditions. Our finding that over two-thirds of the sample students utilized smartphones (instead of devices with larger screens such as computers and tablets) to conduct their distance education is a potential issue for concern, as previous research has indicated that smaller screens may inhibit the effectiveness of online learning (Kim & Kim, 2012; Maniar et al., 2008). Considerable shares of students also faced poor internet connectivity (about one third of students) and video-related technical issues (close to two thirds of students). In addition, between 5% to 33% of students did not have certain basic study space conditions at home, with larger shares of rural students lacking access. As a student's physical learning environment can influence learning outcomes (Glewwe et al., 2012), it is thus possible that this may have also reduced the effectiveness of their distance education when compared to their learning at school.[6]

Another important finding from the analysis is that the learning progress of students suffered markedly during school closures despite the wide provision of distance education. Large shares of teachers reported substantial curricular delays and learning losses. The many parents who indicated that their child's learning had suffered during the pandemic (over three-quarters of the sample) and that their student was distracted while engaging in distance education (over four-fifths of the sample) provides further evidence that school closures hampered the quality of student learning.

Besides potentially large losses in student learning, another important and less discussed consequence of distance education involved costs to families in terms of time and money. Caregivers dedicated approximately 50-60 minutes per day assisting with their child's learning, which around one-third of respondents indicated hindered them from searching for a job. The expected income loss of roughly two months of an average migrant worker's salary (NBSC, 2019) is substantial, especially when considering the additional costs of the extra devices that over half of families bought for their child's distance education. A few recent studies highlight the key role that parents have taken in supporting the learning of their children during COVID-19 (Trung et al., 2020; UNESCO, 2020b) as well as the factors (such as work commitments, income level, and education level) that may limit the amount of time they can dedicate and the quality of the instruction they can provide (Obiakor & Adeniran, 2020).

Across almost all measures, rural students fared worse than urban students. A significantly smaller share of rural students had engaged in any distance education (by 5 percentage points), and – of those that received distance education – their weekly conversation time with their teachers was 38% less than that between urban students and teachers. The share of rural students facing infrastructural barriers was also larger in terms of less access to computers and tablets and poorer study space conditions. We also found that for the subject of mathematics, significantly larger shares of rural teachers reported curricular delays. These gaps in the opportunities to learn and learning progress of rural and urban students during COVID-19 stand to exacerbate the already-substantial rural-urban disparities in academic achievement and educational attainment (Zhang et al., 2015). Moreover, our results suggest that rural parents may have borne a larger opportunity cost when supporting their child's distance education. Although rural and urban parents reported similar losses in wages, the net magnitude of this impact should theoretically be greater on rural families, who on average earn 37% of the income of urban families (NBSC, 2019). Additionally, recent multi-province research in China during COVID-19 has shown that reductions in rural household income resulted in decreased spending on food, education, and health, which may further hamper the academic performance of rural students (Rozelle et al., 2020.).

Our findings shed light on the challenges of distance education measures in China during COVID-19, with important implications for policymakers and school administrators. First, reported curricular delays highlight the need for schools to objectively assess student learning progress to understand actual learning losses and tailor their teaching accordingly. Addressing such losses in a timely fashion could help mitigate long-term consequences, including reductions in future income on both the individual and national levels (Azevedo et al., 2020; Psacharopoulos et al., 2020). Second, as the income losses incurred by parents who stayed at home to help with their child's distance education might also have potentially long-reaching effects both for individual households and for the economy as a whole, policymakers could consider cash transfers for struggling families to ensure that they do not reduce spending on essentials and stimulate their consumer spending. Third, to ensure that a broader share of students have opportunities for learning during potential future school closures, local educational departments could provide additional funding for schools in low-income rural areas to purchase such resources for families in need.

The findings presented here are useful for policymakers and researchers in other parts of the world outside of China still dealing with the COVID-19 pandemic and where schools continue to stay closed and students continue to rely on distance education. More empirical research on the experiences of other countries is necessary to understand the global impact of long-term distance education during the pandemic as well as to identify the approaches, policies, and technologies that are most effective in mitigating the potential consequences.

Notes

1. Thus far, surprisingly given the unprecedented shutdown of schools, there are only a few large-scale, quantitative empirical studies illustrating the nature and extent of these concerns. Although numerous articles discuss distance education during the COVID-19 pandemic most of these are commentaries (see the online Appendix for results of our search for articles in education, economic, psychological, multi-disciplinary science journals as well as working paper series). Furthermore, of the few empirical studies with new research the majority focused on higher education rather than K-12. Those that did focus on K-12 education had relatively small sample sizes (Abel, 2020; Talidong, 2020) or used pre-pandemic data to extrapolate learning losses during the pandemic (Azevedo et al., 2020; Soland et al., 2020). In short, research to date does not sufficiently address the five concerns we explore in the present study.

2. Henan, one of China's largest provinces, hosts 10.7% of population and 11.3% of students at the compulsory level (grades 1-9) in China (NBSC, 2013, 2016). Because of its centrality and because of its size students at the compulsory level, policymakers frequently look to Henan to understand if education policies are working. Specifically, Henan has been the pilot province for many national education programs or plans, such as the national education system reform towards a balanced development of compulsory education, the training of general teachers for primary schools, and the full coverage of the nutrition improvement program for rural compulsory education students in poverty-stricken counties (MOE, 2017).

3. We took a simple random sample of urban (city) schools within each prefecture. We also

sampled every rural school in the two prefectures that used standard government curricula (based on the People's Press) and had sufficient computers with internet. Because we sampled rural schools with more resources (i.e. computers and Internet connectivity) and more resourced schools are better positioned to provide distance education, the rural-urban differences presented in this paper are likely lower bound estimates.

4. If an urban school had three or less grade 6 classes, all classes were included in the sample. If an urban school had more than three grade 6 classes, we randomly sampled three grade 6 classes. The only exception was that from the largest school in the sample, we randomly sampled 6 out of 18 grade 6 classes.

5. The period of school closures was from February 10 to April 26 for the first prefecture and to May 6 for the second prefecture. After this period, students returned to school until July 11 (ten weeks) in the first prefecture and July 6 (eight weeks) in the second prefecture.

6. Now even the poorest of schools in China generally have desks and chairs for each individual student (OECD, 2016).

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Table 1. Opportunity to learn during school closures

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Rural students (N=2928)			Urban students (N=1432)			T test: difference (2) - (5)	
	N	Mean	SD	N	Mean	SD	Difference	SE
Participate in distance education (yes = 1)	2,928	0.87	0.34	1,432	0.92	0.27	-0.05***	(0.01)
Proportion of distance education time using electronic devices	2,928	0.63	0.24	1,432	0.71	0.25	-0.08***	(0.01)
Teachers have interactive conversations with students (yes = 1)	2,928	0.80	0.40	1,432	0.88	0.33	-0.08***	(0.02)
If yes, the length of conversations per week (mins)	2,235	60.55	78.14	1,245	97.73	161.73	-37.18**	(15.11)

Notes: *,**,*** indicates statistical significance at 10 percent, 5 percent, and 1 percent level.

Table 2. Barriers to the opportunity to learn during school closures

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		Rural students (N=2928)			Urban students (N=1432)		T test: difference (2) - (5)	
	N	Mean	SD	N	Mean	SD	Difference	SE
Panel A Devices, internet, and technical issues								
Have electronic devices in family								
Desktop or laptop computer (yes = 1)	2,928	0.35	0.48	1,432	0.58	0.49	-0.23***	(0.04)
Tablet (yes = 1)	2,928	0.09	0.28	1,432	0.28	0.45	-0.19***	(0.03)
Smartphone (yes = 1)	2,928	0.94	0.23	1,432	0.92	0.27	0.02**	(0.01)
TV (yes = 1)	2,928	0.78	0.41	1,432	0.77	0.42	0.01	(0.02)
Main electronic devices used for distance education								
Desktop or laptop computer (yes = 1)	2,544	0.04	0.20	1,316	0.29	0.46	-0.25***	(0.05)
Tablet (yes = 1)	2,544	0.03	0.16	1,316	0.15	0.36	-0.12***	(0.02)
Smartphone (yes = 1)	2,544	0.74	0.44	1,316	0.26	0.44	0.48***	(0.03)
TV (yes = 1)	2,544	0.19	0.39	1,316	0.22	0.41	-0.03	(0.04)
Network signal unstable during teaching	2,521	0.29	0.45	1,310	0.25	0.43	0.04**	(0.02)
Problems with interactive video	1,550	0.64	0.48	1,071	0.69	0.46	-0.05**	(0.02)
Panel B Study space								
Student doesn't have below study conditions:								
Own table	2,928	0.29	0.45	1,432	0.16	0.37	0.13***	(0.02)
Own room	2,928	0.28	0.45	1,432	0.15	0.36	0.13***	(0.02)
Quiet environment	2,928	0.33	0.47	1,432	0.19	0.39	0.13***	(0.02)
Basic learning tools, such as paper and pen	2,928	0.17	0.37	1,432	0.15	0.36	0.02	(0.01)
Independent place at home for distance education	2,928	0.16	0.36	1,432	0.05	0.23	0.10***	(0.01)

Notes: *,**,*** indicates statistical significance at 10 percent, 5 percent, and 1 percent level.

Table 3. Teacher and parental assessment of child's learning progress during school closures

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Rural students (N=2928)			Urban students (N=1432)			T test: difference (2) - (5)	
	N	Mean	SD	N	Mean	SD	Difference	SE
Panel A Math teacher reports of student learning								
School closures resulted in delays in curricular schedule (yes = 1)	2928	0.62	0.49	1432	0.43	0.49	0.19	(0.14)
If yes, number of weeks fell behind	1,812	3.37	1.08	609	3.65	0.81	-0.28	(0.39)
Percent students learned by end of semester compared to previous year	2928	0.88	0.10	1432	0.91	0.09	-0.03	(0.03)
Panel B Parent perceptions of student learning								
Overall, the COVID-19 epidemic had negative effect on student's learning	2,928	0.77	0.42	1,432	0.78	0.42	-0.00	(0.01)
Student distracted while engaging in distance education	2,928	0.82	0.39	1,432	0.81	0.39	0.00	(0.02)
Like to have more online (math) resources during pandemic (yes = 1)	2,868	0.87	0.33	1,432	0.84	0.37	0.04***	(0.01)

Notes: (1) *,**,*** indicates statistical significance at 10 percent, 5 percent, and 1 percent level; (2) To calculate the values in Panel A, teacher responses were weighted by class size. We did this by multiplying each teacher response value by the number of their students in the sample.

Table 4. Household costs of distance education during school closures

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Rural students (N=2928)			Urban students (N=1432)			T test: difference (2) - (5)	
	N	Mean	SD	N	Mean	SD	Difference	SE
Panel A Cost for new electronic devices								
Family purchased extra device for distance education (yes = 1)	2,928	0.74	0.44	1,432	0.56	0.50	0.17***	(0.03)
If yes, purchased desktop or laptop computer (yes = 1)	2,153	0.25	0.43	805	0.44	0.50	-0.19***	(0.05)
If yes, purchased tablet (yes = 1)	2,153	0.09	0.28	805	0.24	0.43	-0.15***	(0.03)
If yes, purchased smartphone (yes = 1)	2,153	0.89	0.31	805	0.79	0.41	0.10***	(0.03)
If yes, purchased TV (yes = 1)	2,153	0.59	0.49	805	0.47	0.50	0.12***	(0.04)
Panel B Time use of parents/grandparents								
Average time per day spent helping with schoolwork (mins)	2,898	37.88	51.62	1,421	42.77	53.62	-4.90*	(2.79)
Average time per day spent helping troubleshoot EdTech (mins)	2,898	11.22	23.07	1,426	11.02	22.34	0.20	(1.20)
Panel C Income loss (opportunity cost) of parents								
Helping with distance education hinders job search (yes = 1)	2,928	0.32	0.47	1,432	0.34	0.48	-0.03	(0.02)
If yes, expected income loss (Chinese yuan)	921	8,123.08	9,425.35	388	12,271.01	12,531.37	-4147.92***	(818.68)

Notes: *,**,*** indicates statistical significance at 10 percent, 5 percent, and 1 percent level.

Appendix Table 1. Student and family characteristics

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Rural students (N=2928)			Urban students (N=1432)			T test: difference (2) - (5)	
	N	Mean	SD	N	Mean	SD	Difference	SE
Student age (years)	2,926	12.44	0.63	1432	12.32	0.72	0.13***	(0.03)
Male student (male = 1)	2,928	0.52	0.50	1432	0.54	0.50	-0.03*	(0.02)
Migrant father (yes = 1)	2,907	0.52	0.50	1432	0.17	0.38	0.35***	(0.02)
Migrant mother (yes = 1)	2,895	0.21	0.41	1432	0.04	0.20	0.17***	(0.01)

Notes: *,**,*** indicates statistical significance at 10 percent, 5 percent, and 1 percent level.