Parental Migration and Left-Behind Children's Cognitive and Academic Performances

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Introduction

Millions of children are resided in their home communities but separated from their parents as either one or both parents have migrated for work (Antia et al., 2020). These are the so-called "left behind children" who are common in migrant-sending regions in the Global South. The global size of left behind children population is unavailable, but in-country surveys provide some estimation. (DeWaard et al., 2018) analyzed the Mexican and Latin American Migration Projects and estimated that around 15 percent of children were left behind in Mexico, El Salvador, Nicaragua, and Puerto Rico in the 2000s. (Popova, 2018) cited a 2016 study by UN Children's Fund Bulgaria indicating that one-fifth of Bulgarian children had one or both parents working abroad. In China, the 2015 one-percent National Population Sample Survey showed that one out of four children lived under parental absence induced by migration (NBS et al., 2017).

Parental migration impacts child-and-adolescence development by exerting different effects that work oppositely (Van Hook & Glick, 2020). Consider children's education. Labor migrants send remittances back home, boosting the family income. Higher income can fund children's schooling as well as improve their nutritional and living conditions. All these may enhance children's educational outcome. The inflow of remittances, however, cannot substitute for the loss of parental care. Parental migration halts the day-to-day, face-to-face contact between parents and children. It decreases the amount and quality of parental guidance, protection, and support. All these may hinder children's school performance. It is uncertain how these two opposing effects shape children's educational performance, which merits empirical investigation.

A challenge arises in when we want to assess the causality between parental migration and children's education. Experiments can unveil causal relations, but it is unfeasible and unethical to design an experiment that randomly assigns parents to migrate without their children. Statistical advances in causal inference provides an alternative approach. We can infer causality from a quasi-experimental design – that is, only if the cause is as good as randomly assigned to individuals in the analysis, conditional on identification assumptions.

For studying left behind children, a suitable case is China. The country has seen a huge scale of internal migration and salient challenges facing migrant parents and left behind children. The National Bureau of Statistics reported that the number of in-country migrant workers exceeded 292.5 million by 2021(NBS, 2022). According to (Gu, 2021), current policy still limits internal migrants' access to public services and social benefits outside their hometowns, including public school for their children. Facing financial and policy constraints, many migrant laborers have to leave children in their original domiciles. The number of left behind Chinese children reached 68.7 million in 2015 (NBS et al., 2017).

To what extent do parental migration affect the cognitive development and academic performance of left-behind children in the short term? I analyze the data from a nationally representative two-wave panel survey. The sample includes children in both urban and rural areas. I develop a difference-in-differences design for causal inference. The dependent variables include children's cognitive test score and Chinese, mathematics, and English exam scores.

Literature Review

Researchers obtained mixed results regarding how migration-induced parental absence affects children's education. Using data collected from junior high school students, (Li et al., 2017) found that parental migration negatively impacts left-behind children's achievement in standardized mathematical test. (Wang et al., 2019) also collected data from students of junior high school, but discovered no overall effect of parental migration on the mathematical test grades of children left behind. (Bai et al., 2018) gathered data from primary school pupils. They reported that parental migration “does not appear to have a negative effect” on the standardized English test scores of left-behind children, and “in some cases even appears to have a positive effect” (p. 1165). The inconsistency can result from factors such as the left-behind children’s age and gender, the migrant parent’s original domicile and eventual destination, and the arrangement of which parent migrate for how long.

Between parental migration and children’s education, the mechanisms trace to two theoretical frameworks. One model, the generation model, holds that parental migration brings forth greater resources in the form of economic capital. Economic capital is, in Bourdieu’s words, “immediately and directly convertible into money and may be institutionalized in the form of property rights” (2002, p. 16). Economic capital is transferable to human capital, which is the stock of “skills, talents, health, and expertise” in people that enhance their productivity (Botev et al., 2019; Goldin, 2016). (Chang et al., 2019) provided evidence through interviews with migrant workers and their family members. They said that the city offered more jobs and higher pay than did the countryside. Oftentimes, they found that labor migration presented the only way to sustain their children’s education and livelihood.

The other theoretical model is the family disruption model. Children flourish under parental nurturing care. This term refers to the “stable environments that promote health and adequate nutrition, protect from threats, and provide opportunities for learning and responsive, emotionally supportive and developmentally enriching relationships” (**black?**). Parental migration decreases nurturing care, thereby hindering children’s developmental outcomes. The loss of nurturing care hinders children’s accumulation of human capital. (Hong & Fuller, 2019) talked to a group of left behind children in grade nine. These students expressed the utter sense of loneliness “with no advocate, no support and with no one looking out for them” (p. 13). Many of them felt indifferent to school grades, and some even longed to ditch school to pursue a free, independent life (p. 14).

I hypothesized that in the short term, parental migration negatively affect the cognitive development and academic performance of children left behind. This is because parental migration immediately disrupts family structure, resulting in lower academic performance of children. It takes longer time for parental migration to generate resources that improve children's performance at school.

Researchers have studied whether the impact differ between mother absence and father absence in the context of labor migration. (Xu et al., 2019) adopted a fixed-effects propensity score weighting model on cross-sectional data collected from seventh and ninth graders in rural areas across China. They found that the absence of father only or both parents had "little or no association with negative outcomes" on children's academic and cognitive performances. Only-mother absence, however, showed a "strong association with negative outcomes" (p. 1646). (Chen et al., 2019) conducted structural equation modeling on the cross-sectional data collected from fourth to seventh graders in the countryside of one province. They found that mother migration was "negatively associated with children's social competence and academic performance," while father migration had no direct effects on the two outcomes (pp. 860-861).

I hypothesized that in the short term, mother migration negatively affect the cognitive development and academic performance of children left behind, while father migration does not show a effect. This relates to the social norms that designate men as breadwinners and women as caregivers. Studies noted that in some Asian and Latin American societies, children are more likely to accept fathers' migration than mothers' (Murphy, 2022). Left behind children may even resent their migrant mothers, viewing them as transgressing on the expected care-giving roles.

The research on China's left behind children has three major shortcomings. First, most literature focuses on children left behind in rural areas while neglecting the urban counterparts. As (NBS et al., 2017) stated, the number of urban left behind children had been growing, and the trend would continue. The second shortcoming lies in data and sampling. Some studies draw from cross-sectional data, making it hard to infer causal relations (Jin et al., 2020; Zhou et al., 2014). Others suffer from a limited sample size of less than one thousand participants (Liu et al., 2021; Yang et al., 2022) or a limited geographic coverage of one or a few towns (Jin et al., 2020; Shu, 2021; Yang et al., 2022). The third shortcoming lies in the selection and measurement of outcome. (Chang et al., 2019; Wang et al., 2019) measure students' educational performance with the test score of only one academic subject, namely mathematics. The test results of multiple subjects should be included, as parental migration's impact may vary across subject areas.

Methods

Participants

I obtained the data from the China Education Panel Survey (CEPS). It is a nationally representative, school-based survey featuring junior high school students. The survey administrator is the National Survey Research Center at Renmin University of China. The research team adopted the approach of multi-stage stratified probability proportional to size sampling. The selected participants filled a paper-and-pencil questionnaire. The baseline survey took place in the 2013-2014 academic year with a sample size of about twenty thousand students in seventh and ninth grades. These students were nested in 438 classrooms of 112 schools in 28 urban districts or rural counties. I only kept the 9,449 observations of seventh grade students and their parents, who completed the follow-up survey in the 2014-2015 academic year.

Measurement

I explored two categories of adolescence development: academic and cognitive abilities. One key dependent variable, the student's cognitive skill, is measured by a fifteen-minute standardized test. The test covered three types of reasoning: verbal, visuospatial, and numerical. The raw scores of cognitive skill were then standardized. The other set of dependent variables concerned students' academic performance. This was measured by the mid-term exam scores in three subjects: Chinese, mathematics, and English. I calculated the standardized exam grades at the school-by-grade level to facilitate comparison across schools and counties. I removed the observations with missing values in any of the test score mentioned above. My choice of standardized exam grades over raw grades follows previous research (Xu et al., 2019; Young & Hannum, 2018).

The key independent variable, the parental migration status, was identified by two items in the parent survey. In both the baseline and the follow-up surveys, parents specified the family members living in the same household at the time. I constructed six treatment dummy variables measuring migration arrangements: both parents absent, only father absent, only mother absent, father absent (unconditional), mother absent (unconditional). These arrangements can overlap with each other. The control group consisted of parents staying with their children throughout at both the baseline and the follow-up surveys. I then removed the observations that reported other types of parental absence induced by divorce or death.

The control variables at the student level include: student's age, gender, ethnicity, self-rated health, hukou type, and the number of siblings. I obtained the age by subtracting the student's birth year from the year 2013, the start of the baseline academic year. I coded students' gender as male = 0 and female = 1, ethnic minority status as Han Chinese = 0 and other ethnicity = 1, hukou status as rural (agricultural) hukou = 1 and other types = 0. I obtained the number of siblings of students through two items. Students who answered yes to the question "Are you the only child of your family" had no sibling. Those who answered no to this question were instructed to proceed to the next question, "How many full or half siblings do you have" – elder brother, younger brother, elder sister, and younger sister, respectively. In these four columns, I transformed `NA` to zero. Then I added the four columns as the number of siblings of a student.

The control variables at the household level include the internet assess at home, the self-rated number of books at home, and the years of education of the best-educated parent. These variables can approximate the level of human capital in a household. The internet assess was measured by the item “Do [sic] your family own a computer and have an access to the Internet”. Those who answered “Yes, we have both” were coded as 1, and others as 0. The number of books was measured by the item “How many books do your family own? (not including textbooks or magazines)”. Students chose from a range of 1 as “very few” to 5 as “a great number”. The years of education of the best-educated parent were measured by two items. Students indicated their father’s and mother’s educational level, respectively. I transformed these two variables into years of education and retained the larger value.

Data analysis

I adopted R (Version 4.2.0; R Core Team, 2022) and the R-packages *papaja* (Version 0.1.0.9999; Aust & Barth, 2020), and *tinylabels* (Version 0.2.3; Barth, 2022) for all the analyses, the `fixest` package for building the econometric models (Bergé, 2018), and the `modelsummary` package for presenting the results (Arel-Bundock, 2022). I built a two-way fixed effect model in a difference-in-differences (DID) design, following Bai and colleagues’ (2018; 2020) approach. The model served to analyze the educational outcome of children newly left behind by parents vis-a-vis that of children staying together with parents. I first specified an unrestricted and unadjusted model:

$$\Delta score_{i,s} = \alpha + \beta \cdot migr_{i,s} + \gamma \cdot FE_s + \lambda \cdot score_{i,s;base} + \varepsilon_{i,s}$$

For student i in school s, $\Delta score_{i,s}$ is the change in standardized test score between baseline and follow-up surveys, $migr_{i,s}$ is the treatment dummy variable, FE_s is the school-level fixed effect, and $score_{i,s;base}$ is the standardized test score at baseline. The model is unrestricted because it does not restrict on the coefficient associated with the baseline scores. The model is unadjusted as it does not adjust for additional covariates. Theoretically, it is unnecessary to include covariates that vary over group but remain consant over time; They would cancel out in the two-way fixed effect model. The standard errors were clustered at the school level.

In addition, I presented an unrestricted and adjusted DID model:

$$\Delta score_{i,s} = \alpha + \beta \cdot migr_{i,s} + \gamma \cdot FE_s + \lambda \cdot score_{i,s;base} + \theta \cdot X_{i,s} + \varepsilon_{i,s}$$

where $X_{i,s}$ is the vector of covariates capturing the characteristics of children and their households. The control variables were measured in the baseline survey. This version of model lifts the restriction that covariates from the baseline survey would be associated with a coefficient that equals one.

Results

Note: ^^ * p < 0.05, ** p < 0.01, *** p < 0.001

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Discussion

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	Any Parent Absent	Only Mother Absent	Mother Absent	Only Father Absent	Father Absent	Both Parents Absent
Explanator	-0.12***	-0.07	-0.10*	-0.16***	-0.16***	-0.16*
	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)	(0.07)
Baseline Score	-0.62***	-0.63***	-0.63***	-0.62***	-0.62***	-0.63***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Num.Obs.	4134	3770	3894	3745	3869	3629
R2	0.440	0.449	0.442	0.453	0.445	0.448
R2 Adj.	0.424	0.432	0.425	0.436	0.429	0.430
R2 Within	0.371	0.379	0.374	0.383	0.377	0.382
R2 Pseudo						
AIC	7697.6	6999.8	7273.5	6898.0	7171.1	6746.1
BIC	8418.9	7710.6	7988.0	7608.0	7884.8	7452.5
Log.Lik.	-3734.792	-3385.924	-3522.761	-3335.002	-3471.561	-3259.049
Std.Errors	by: schids	by: schids	by: schids	by: schids	by: schids	by: schids
FE: schids	X	X	X	X	X	X

	Any Parent Absent	Only Mother Absent	Mother Absent	Only Father Absent	Father Absent	Both Parents Absent
Explanator	-0.08*	-0.12*	-0.10*	-0.05	-0.05	-0.05
	(0.03)	(0.05)	(0.04)	(0.05)	(0.04)	(0.07)
Baseline Score	-0.31***	-0.31***	-0.31***	-0.32***	-0.32***	-0.32***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Num.Obs.	4134	3770	3894	3745	3869	3629
R2	0.163	0.166	0.165	0.170	0.170	0.172
R2 Adj.	0.140	0.140	0.140	0.144	0.145	0.145
R2 Within	0.148	0.147	0.148	0.153	0.153	0.153
R2 Pseudo						
AIC	8749.8	7947.9	8227.8	7838.8	8117.1	7596.2
BIC	9471.1	8658.6	8942.3	8548.8	8830.8	8302.6
Log.Lik.	-4260.905	-3859.940	-3999.901	-3805.376	-3944.541	-3684.093
Std.Errors	by: schids	by: schids	by: schids	by: schids	by: schids	by: schids
FE: schids	X	X	X	X	X	X

	Any Parent Absent	Only Mother Absent	Mother Absent	Only Father Absent	Father Absent	Both Parents Absent
Explanator	-0.08*	-0.12*	-0.13**	0.01	-0.04	-0.14*
	(0.03)	(0.05)	(0.04)	(0.05)	(0.04)	(0.07)
Baseline Score	-0.29***	-0.29***	-0.29***	-0.29***	-0.29***	-0.30***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Num.Obs.	4134	3770	3894	3745	3869	3629
R2	0.164	0.172	0.170	0.169	0.167	0.173
R2 Adj.	0.141	0.146	0.145	0.143	0.142	0.147
R2 Within	0.149	0.153	0.154	0.151	0.153	0.158
R2 Pseudo						
AIC	8312.4	7556.5	7816.0	7503.0	7765.6	7272.1
BIC	9033.7	8267.3	8530.5	8213.0	8479.3	7978.5
Log.Lik.	-4042.216	-3664.273	-3794.002	-3637.509	-3768.779	-3522.049
Std.Errors	by: schids	by: schids	by: schids	by: schids	by: schids	by: schids
FE: schids	X	X	X	X	X	X

	Any Parent Absent	Only Mother Absent	Mother Absent	Only Father Absent	Father Absent	Both Parents Absent
Explanator	-0.06*	-0.05	-0.04	-0.09*	-0.07	-0.01
	(0.03)	(0.05)	(0.04)	(0.04)	(0.04)	(0.05)
Baseline Score	-0.17***	-0.17***	-0.18***	-0.17***	-0.18***	-0.18***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Num.Obs.	4134	3770	3894	3745	3869	3629
R2	0.091	0.097	0.098	0.092	0.094	0.100
R2 Adj.	0.065	0.069	0.071	0.064	0.066	0.071
R2 Within	0.071	0.072	0.073	0.073	0.073	0.076
R2 Pseudo						
AIC	7185.6	6502.1	6737.9	6513.7	6748.0	6303.0
BIC	7906.8	7212.8	7452.4	7223.7	7461.7	7009.4
Log.Lik.	-3478.783	-3137.026	-3254.945	-3142.869	-3259.978	-3037.495
Std.Errors	by: schids	by: schids	by: schids	by: schids	by: schids	by: schids
FE: schids	X	X	X	X	X	X

	Any Parent Absent	Only Mother Absent	Mother Absent	Only Father Absent	Mother Absent	Both Parents Absent
Explanator	-0.12***	-0.08	-0.10**	-0.16***	-0.16***	-0.14*
	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)	(0.06)
Baseline Score	-0.64***	-0.64***	-0.64***	-0.64***	-0.64***	-0.64***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
age	-0.11***	-0.10***	-0.11***	-0.11***	-0.10***	-0.11***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
ch.girl	0.02	0.03	0.03	0.02	0.03	0.03
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
ch.health	0.00	-0.01	0.00	-0.01	-0.01	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
ch.rural	0.02	0.02	0.02	0.03	0.02	0.03
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)
ch.sibling	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
ch.boarding	0.01	0.01	0.01	0.00	-0.01	0.00
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
ch.ethn.minority	0.07	0.08	0.08	0.07	0.07	0.07
	(0.06)	(0.07)	(0.07)	(0.07)	(0.07)	(0.08)
par.edu.year	0.01*	0.01*	0.01**	0.01	0.01	0.01*
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
home.book	0.03**	0.03*	0.03**	0.03**	0.03**	0.03**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
home.internet	-0.01	-0.02	-0.01	-0.02	-0.02	-0.02

	Any Parent Absent	Only Mother Absent	Mother Absent	Only Father Absent	Mother Absent	Both Parents Absent
	(0.02)	(0.03)	(0.03)	(0.02)	(0.03)	(0.03)
Num.Obs.	4134	3770	3894	3869	3745	3629
R2	0.451	0.459	0.453	0.456	0.462	0.458
R2 Adj.	0.434	0.441	0.435	0.438	0.444	0.439
R2 Within	0.383	0.390	0.387	0.389	0.393	0.394
R2 Pseudo						
AIC	7633.6	6948.9	7211.4	7117.0	6853.3	6694.5
BIC	8418.1	7722.0	7988.5	7893.3	7625.6	7462.9
Log.Lik.	-3692.791	-3350.450	-3481.690	-3434.478	-3302.665	-3223.231
Std.Errors	by: schids	by: schids	by: schids	by: schids	by: schids	by: schids
FE: schids	X	X	X	X	X	X

	Any Parent Absent	Only Mother Absent	Mother Absent	Only Father Absent	Mother Absent	Both Parents Absent
Explanator	-0.07*	-0.13*	-0.09*	-0.03	-0.03	-0.03
	(0.03)	(0.05)	(0.04)	(0.04)	(0.05)	(0.07)
Baseline Score	-0.36***	-0.36***	-0.36***	-0.37***	-0.36***	-0.37***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
age	-0.05**	-0.06**	-0.05**	-0.06***	-0.07***	-0.06**
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
ch.girl	0.19***	0.19***	0.19***	0.20***	0.20***	0.20***
	(0.02)	(0.03)	(0.02)	(0.03)	(0.03)	(0.03)
ch.health	0.04**	0.05**	0.04**	0.04**	0.04**	0.04**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
ch.rural	-0.02	-0.01	-0.03	-0.04	-0.02	-0.04
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
ch.sibling	-0.02	-0.02	-0.02	-0.02	-0.02	-0.03
	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)
ch.boarding	0.00	0.00	0.00	-0.01	0.00	-0.01
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
ch.ethn.minority	-0.04	-0.05	-0.03	-0.06	-0.08	-0.05
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
par.edu.year	0.00	0.01	0.00	0.00	0.01	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
home.book	0.03**	0.03*	0.03*	0.04**	0.04**	0.04**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
home.internet	-0.05	-0.05	-0.06	-0.04	-0.04	-0.06

	Any Parent Absent	Only Mother Absent	Mother Absent	Only Father Absent	Mother Absent	Both Parents Absent
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Num.Obs.	4134	3770	3894	3869	3745	3629
R2	0.185	0.188	0.186	0.195	0.196	0.196
R2 Adj.	0.160	0.161	0.160	0.168	0.169	0.168
R2 Within	0.170	0.170	0.170	0.179	0.179	0.179
R2 Pseudo						
AIC	8661.6	7865.5	8146.6	8018.7	7738.7	7505.3
BIC	9446.1	8638.6	8923.7	8795.0	8511.0	8273.6
Log.Lik.	-4206.775	-3808.734	-3949.295	-3885.352	-3745.366	-3628.626
Std.Errors	by: schids	by: schids	by: schids	by: schids	by: schids	by: schids
FE: schids	X	X	X	X	X	X

	Any Parent Absent	Only Mother Absent	Mother Absent	Only Father Absent	Mother Absent	Both Parents Absent
Explanator	-0.07*	-0.13*	-0.12**	-0.03	0.01	-0.13
	(0.03)	(0.05)	(0.04)	(0.04)	(0.05)	(0.07)
Baseline Score	-0.30***	-0.30***	-0.30***	-0.30***	-0.30***	-0.31***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
age	-0.07***	-0.05**	-0.06**	-0.06***	-0.06**	-0.05**
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
ch.girl	0.08***	0.10***	0.09***	0.08**	0.08**	0.08**
	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)
ch.health	0.01	0.02	0.02	0.01	0.01	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
ch.rural	0.03	0.05	0.04	0.03	0.04	0.03
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
ch.sibling	0.00	-0.01	-0.01	-0.01	0.00	-0.02
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
ch.boarding	0.04	0.03	0.05	0.04	0.03	0.05
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
ch.ethn.minority	-0.03	-0.04	-0.04	-0.04	-0.04	-0.05
	(0.06)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
par.edu.year	0.01*	0.01**	0.01*	0.01*	0.01*	0.01*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
home.book	0.00	-0.01	-0.01	0.00	0.00	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
home.internet	-0.01	-0.01	-0.01	-0.01	-0.01	-0.02

	Any Parent Absent	Only Mother Absent	Mother Absent	Only Father Absent	Mother Absent	Both Parents Absent
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Num.Obs.	4134	3770	3894	3869	3745	3629
R2	0.173	0.182	0.180	0.175	0.178	0.182
R2 Adj.	0.148	0.154	0.153	0.148	0.150	0.153
R2 Within	0.158	0.163	0.164	0.161	0.160	0.167
R2 Pseudo						
AIC	8287.6	7529.5	7791.3	7748.0	7483.5	7255.4
BIC	9072.1	8302.6	8568.4	8524.3	8255.8	8023.8
Log.Lik.	-4019.779	-3640.738	-3771.655	-3749.997	-3617.766	-3503.687
Std.Errors	by: schids	by: schids	by: schids	by: schids	by: schids	by: schids
FE: schids	X	X	X	X	X	X

	Any Parent Absent	Only Mother Absent	Mother Absent	Only Father Absent	Mother Absent	Both Parents Absent
Explanator	-0.06*	-0.06	-0.04	-0.06	-0.09*	0.00
	(0.03)	(0.05)	(0.04)	(0.04)	(0.04)	(0.05)
Baseline Score	-0.20***	-0.20***	-0.20***	-0.20***	-0.20***	-0.20***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
age	-0.03*	-0.03	-0.03	-0.04*	-0.03	-0.03
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
ch.girl	0.10***	0.10***	0.10***	0.10***	0.10***	0.10***
	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)
ch.health	0.02*	0.02*	0.03**	0.02	0.01	0.02*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
ch.rural	0.03	0.03	0.03	0.02	0.02	0.02
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
ch.sibling	0.00	0.00	0.00	0.01	0.01	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
ch.boarding	-0.02	0.00	-0.01	-0.03	-0.03	-0.03
	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)
ch.ethn.minority	0.02	0.01	0.00	0.02	0.02	0.00
	(0.04)	(0.04)	(0.05)	(0.05)	(0.05)	(0.05)
par.edu.year	0.01**	0.01**	0.01**	0.01**	0.01**	0.01**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
home.book	0.01	0.01	0.01	0.02	0.01	0.02
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
home.internet	-0.07**	-0.08**	-0.07**	-0.08**	-0.09***	-0.09***

	Any Parent Absent	Only Mother Absent	Mother Absent	Only Father Absent	Mother Absent	Both Parents Absent
	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)
Num.Obs.	4134	3770	3894	3869	3745	3629
R2	0.104	0.110	0.110	0.107	0.106	0.114
R2 Adj.	0.077	0.079	0.081	0.078	0.076	0.083
R2 Within	0.085	0.085	0.086	0.088	0.087	0.090
R2 Pseudo						
AIC	7145.5	6470.0	6702.6	6708.4	6477.6	6268.0
BIC	7930.1	7243.1	7479.7	7484.7	7249.9	7036.4
Log.Lik.	-3448.758	-3110.976	-3227.279	-3230.208	-3114.781	-3009.986
Std.Errors	by: schids	by: schids	by: schids	by: schids	by: schids	by: schids
FE: schids	X	X	X	X	X	X