"Brains gain and hearts drain": forms of selectivity into international migration expectations in China

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Abstract

Migration is not at random. The migrating population is different from those co-nationals who stayed in the country of origin. A full understanding of the migration process might not only be focused on selectivity into the migration outcome, but also on the selectivity into subjective components of the migration process. This study examines forms of selectivity of migration expectations based on a longitudinal and representative sample of Chinese middle-school students. Using conditional fixed-effects panel logistic models, the effects of cognitive and non-cognitive skills, health, and parental worldviews on adolescents' migration expectations were tested. The findings suggest divergent effects for cognitive and non-cognitive skills. Cognitive skills have a negative effect on expectations of international migration, while motivation, openness and educational expectations increase them. Cultural and health selections were not supported. Overall, this paper discusses the implications for the "brain and heart drain" in China.

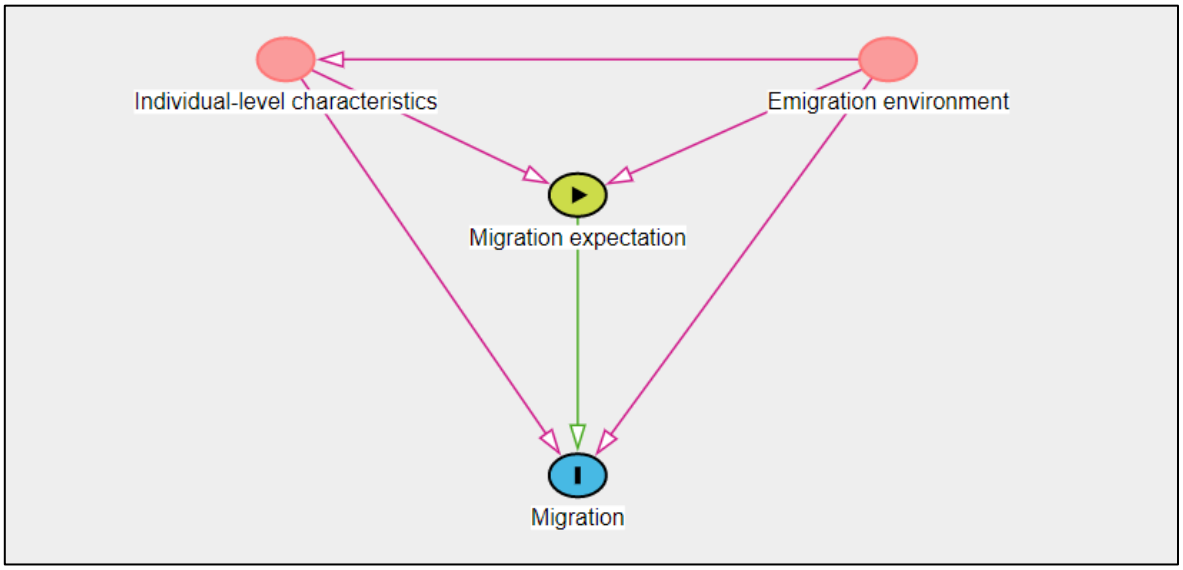
Key words: immigration selectivity, expectation of migration, cognitive skills, non-cognitive skills, health, culture, China, conditional logistic models.

Introduction

Migration is not at random. The migrating population is different from those co-nationals who stayed in the country of origin. That is what is termed as immigration selectivity (Borjas 1987; Feliciano 2020; Lee 1966; Portes and Rumbaut 1990). These differentials have important policy implications. For instance, when a highly skilled population migrates, countries encounter a "brain drain". And when migrants are also positively self-selected by their non-cognitive skills, the economic costs go beyond "brain drain" and include the so-called "heart drain" (Polavieja, Fernández-Reino, and Ramos 2018). Thus, examining how certain characteristics influence the likelihood of migration provides critical information for understanding the migration process, its characteristics, and implications for both sending, and receiving countries.

In the last decades, researchers have produced a large body of evidence have supported immigrant selectivity hypotheses, mainly focusing on education and health (Feliciano 2020). However, migration is not only pushed by aggregated social influence or structural conditions without strategic reflection. It is also the result of cognizant agents who strategically act to achieve well-formulated objectives. Thus, objective conditions that make migration possible, and agents' subjectivity come together in a two-step process of migration (Carling 2002; Carling and Schewel 2018). First, individuals form thoughts and feelings that, in a second stage, will motivate and drive the migration outcomes (move or stay). These socio-psychological constructs include aspirations, intentions, considerations, willingness, necessity, and expectations to migrate. In this context, the selectivity not only takes place directly through outcomes but also indirectly through who wish or expect to migrate. The direct acyclic graph in Figure 1 represents this selection. Individual characteristics and the emigration environment could influence both the migration outcome and the expectation of migration. Not only is migration not at random, but also who aspires, wishes, or expects to migrate. A full understanding of the migration process requires not only understanding selectivity of the migration outcome, but also the selectivity on the subjective components of the two-stages process. This study contributes to this full understanding of the migration process by examining individual-level characteristics that determine expectations of international migration in a representative sample of Chinese middle-school students.

Figure 1. A direct acyclic graph of the causal effect of expectation to migrate on migration and potential selectivity.



While aspirations refer to students' desire to migrate, expectations consider students' subjective assessment of the likelihood of migrating. For a resource-constraint theory, they

are a more realistic self-assessment of a child's future (Bohon, Johnson, and Gorman 2006; Kurlaender and Hibel 2018; Morgan 1996). Therefore, I evaluate in which extend the constraints and opportunities of migration suggested by the literature apply to the formation of migration expectations in the early stages of life. Although migration could be years ahead from adolescence, it is important to examine adolescent socio-psychological dispositions to migrate because they will belong to the next cohorts of migration (Becerra 2012). Understanding the determinants of expectations of migration provides insights to anticipate future waves of emigration in China. In addition, most of the studies in migration selectivity use adult samples, ignoring the "1.5 generation" or those who migrated at a young age (Zhou and Gonzales 2019). By studying adolescents, this study closely examines a cohort of potential young migrants.

The most studied forms of selectivity are education and health (Feliciano 2020). In this study, skills and different indicators of health status are used to compare students who expect to migrate in the future with those who expect to stay. However, I move forward the literature by examining the selectivity by cultural factors and untangling cognitive and non-cognitive skills[1]. A mainstream approach in cultural sociology understands individual decisions as a dual-process where embedded culture motivates decision-making (Lizardo et al. 2016; Vaisey 2009). Thus, this study joins this framework discussing whether parental worldviews about meritocracy affect children's migration expectations.

In addition, scholars have stated that migrants outperform in their non-cognitive skills to their counterparts who stayed (Cebolla-Boado and Soysal 2018; Polavieja et al. 2018; Portes and Rumbaut 1990). For instance, migration requires motivation and openness. This study focuses on educational expectations, motivation, and openness as non-cognitive skills shaping migration expectations. In the last decades, the literature in economics has invigorated a discussion of the productive value of non-cognitive skills, as dimension of human capital. Heckman and colleagues (Heckman, Stixrud, and Urzua 2006) has shown that the role played by non-cognitive skills on the explanation of behavior or labor market outcome is comparable to or greater than cognitive skills, which contradicts traditional theories of human behaviors (Jensen 1998) that attributes cognitive skills a prominent role. Therefore, I introduce this discussion in the literature of selectivity into migration.

[1] The literature in economics and sociology do not differentiate between skills and traits and tend to use them interchangeably. While skills refer to the ability to do something, trait is a feature of someone's character. To make a distinction between both constructs goes beyond the aims of this article, and I call them skills for the sake of simplicity.

The analysis uses school-based representative and longitudinal data from China. After India and Mexico, China is the largest country of origin of international migrants (International Organization for Migration 2020). Therefore, the Chinese case is a relevant standing point to understand the role of individuals' subjectivity in the scenario of international migration. Previous studies have examined the relationship between educational expectations and migration expectations in China using cross-sectional data (Cebolla-Boado and Soysal 2018). My analysis considers this "optimism hypothesis", where immigrant optimism is related to migrant selectivity, and uses panel data to address potential bidirectionality of the effects. Additionally, longitudinal fixed-effect models address the endogeneity of expectations by ruling out time-invariant confounders.

This article is structured as follows. In the next three sections, I introduce the theoretical framework of three potential forms of selectivity. First, competing hypotheses of selectivity by cognitive and non-cognitive skills. Studies about immigrant selectivity often use education as an indicator of human capital due to its objectivity and data availability. Nevertheless, indicators of educational attainment do not disentangle the contribution of cognitive and non-cognitive skills. Second, the self-selection into migration by physical and psychological health is discussed. And third, a hypothesis of negative cultural selection is derived considering parental meritocratic beliefs. In the fourth section, data, variables, and analytic strategy are introduced. As mentioned, longitudinal data and estimation strategy enable me to solve endogeneity issues of previous studies. Fifth, results and robustness checks are reported. Finally, the findings, suggestions for further studies, and implications for "brain gain" and "heart drain" are discussed in the conclusion.

Cognitive and non-cognitive skills selectivity

Classic economic theories attribute high relevance to the expected benefits of migrating relative to the country of origin (Borjas 1987). When the returns at the destination country are higher, the positive skills selection is stronger. Thus, if Chinese students perceive that their skills will have higher payoffs in China, students with higher skills will aspire and expect to stay. Nevertheless, from the perspective of the new economics of labor migration (Stark and Bloom 1985), the decision is a strategy to minimize risks in the face of constraints, such as educational competition. In this context, it is also possible that students with lower skills could expect to migrate to avoid academic failure or stay in the educational system

given the fierce competition in China. This rationale could explain the emergence of the opt-out phenomenon in China (Hannum et al. 2019; Liu 2018), where wealthier families increase children's opportunities for international mobility by investing in bilingual education, school with international curricula or international exchanges. Thus, opt-out is an strategy to avoid academic failure (Young 2018) in the Chinese educational system due to the competition from higher-skilled individuals who expect to study in top tier universities.

Although educational selectivity is a long-standing finding in migration studies, we do not really know whether education selectivity is associated to cognitive or non-cognitive skills. Educational attainment is explained by both cognitive and non-cognitive skills (Esping-Andersen and Cimentada 2018; Farkas 2003; Hsin and Xie 2017; Reynolds, Temple, and Ou 2010). This gap in the literature is generated by a limited availability of measurements of cognitive and non-cognitive skills at the individual level (Bütikofer and Peri 2017).

In addition, studies on human capital selectivity have suggested a "migrant personality" (Polavieja et al. 2018). A set of non-cognitive skills and motivational orientations associated to the disposition to migrate. Researchers have argued that migrants are specially motivated and ambitious (Portes and Rumbaut 1990), but few studies have empirically examined this assumption. The scarce existing studies do not use random samples or compare migrants to native-born population (Polavieja et al. 2018). As mentioned, immigration selectivity requires to compare migrants with those peers who did not migrate. The non-cognitive skills selectivity is crucial for sending and receiving countries because studies have shown that non-cognitive skills are important predictors of labor market outcomes (Heckman et al. 2006), health status (Tam and Wu 2013) and educational achievement (Farkas 2003). As mentioned, the effects of non-cognitive skills on different individual outcomes is, at least, comparable to the effect of cognitive skills (Heckman et al. 2006). Therefore, they could be crucial determinants of the success or failure of migrants at the receiving society.

The main challenge for this literature is that non-cognitive skills are diverse and difficult to observe. Among the studies attempting to assess the selectivity by non-cognitive skills, the evidence presented by Ifatunji (2017) did not support the immigrant selectivity hypothesis. Measurements of motivation do not account for differences in labor market participation between Afro Caribbean immigrants and African Americans. Polavieja et al. (2018) did not find a universal pattern of motivational selectivity across sending and receiving countries. In contrast to the "brain drain" phenomenon, where higher-skilled

individuals are self-selected into migration. The positive selection by non-cognitive skills is a separate form of selection that Polavieja et al. (2018) term “heart drain”.

The paradox of the immigrant optimism is another case of selectivity by non-cognitive skills. Studies suggest that second-generation children have higher expectations than native-born children, which depends upon immigration selectivity of parents (Feliciano 2005, 2006). Besides higher educational level, first generation migrants tend to have higher educational aspirations and expectations that are transmitted to their children, which fosters their performance and achievement. Recent studies have found evidence of a correlation between students’ educational expectations and expectation to migration (Cebolla-Boado and Soysal 2018). As migration expectations, educational expectations are an assertion of personal identity that consider agency and constraints of aspirations. Thus, educational expectations are also a measurement of optimism and a non-pecuniary capital that promote social mobility (Cebolla-Boado, González Ferrer, and Nuhoğlu Soysal 2020; Cebolla-Boado and Soysal 2018). However, the available cross-sectional evidence does not disentangle the direction of this effect, and the immigration selectivity by educational expectations requires an effect of the later on the former. Thus, considering that educational decision-making is closer temporally than migration choices, educational expectations might be antecedents of migration expectations. Therefore, this study moves the literature forward by addressing the direction of this effect.

Similarly, studies in social psychology have shown a positive effect of openness on migration (Ayhan, Gatskova, and Lehmann 2020; Camperio Ciani et al. 2007; Jokela 2009). Curious, broad-minded, and adventurous individuals are more willing and prone to migrate. The literature have shown consistently that openness to experiences positively predicts risk-taking behaviors (e.g. Soane and Chmiel 2005; Weller and Tikir 2011). As Ayhan (2020) et al. suggest, openness may help people to perceive lower costs of migration and foster adaptation to the new environment.

Due to the focus on the supply side and data availability, receiving-country characteristics cannot be considered in the analysis. Nevertheless, studies in education selectivity indicates that Chinese positively self-select (Feliciano 2005; Liang and Morooka 2004). However, younger cohorts have been socialized in an unprecedented context. The gradual expansion of markets after reformation led to an increase of the long-term importance of human capital (Zhou 2014), which could generate a negative selection by skills. Returns to education have risen from 2 percent net increase in income in 1978 to 7.7 percent in 2005 by each additional year of schooling (Hannum et al. 2019; Jansen and Wu

2012). The future in China is increasingly becoming more attractive relative to potential receiving countries. At the same time, this is consistent with the prediction from the new household economics of labor (Stark and Bloom 1985), where students with lower skills will expect to migrate in order to avoid competition and risk of failure. Student do not compare destination-origin countries, but themselves with others around them. Thus, both negative and positive selection by skills are theoretically plausible, which yields to the following hypotheses:

Hypothesis 1A: The higher students' cognitive skills, the higher the expectation of migrating.
Hypothesis 1B: The higher students' cognitive skills, the lower the expectation of migrating.

Hypothesis 2A: The higher students' non-cognitive skills, the higher the expectation of migrating.
Hypothesis 2B: The higher students' non-cognitive skills, the lower the expectation of migrating.

Health selectivity

One of the most striking findings in migration studies is the Hispanic health paradox in the United States: despite their lower socioeconomic status, Hispanics exhibit better health than American non-Hispanic whites. The immigrant selectivity effect is one of the explanations to this differential (Feliciano 2020; Jasso et al. 2004; Riosmena, Kuhn, and Jochem 2017; Riosmena, Wong, and Palloni 2013), where the health of migrants has shown to be better than that of nonimmigrants left behind.

According to Jasso et al. (2004), health selectivity is explained in several ways. First, health enhances earnings capacity. Healthier individuals will earn more from migration. Second, the self-selection by health will be stronger when the cost of migration is greater. Thus, when sending and receiving countries are distant geographic or culturally, the health self-selection might be stronger. In the case of Chinese migrants, the language barrier is a cultural difference that could increase the selectivity by health status. In addition, migration not only might entail better physical health but psychological well-being. Besides social and monetary costs, the process of migration is stressful and requires abilities to withstand stress (Feliciano 2020; Fu Keung Wong and He Xue Song 2008). Migrants often encounter

substandard working conditions and stringent jobs (Lai and Fong 2020; Liu and Olivos 2019), which demands a better physical and psychological health status.

Although scholars have argued that if migration offers higher quality health care or at a lower cost, it will incentive migration of less healthy people, studies support a positive health selectivity of migrants (Jasso et al. 2004; Riosmena et al. 2017, 2013). When comparing non-migrant Mexicans and those returned from the United States, Riosmena et al. (2013) show that the chances of reporting hypertension and poor global health are lower for migrants compare to non-migrant. They are also 3 cm taller than non-migrant. In China, empirical evidence supports the heathy migrant hypothesis for internal migration (Chen 2011; Lu and Qin 2014). Therefore, the higher cost of long-distance migration, formal health screenings, and more disruption of social networks might lead to an even stronger selection of healthier migrants in the case of international migration (Lu and Qin 2014). In this regard, recent evidence (Riosmena et al. 2017) suggests a strong and substantial international migration self-selection of Chinese in smoking behavior when comparing with nonimmigrant peers prior to migration. Therefore, to the extent that Chinese youth are aware of health constraints, we might observe an effect on their expectation. This frame yields to the following hypotheses:

Hypothesis 3: Students' health status has a positive effect on the expectation of migration.

Hypothesis 4: Students' psychological well-being has a positive effect on the expectation of migration.

Cultural selectivity

In the culture and agency relationship, cultural sociologists argue that culture motivates and makes sense of action in a dual process (Lizardo et al. 2016; Vaisey 2009; Vaisey and Lizardo 2010). On one side, actors are driven by internalized dispositions but, on the other, they can deliberate and justify through cultural elements. The dual process integrates cultural dispositions (Bourdieu 1979) and culture as a toolkit (Swidler 1986) theories. The relationship between culture and migration could also be understood from this perspective. Worldviews, meanings, and dispositions could lead to decide to migrate, but they could also

emerge after migration as sense-making. In the former, individuals are culturally selected, and, in the second, culture is shaped by the experience of migration. Thus, following the motivational side of the model, migration expectations could be motivated - or selected - by cultural elements.

In this regard, recent studies (He and Gerber 2020; Hofmann 2014) have examined cultural selectivity by identifying self-selection into migration by gender ideology. More egalitarian women tend to migrate in cultures where traditional gender roles are predominant (Hofmann 2014). Migration is motivated by a mismatch between egalitarian gender beliefs and objective opportunities. More broadly, this argument suggests that when societies are framed as unjust and non-meritocratic, aspirations and expectations for leaving the country and seeking new opportunities will emerge. Therefore, there might be selectivity based on the perception of how fair is the society. Even if in China there are shared beliefs about merit, there will be individual-level heterogeneity because private cultures vary in the extent that they embrace public culture (He and Gerber 2020; Olivos 2020; Sewell 2005).

Thus, I argue that children of parents who believe in a strong relationship between effort and skills have fewer incentives to develop migration expectations. Parental beliefs exert a large influence on children's beliefs, attitudes, and behaviors. As Frye argues: "*familiar slogan can enter into cultural models and shape individual cognition*" (2012:1592). This effect might apply even for low-status groups who develop meritocratic beliefs as a psychological mechanism of defense (Jost, Banaji, and Nosek 2004). Therefore, the following hypothesize is stated:

> **Hypothesis 5:** Children of parents who believe in merit as a predictor of success are less likely to hold migration expectations in comparison to those with parents that believe otherwise.

Data and Method

Data

I analyze data from the first and second waves of the China Educational Panel Survey (CEPS). The sample comprises 10,279 seventh graders surveyed in 2013-2014 with a follow-up in eighth grade. This survey is a longitudinal, large-scale, probabilistic, and representative sample of seventh and ninth graders from 438 classes at 112 schools in 28 counties in

mainland China. Of the 10,279 seventh graders in the baseline, 9,440 students were surveyed in the follow-up in eighth grade. Total attrition is low (8.16 percent of the original sample) and, therefore, it is assumed at random. CEPS includes questionnaires to students, parents, teachers, and school principals. The former two are used in this analysis.

Dependent Variable

Expectation of international migration. Students were asked "*Where do you most expect to live and work when you grow up?*[2]." The questions are not completely comparable between waves, due to changes in their categories. In the first wave, five categories where provided: (1) in a rural area, (2) in medium or small cities, (3) in big cities, such as Beijing/Shanghai/Guangzhou, (4) abroad, (5) I do not care. In contrast, in the second measurement two categories where added: (1) in rural area, (2) in towns/counties, (3) in medium or small cities, (4) In capital cities, (5) Beijing/Shanghai/Guangzhou, (6) abroad, (7) I do not care. Therefore, binary variables were created where 1 represents "Migrate abroad" and 0 "Stay." Initially, "I do not care" answers were treated as missing values. Further robustness checks provide alternative specifications of the dependent variable[3].

Independent Variables

Cognitive skills. CEPS includes a test assessing students' aptitudes over 22 items on reasoning and problem-solving, which must be answered in up to 15 minutes (Zhao et al. 2017). The test is unrelated to the school curriculum. To facilitate the comparability across students, scores were estimated using an item response theory model and z-scores. Instruments measuring cognitive skills are scarce, which makes CEPS a unique resource to test the hypotheses.

Parental beliefs about hard work and talent. Classical definitions of meritocratic beliefs consider individual motivation and abilities as predictors of success (Young 1958). However, both components have different implications in the explanation of achievement.

[2] Surveys face the challenge of avoiding measurement error. Asking about expecting "to live or work" enables us to avoid the bias of the specific connotation of the word "migration" (Carling and Schewel 2018). This bias is highly relevant in China, where migrants perceive and experience a high level of stigmatization (Li et al. 2007; Wang et al. 2010).

[3] CEPS do not include the specific information of province or city where the survey was applied due to ethical considerations. Instead, unspecific variables of the location of the survey and location of the school according to the principal are reported. With that information, it is impossible to identify rural-to-urban migration accurately.

Paradoxically, talents are considered as the non-meritocratic component of meritocracy. They are highly dependent on family origin and genetic endowments. Thus, studies in meritocratic beliefs have a focus on individual motivation as the true meritocratic component of meritocracy (Bucca 2016; Mijs 2019). In this study, we consider both measurements independently as worldviews. For beliefs about payoffs of hard work, respondents were asked "*Do you think that hard work affects student's academic achievement?*", where 1 signified "yes" and 0 "No". Similarly, the attributional belief of talent was measured asking "*Do you believe that talent and capability affect student's academic achievement?*".

Students' educational expectations. Students were asked "What is the highest level of education you expect yourself to receive?". Following other sociological studies in educational expectations (Andrew and Flashman 2017; Andrew and Hauser 2011; Karlson 2015), I transform this variable in a continuous indicator from 0 (drop out) to 13 (Doctor degree). Analyses were replicated considering a binary indicator as a robustness check.

Index of motivation. Motivation is measured based on the average of three items about motivation in the previous grade. Students declared their agreement with three statements in a scale from 1 to 4, where 1 represents strongly disagree and 4 strongly agree: (1) I would try my best to go to school even if I was not feeling very well or I had other reasons to stay at home, (2) I would try my best to finish even the homework I dislike, (3) I would try my best to finish my homework, even if it would take me quite a long time. Similar indicators have been used to measure non-cognitive skills in the adult population in China (Tam and Wu 2013). Internal consistency is supported for both wave 1 (α=.69) and wave 2 (α=.81). The higher the score, the higher the motivation of the student.

Openness. The indicator of openness comes from the parent's questionnaire. It provides a strong test of the non-cognitive hypothesis because it combines both self-perceived indicators (educational expectations and motivation) and an indicator observed by parents, as in this case. Parents were asked whether the child fits the description of "*curious about new stuff*." They answered on a scale ranging from 1 "not fit at all" to 4 "exactly fit." The extent that their child fits the description is the level of openness to experience as perceived by parents.

Psychological well-being. Five self-reported psychological states were averaged. Students were asked "Do you have the feelings below in the last seven days?". The items included were (1) feeling blue, (2) depressed, (3) unhappy, (4) not enjoying life, and (5) sad.

In both waves, the indicators show a high level of internal consistency (α=.85 and α=.91, respectively). Each item was rated on a scale from 1 "never" to 5 "always." Values were revers for a more intuitive interpretation. The higher the score, the better students' psychological well-being.

Self-perceived health status. Students report their perception of their own general health condition at present on a 5-categories scale, ranging from 1 "very poor" to "very good."

Descriptive statistics of these variables are reported in Table 1.

Table 1. Descriptive statistics

Variable		Mean	Std. Dev.	Min	Max
Expectation of international migration	Overall	0.19	0.40	0	1
	Between		0.34	0	1
	Within		0.21	0	1
Cognitive skills	Overall	0.14	0.87	-3	2
	Between		0.77	-2	2
	Within		0.41	-2	2
Parental beliefs about hard work	Overall	0.86	0.35	0	1
	Between		0.29	0	1
	Within		0.22	0	1
Parental beliefs about talent	Overall	0.38	0.48	0	1
	Between		0.39	0	1
	Within		0.29	0	1
Index of motivation	Overall	3.28	0.71	1	4
	Between		0.57	1	4
	Within		0.44	2	5
Openness	Overall	3.37	.712	1	4
	Between		.598	1	5
	Within		.416	2	5
Psychological well-being	Overall	2.09	0.86	1	5
	Between		0.74	1	5
	Within		0.46	0	4
Self-perceived health status	Overall	3.98	0.93	1	5
	Between		0.79	1	5
	Within		0.51	2	6
Educational expectations	Overall	8.63	2.81	0	13
	Between		2.51	0	13
	Within		1.43	2	15

Control

The statistical models are controlled for different potential time-variant confounders of the investigated relationships. All the controls are theoretically driven. First, a set of variables is aimed to control for different indicators of family and parent-child relationships. Studies in international migration suggest that family relationships could encourage or discourage mobility (e.g. Cairns 2014; Liu and Olivos 2019; Mata-Codesal 2015). At the same time, family members are significant others that could also affect children's well-being (Holder and Coleman 2009; Huebner 1991), motivation (Dornbusch 1989), and educational expectations (Carolan and Wasserman 2015; Roth 2017). Particularly, I included (1) parental educational expectations, (2) frequency of parents giving instruction on your homework, (3) a parental strictness index [4], (4) mother-child communication, (5) father-child communication, (6) an index of family activities[5], and (7) parents confidence in child's future.

Second, recent evidence suggests that students' educational expectations are negatively affected by family economic shocks (Renzulli and Barr 2017). At the same time, expectations of migration are also highly conditioned by their conditions of possibility (Carling and Schewel 2018). Thus, changes in family income also could impact future expectations of migration. Therefore, the logarithm of pocket money received by the children is used as a proxy. I argue that the money that parents give to children might capture an important part of the economic shocks of the family. CEPS does not include a measurement of household income.

Third, different variables are aimed to capture educational achievement. The academic performance of students could be related to both educational expectations and expectations of migration. Bayesian Learning Theory (Morgan 2005) suggests that students could update their expectations based on the information provided by their educational performance. Although small, the evidence supports the effect of grades on educational expectations (Andrew and Hauser 2011; Carolan 2017). I include the percentile rank in mathematics at the class-level based on mid-term exams, declared current difficulty in Mathematics, Chinese and English, and parental subjective assessment of student's performance. Finally, students' school integration and school environment are controlled, considering its effect on individual-level characteristics and migration expectations, as

[4] Average of six items. For different actions, students were asked "Do your parents care and are they strict with you about the following." They included: (1) your homework and examination; (2) your behavior at school; (3) whom you make friends with; (4) your dress style; (5) time you spend on the internet; (6) and time you spend on watching TV.

[5] Average of the frequency in which family members did the following activities with this child over the last year: (1) having dinner; (2) visiting museums, zoos, science museums; and (3) going out to watch movies, shows, sports games. Categories range from 1 "never" to 6 "more than once a week."

suggested by Figure 1. The agreement with each of the following three statements was included: (1) I feel close to people in this school, (2) I feel bored in this school, and (3) I hope that I could transfer to another school.

Analytical strategy

In this article, the interest is on the probability of expecting to migrate. I use conditional logistic regression, which is a fixed-effect longitudinal model for dichotomous dependent variables that control for any unobserved student-level heterogeneity.

$$\Pr(Y_{it} = 1) = F(B_i + B_1 X'_i + B_2 Z_i + \tau_t + \varepsilon_i), \quad (1)$$

where Y_{it} is the expectation of migrating of student i at time t. F represents the cumulative logistic distribution function. X' is a vector containing the variables of interest in this study. Z is a vector of individual time-variant characteristics that have been shown to be associated with students' expectations. τ is a wave indicator that controls for unmeasured factors associated with time (time-invariant). Coefficients are identified only using those students with changes in their expectations over the two waves of the study. Thus, students who did not expect to migrate or expected to migrate in both waves were not used to estimate the coefficients. Therefore, these results might not be generalizable to all the students in China.

Results

A Hausman test was conducted to decide whether to use random- or fixed-effects models (Table 1S in the supplementary material). This test indicates whether the between-relationships are different from the within-relationships. In this case, the difference is significant ($X^2(25) = 164.19$; $p<.001$). Therefore, and since the hypotheses refer to within relationships, I report conditional logistic fixed-effect models to control for time-invariant confounders. Table 5S, in the supplementary material, reports the results using fixed-effect models, which are consistent with the findings from conditional logistic fixed-effect models[6].

[6] Unlike logistic regressions, dependent variable errors only cause imprecision but not bias in linear regressions (Hausman 2001). Thus, consistent results between both models suggest robustness of the results produced by biases, such as misclassification in the binary outcome.

Table 2 reports the main results of the study. Model 1 shows the effects of the variables of interest without time-variant controls. They are only controlled by time-invariant characteristics due to fixed-effects. Model 2 incorporates the control variables describe in the previous section. Both cognitive skills and students' educational expectations have significant effects on the expectations of international migration. Coefficients and standard errors changed slightly these observed confounders in Model 2, suggesting the robustness of the effects. An increase of cognitive skills in one unit between wave 1 and wave 2 decreases the probability of expecting to migrate abroad by a factor of 0.73 ($p<0.01$), as suggested by odds ratios in Model 3. In contrast, an increase in student educational expectations positively affects the likelihood of hold expectations of migration. An increase of one year of expected education, increase the chances of holding expectations by a factor of 1.11 ($p<0.01$). Changes in students' openness (OR=1.22, $p<0.05$) and in the index of motivation (OR=1.23, $p<0.05$) also have positive effects on migration expectation.

Predicted probabilities cannot be used with fixed-effect models. However, average (semi) elasticities have been proposed as an alternative (Kitazawa 2012)[7]. Thus, an increase of one unit in the cognitive skills scale, on average, the probability of expecting to migrated increases 13 percent. Contrariwise, when students' educational expectation increases one year, the probability of holding expectations of international migration goes up by five percent. In model 2, the index of motivation shows statistical significance after controlling by time-variant confounders. It suggests that the increase of one unit in the index increases the probability of expecting to migrate abroad by five percent. In addition, the effect of openness is statistically significant and consistent with the effect of educational expectations. The higher students' openness according to their parents, the higher is the probability of expecting to migrate. One unit in the scale increases the probabilities of migration expectation by 10 percent. Similarly, the exploratory interactions between cognitive and non-cognitive skills do not show statistical significance (models available under request). Noteworthy, the effect of educational expectations on migration expectations is net of openness. As Cebolla-Boado and Nuhoğlu (2018) pointed out, both kinds of expectations are confounded by an adventurous individual trait. Therefore, it might be captured by the indicator of openness to experience. Overall, the results support hypothesis 1B of a negative effect of cognitive skills and hypothesis 2A of a positive effect of non-cognitive skills: "brain gain" and "hearts drain".

[7] The user-written Stata module aextlogit (Santos Silva 2020) was used to compute average elasticities for fixed-effect logit models.

In order to compare the effect between cognitive and non-cognitive skills, I used the within-wave decile rank of the cognitive and non-cognitive indicators. This procedure standardized measurement scale and distributions of variables. Average elasticities for these variables are reported in Model 5. In increase of one decile on cognitive skills reduces the probability of expecting migration in 4 percent, while for non-cognitive skills it ranges from 3 to 6. Therefore, the effect of non-cognitive skills is at least comparable to the effect of cognitive skills.

Regarding cultural and health selection, there are no significant differences between those students who expect to migrate and those who do not. In addition, to evaluate potential multicollinearity between key predictors, a matrix of pairwise correlations is reported in Table 2S of the supplementary material. The correlations are relatively low.

The non-significance of the self-perceived health status could be explained by an error of measurement or subjective evaluations that do not reflect changes in students' objective health conditions. To evaluate this potential bias, Table 2S in the supplementary material reports the results for two alternative indicators. First, CEPS lists certain disorders and parents declare whether their children have some of those conditions (vision disorders, hearing disorders, extremity disabled, language disorders, mental disorders, attention deficit hyperactivity disorder, epilepsy, others). I used a binary indicator where 1 represents those parents that at least listed one condition. Second, parents described the general health condition of the child at present on a scale from 1 "very poor" to 5 "very good." For both indicators, there is no significant effect on the migration expectation, which is consistent with the original finding.

Table 2. Conditional logistic models for expectation of migrating.

	(1)	(2)	(3)	(4)	(5)
VARIABLES	B	B	OR	E	E
Cognitive skills	-0.29*	-0.32**	0.73**	-0.16**	-0.04*
	(0.11)	(0.11)	(0.08)	(0.06)	(0.02)
Parental belief about hard work	-0.18	-0.23	0.79	-0.12	-0.11
	(0.26)	(0.25)	(0.20)	(0.13)	(0.13)
Parental beliefs about talents	0.08	0.11	1.12	0.06	0.06
	(0.15)	(0.15)	(0.17)	(0.08)	(0.08)
Students educational expectations	0.12***	0.10**	1.11**	0.05**	0.06***
	(0.03)	(0.04)	(0.04)	(0.02)	(0.02)
Index of students' motivation	0.2	0.21*	1.23*	0.10*	0.03*
	(0.11)	(0.11)	(0.13)	(0.05)	(0.01)
Openness	0.20*	0.20*	1.22*	0.10*	0.03*

	(0.09)	(0.09)	(0.11)	(0.05)	(0.01)
Psychological well-being	-0.07	-0.04	0.96	-0.02	-0.02
	(0.09)	(0.10)	(0.10)	(0.05)	(0.05)
Self-perceived health status	-0.03	-0.03	0.97	-0.02	-0.02
	(0.09)	(0.09)	(0.09)	(0.05)	(0.05)
Observations	2002	2002	2002	2002	2002
Students	1001	1001	1001	1001	1001
Pseudo-R2	0.047	0.078	0.078	0.078	0.078
Controls	NO	YES	YES	YES	YES

Note: *** p<0.001, ** p<0.01, * p<0.05. Clustered standard errors at school-level. Weighted statistics.

Explaining returns to cognitive and non-cognitive skills

The striking opposite effects of cognitive and non-cognitive skills were further explored. The theoretical rationale considers students as cognizant agents that make sense of the returns to their skills in their immediate social environment, shaping their imagined futures. However, we do not really know whether the returns to cognitive and non-cognitive skills are different. Therefore, I estimated pairwise correlations between skills indicators and class-rank in Mathematics and Chinese. The analysis assumes that students are aware of these associations and make-sense of them. A long tradition of cognitive sociology has developed the idea that social environments influence individuals' understanding of how the world works (Cerulo 2010; DiMaggio 1993; Lizardo and Strand 2010; Zerubel 1997). Arguing that students are fully aware of the returns to skills in the labor market could be unrealistic. Instead, grades at school are the rewards in the educational tournament and could be conceptualized as returns in the closest social environment. As Ruane and Cerulo (2012) explain, conventional wisdom is built upon circumstantial individualistic experience and specific social relations. People usually guess about causal relations (skills -> returns) before they ever seen a system in operation (Sloman 2005). What student observed at school could be available heuristics (Kahneman 2003) to infer further returns in the labor market and the society. Table 3 shows that cognitive skills are positive and strongly associated with grades in Mathematics, Chinese, and English. It is consistent across waves. Nevertheless, the associations of non-cognitive skills are more inconsistent. In the first wave, grade ranks are not associated with students' motivation nor openness. The same is suggested in wave 2

for openness. Only educational expectations are consistently associated with performance in Mathematics and Chinese.

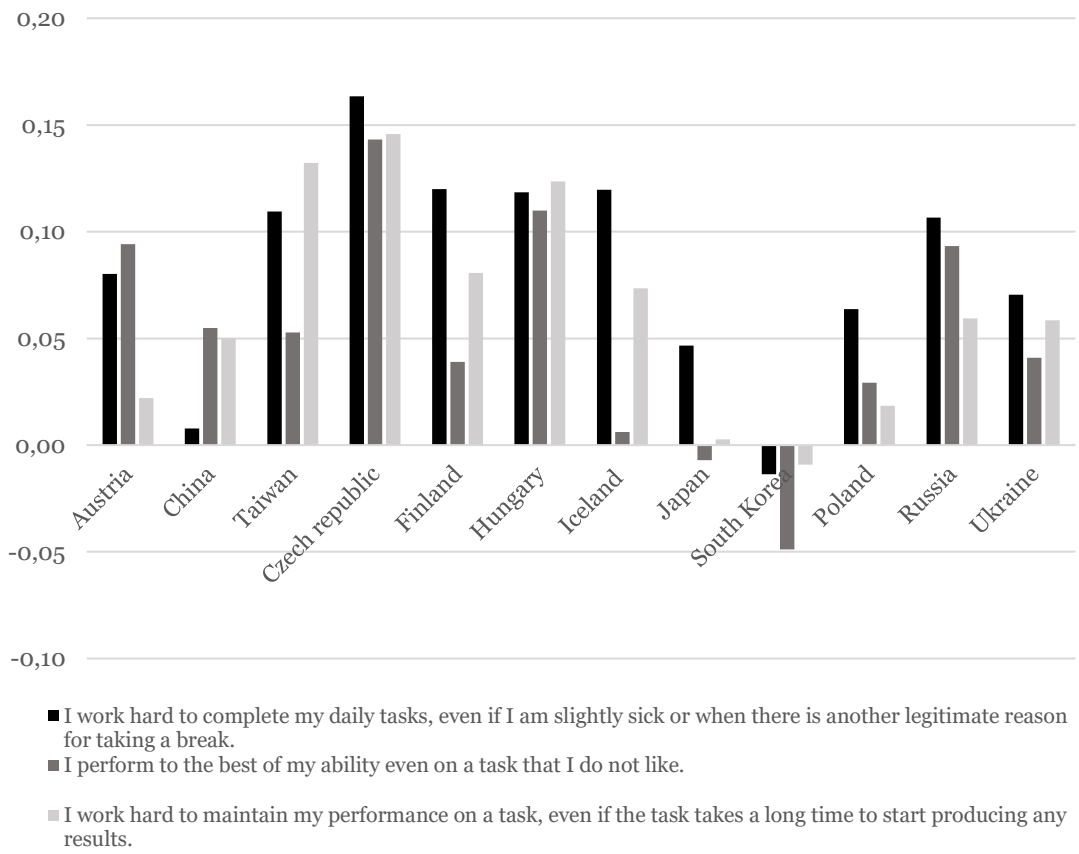
Table 3. Pairwise correlations between skills indicators and class-rank by wave (standardized variables).

		Subject	
		Mathematics	Chinese
Wave 1			
	Cognitive skills	0.304*	0.209*
	Students educational expectations	0.228*	0.148*
	Index of students' motivation	0.100	0.104
	Openness	0.031	0.038
Wave 2			
	Cognitive skills	0.408*	0.334*
	Students educational expectations	0.292*	0.247*
	Index of students' motivation	0.205*	0.184*
	Openness	0.041	0.025

Note: *** p<0.001.

The assumption that students make-sense of their immediate environment could also be relaxed. If adolescents are also aware of how society rewards different skills, the returns to non-cognitive skills might be low in the Chinese labor market. I use data from the 2009 International Social Survey Project to evaluate returns to non-cognitive skills in a benchmark with 11 countries from different continents. The survey included three indicators that match the item of the Index of Motivation. The pairwise correlations between these indicators and the status attainment of respondents using ISEI (International Socio-Economic Index of occupational status) are reported in Figure 2 by countries with measurements available. Overall, the association between non-cognitive skills and status attainment is lower in China in comparison to other countries, except for Japan and South Korea.

Figure 2. Pairwise correlations between ISEI and non-cognitive skills by country.



Note: Weighted statistics.

Therefore, if we consider returns at school and returns at the society, students with higher non-cognitive skills might likely form expectations of international migration as a strategy to overcome the low pay-offs.

Robustness checks

One of the possible criticisms of the estimated coefficients is omitted time-variant confounders. Although models are controlled by time-invariant confounders due to the use of fixed effects, certain unobserved time-variant variables could still bias the estimations. For example, having traveled between wave 1 and wave 2 could be associated with both expectations of migration and educational expectations, or another of the key predictors. When this variable is omitted, this confounder could bias the educational expectations coefficient. I estimate E-values for each of the significant predictors as proposed by van der Weele and Ding (2017) in epidemiology. This coefficient indicates the minimum association on the risk ratio scale needed between an unmeasured confounder and both dependent and

independent variables to fully explain away an effect. This estimate is only available for binary treatments. Therefore, I recoded cognitive skills and educational expectations as dichotomous indicators. To generate groups of similar size, I used 0 and 8 years as cut-off points in cognitive skills and students' educational expectations, respectively. For openness and the index of motivation, the cut-off point is 3. The main effects are confirmed, which indicates robustness against the different specifications of the independent variables. For each coefficient, Figure 1S in the supplementary material shows the join relationship between the two sensitivity parameters that could potentially explain away the estimated effect. In the case of cognitive skills (Panel A), a confounder that affects this variable and the expectation of international migration by a factor of 1.83 could potentially bias the estimated effect. Panel B suggests that this effect should be even higher (RR=2.01). Panel C indicates that a confounder of a risk ratio of 1.69 could bias the estimation, while Panel D suggests 1.57 for openness. These effects could be considered large in social sciences[8], which provides strong evidence against the possibility of omitted time-variant confounders.

Another potential bias of the results could be related to the operationalization of the dependent variable. As stated, the original question of expectations in CEPS includes an "I do not care" category. In the main analyses, this category was declared as missing. It is an indicator of indifference about the future. I estimated additional models with a binary indicator where 1 represents "I don't care" and 0 "any other option". Table 3 shows these results. The findings indicate that the formation of expectations depends upon two factors. First, children of parents who believe that talents lead to success are 27 percent more likely to be indifferent regarding a specific place where to live in the future. The effect of parental beliefs suggests a selection into having or not a certain expectation about the future. Instead of reducing the likelihood of expecting to migrate, believing in a just educational system makes the place of living irrelevant. In contrast, one additional unit in the scale of motivation decreases the probability of being indifferent by 36 percent. A possible interpretation is a relationship between motivation and human agency. More motivated individuals who are rewarded by their effort tend to increase their beliefs about their own

[8] The use of risk ratios is not common in the social sciences. However, some studies provide these estimations that we could use as a benchmark. For instance: the migrant status increases the probability of declining health by 1.2 times compared to native-born (Bruce Newbold 2005); Mexican Americans have 1.1 times the risk of dying compared to non-Hispanic whites (Wei et al. 1996); a couple married in a religious ceremony face a 30% lower risk (RR = .70) of marital dissolution than those married in other ceremonies (Vaaler, Ellison, and Powers 2009). Downer et al. studied the relationship between the age of migration and cognitive impairment. They found that only late-life migrant women (>50) have a risk for cognitive impairment of 1.28 compared to U.S-born women. Regarding leaving the parental home in China (Ting and Chiu 2002), individuals living with relatives were 1.95 times more likely to move out from the parental home than those living without them; those who have received a pay raise are 1.31 times more likely than those who did not.

control over their lives. While individuals whose motivation is non-rewarded tend to believe that their lives are controlled by external forces (Twenge, Zhang, and Im 2004). Either way, rewarded or non-rewarded, motivation contributes to the formation of beliefs about their lives and constraints. Therefore, students who score higher in the index of motivation are more likely to hold an expectation about the future.

Table 3. Conditional logistic models for indifference.

	(2)	(3)	(4)
VARIABLES	B	OR	E
Cognitive skills	0.06	1.07	0.06
	(0.13)	(0.14)	(0.12)
Parental belief about hard work	0.04	1.04	0.03
	(0.22)	(0.23)	(0.20)
Parental beliefs about talent	0.30*	1.35*	0.27*
	(0.13)	(0.17)	(0.11)
Students educational expectations	-0.04	0.97	-0.03
	(0.04)	(0.04)	(0.04)
Index of students' motivation	-0.40***	0.67***	-0.36***
	(0.12)	(0.08)	(0.11)
Openness	0.22	1.25	0.20
	(0.13)	(0.16)	(0.11)
Psychological well-being	0.07	1.07	0.06
	(0.10)	(0.11)	(0.09)
Self-perceived health status	-0.00	1.00	-0.00
	(0.10)	(0.10)	(0.09)
Observations	7642	7642	7642
Students	3821	3821	3821
Pseudo-R2	0.071	0. 071	0. 071

Note: *** p<0.001, ** p<0.01, * p<0.05. All the controls variables included. Clustered standard errors at school-level. Weighted statistics.

Additionally, an alternative indicator of migration expectation was used as a robustness check. Instead of declaring "I do not care" as missing, they are included with the expectation of living anywhere within China. Thus, the conditional logit model uses a binary indicator where 1 indicates "expecting to migrate abroad" and 0 "expecting living in China or indifference." Table 4S in the supplementary material shows that the effects of cognitive and non-cognitive skills are consistent with the main findings.

In sum, the results support two forms of immigrant selectivity in opposite directions. While cognitive skills reduce the probability of expecting to migrate, non-cognitive skills increase the expectation. However, there is no evidence supporting cultural or health selection. Beliefs about the relationship between talent and success only predict the probability of being indifferent about the place of living in the future.

Conclusion

Not only migration is non-random, but also who aspire, wish, or expect to migrate. This study aimed to examine the determinants of the selectivity into this subjective component of the two-stage process of migration. The results suggest a twofold selectivity. Students with higher cognitive skills expect to stay, while students with higher non-cognitive skills expect to migrate. Three indicators of non-cognitive skills showed significant and consistent results: motivation, educational expectations, and openness. The effect of changes on non-cognitive skills is comparable to the effect of equivalent changes in cognitive skills, which is consistent with findings in labor market and behavioral outcomes (Heckman et al. 2006). Health and cultural selection are not supported.

The negative effect of cognitive skills provides insightful information to the discussion of "brain drain" in China. Studies in migration selectivity indicate that education positively self-select emigration in China (Feliciano 2005; Liang and Morooka 2004). Nevertheless, the finding of this study indicates that students with higher cognitive skills are more likely to expect to stay in China. This change could be explained by the rapid development of China, where new generations are encountering high returns to human capital in the labor market, differentiating previous waves of Chinese international migrants and potential future migrants. Thus, China could join the turned from "brain drain" to "brain gain" that has been followed by the Republic of Korea and Taiwan (Zweig 2006). At the same time, the fierce competition in the Chinese educational system (Hannum et al. 2019) could explain the negative effect, since migration is a decision to avoid risk of failure according to the new economics of migration (Stark and Bloom 1985). In addition, the measurement of expectation used in this study cannot disentangle expectations of temporary from permanent migration. Therefore, the "brain gain" could be even stronger in the case that return migration is positively selected by skills. An alternative explanation that conciliates the findings with previous studies is that they do not untangle the selection by cognitive and

non-cognitive skills, and the selection by education could capture mainly the positive selection of non-cognitive skills. Hence, this study is evidence of the importance of examining both forms of selection separately and considering their relative contribution to the human capital self-selection.

In contrast to "brain gain", this study is consistent with what has been termed "heart drain" (Polavieja et al. 2018). New waves of migration could be characterized by higher non-cognitive skills in comparison to those co-nationals who stay in the country. It could have multiple implications for the Chinese labor market. For instance, the migration of people open to new experiences could weaken the production of innovation, entrepreneurship, or the creative industry. Currently, to the best of my knowledge, there are no estimations of returns to non-cognitive skills in the Chinese labor market. China could anticipate a future "heart drain" of this cohort by boosting returns to non-cognitive skills.

Health and cultural selection were not supported by the literature. A possible explanation is that young Chinese cannot visualize the health costs of migration. In addition, CEPS only provides declared indicators of health conditions that could produce measurement bias. Declared measurements depend on the previous diagnosis, which is contingent on health care access. Further studies could incorporate biomarkers, as suggested by Riosmena et al. (2013). Regarding culture, we measure only two specific kinds of parental beliefs that represent a small fraction of the Chinese belief system (Boutyline and Vaisey 2017; Converse 2006). Meanings of migration or staying, or gender ideology (He and Gerber 2020; Hofmann 2014) could be other cultural factors explaining migration expectations. Alternatively, dual-process models of culture indicate that culture explains the action to the extent that it is internalized by the agent (Lizardo et al. 2016; Vaisey 2009). In this case, beliefs are declared narratives and not necessarily the students' disposition. Although I rule out belief-as-rationalization effects (DiMaggio 1993; Swidler 1986) using longitudinal data, extensions of this study might address the adoption of public culture by private culture through more sophisticated measurements of cultural dispositions (e.g. Moore 2017). Finally, the selection into migration expectation does not imply that there could be a direct selection into migration. It is particularly relevant in the case of health. For instance, international migration depends upon formal screening of health status. In that case, if potential migrants are not aware of a certain medical condition, they could be selected just before migration through formal requirements. In that case, health does not affect the expectation, but it has a direct effect on the final migration outcome. In the future,

CEPS also will make available information about long-term outcomes, which could include migration.

The theoretical framework considered individual-level characteristics as determinants of migration expectations. In addition, in the two-step approach, environmental conditions also play a role in explaining the formation of expectations. Although I controlled by observed time-variant and unobserved time-invariant characteristics at that level, future studies might consider selectivity due to social networks, schools, and communities.

Overall, this study considered migration as a two-stage process, including both expectations and final migration as related, but not interchangeable components. Therefore, migration studies might consider selectivity at different levels, including the development of the socio-psychological mechanisms that drive migration.

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Supplementary Material

Table 1S. Comparison between coefficients between fixed and random effects models.

	Fixed (b)	Random (B)	Difference (b-B)
Cognitive skills	-0.199	0.049	-0.248
Parental beliefs about hard work	0.004	0.103	-0.100
Parental beliefs about skills	-0.020	0.157	-0.176
Educational expectations	0.135	0.258	-0.123
Index of students' motivation	0.121	-0.039	0.161
Openness	0.162	0.182	-0.020
Psychological well-being	-0.101	-0.142	0.041
Self-perceived health status	-0.007	0.009	-0.016
Parental educational expectations	-0.001	0.004	-0.004
Logarithm of pocket money	-0.045	0.026	-0.070
Frequency of parents giving instruction on your homework	-0.080	0.031	-0.111
Parental strictness index	0.048	-0.045	0.092
Mother-child communication	0.085	0.144	-0.060
Father-child communication	0.054	-0.140	0.194
Index of family activities	-0.106	0.263	-0.369
Parents confidence in child's future	-0.007	-0.001	-0.006
Difficulty in Mathematics	0.162	0.042	0.120
Difficulty in Chinese	-0.106	-0.041	-0.065
Difficulty in English	0.050	0.330	-0.280
parental subjective assessment	-0.001	-0.046	0.046
I feel close to people in this school	0.075	-0.010	0.086
I feel bored in this school	-0.108	-0.046	-0.062
I hope that I could transfer to another school	0.338	0.304	0.034
Percentile rank in mathematics (class)	-0.528	-0.670	0.142

Table 2S. Pairwise correlation coefficients between variables of interests.

	CS	PBHW	PBS	SEE	IOE	O	PW	SPH
CS	1							
PBHW	0.16*	1						
PBS	0.12*	0.09	1					
SEE	0.16*	0.07	0.06	1				
IOE	0.11*	0.01	0.04	0.15*	1			
O	0.06	0.07	0.02	0.11*	0.11*			
PW	0.05	0.04	0.04	0.09	0.17*	0.08		
SPH	0.03	0.01	0.02	0.05	0.13*	0.09	0.35*	1

Note: *p<.001; CS = cognitive skills, PBHW = Parental belief about hard work, PBS = Parental belief about talent, SEE = Student's educational expectation, IOE = Index of Motivation, O = Openness, PW = Psychological well-being, SPH=Self-perceived health. Bonferroni-adjusted significance level used. Weighted statistics.

Table 3S. Conditional logistic models for migration expectation with alternatives indicators of student's health.

VARIABLES	(1) OR	(2) OR
Cognitive skills	0.68***	0.73**
	(0.07)	(0.08)
Parental belief about hard work	0.77	0.80
	(0.20)	(0.21)
Parental beliefs about talents	1.07	1.13
	(0.17)	(0.17)
Students educational expectations	1.11**	1.10*
	(0.04)	(0.04)
Index of students' motivation	1.27*	1.24*
	(0.13)	(0.13)
Openness	1.20	1.19
	(0.11)	(0.11)
Psychological well-being	0.95	0.97
	(0.10)	(0.10)
Health condition	1.18	
	(0.38)	
Perceived student's health status by parents		1.11
		(0.11)
Observations	1,942	1,976
Students	821	838
Pseudo-R2	0.085	0.076

Note: *** p<0.001, ** p<0.01, * p<0.05. All the control variables are included. Clustered standard errors at school-level. Weighted statistics.

Table 4S. Conditional logistic models for indifference.

VARIABLES	(1) B	(2) OR	(3) E
Cognitive skills	-0.31**	0.73**	-0.26**
	(0.10)	(0.07)	(0.09)
Parental belief about hard work	-0.22	0.80	-0.19
	(0.25)	(0.20)	(0.21)
Parental beliefs about talents	0.07	1.07	0.06
	(0.16)	(0.17)	(0.13)
Students educational expectations	0.10**	1.11**	0.08**
	(0.04)	(0.04)	(0.03)
Index of students' motivation	0.21*	1.23*	0.18*
	(0.10)	(0.13)	(0.09)
Openness	0.20*	1.23*	0.17*
	(0.09)	(0.11)	(0.08)
Psychological well-being	-0.05	0.95	-0.04
	(0.08)	(0.08)	(0.07)
Self-perceived health status	-0.02	0.98	-0.02
	(0.09)	(0.09)	(0.08)
Observations	2098	2098	2098
Students	1049	1049	1049
Pseudo-R2	0.072	0.072	0.072

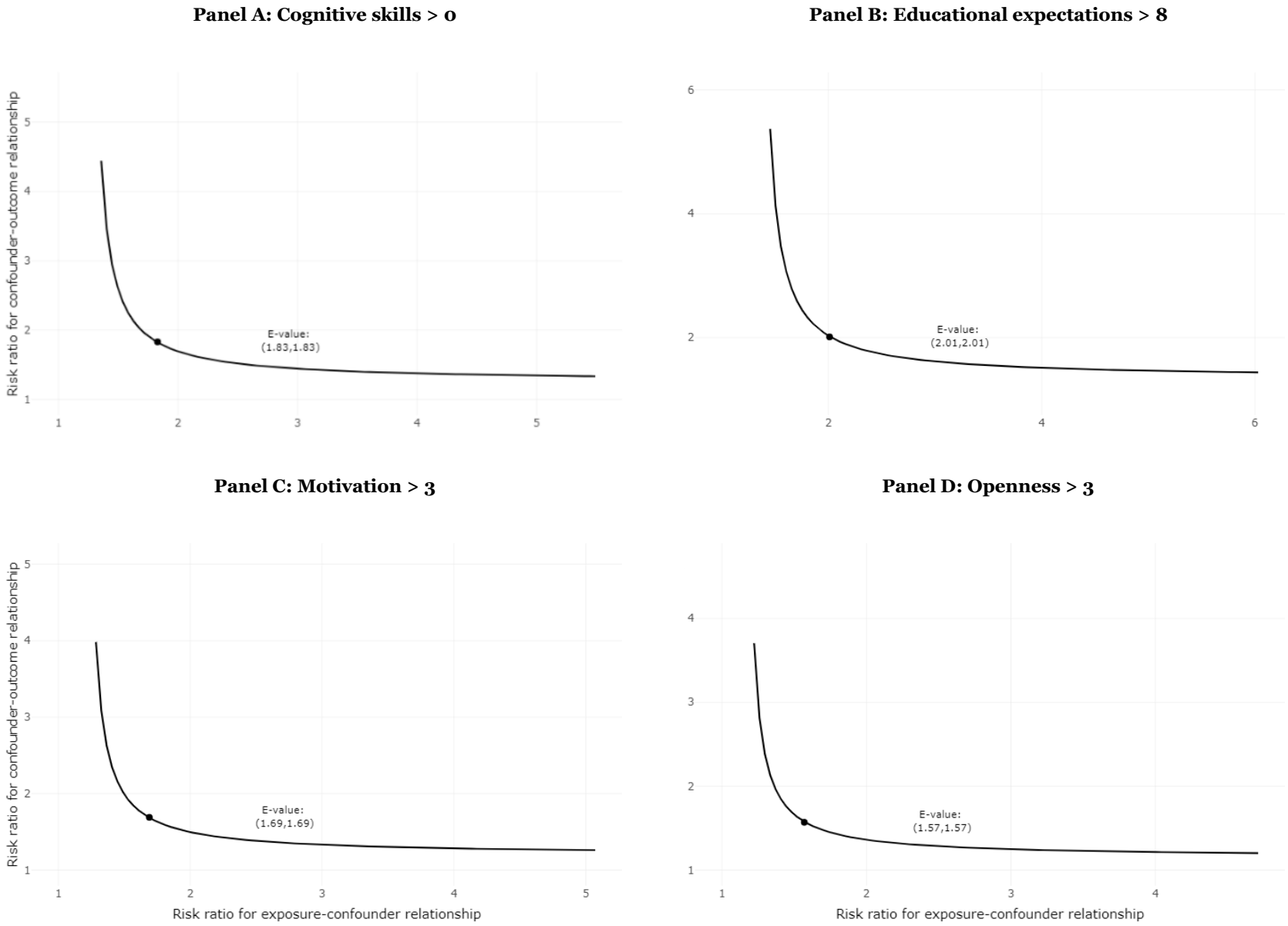
Note: *** p<0.001, ** p<0.01, * p<0.05. All the control variables are included. Clustered standard errors at school-level. Weighted statistics.

Table 5S. Fixed-effect linear model.

VARIABLES	(1) B	(2) B
Cognitive skills	-0.14**	-0.14**
	(0.05)	(0.05)
Parental belief in hard work	-0.08	-0.10
	(0.12)	(0.11)
Parental beliefs in talents	0.04	0.05
	(0.07)	(0.07)
Students educational expectations	0.06***	0.05**
	(0.01)	(0.02)
Index of students' effort	0.10	0.09*
	(0.05)	(0.05)
Openness	0.09*	0.09*
	(0.04)	(0.04)
Psychological well-being	-0.03	-0.02
	(0.04)	(0.05)
Self-perceived health status	-0.02	-0.01
	(0.04)	(0.04)
Constant	-0.45	-0.81
	(0.30)	(0.46)
Observations	2,002	2,002
Students	1001	1001
R-squared	0.06	0.10
Controls	NO	YES

Note: Robust standard errors in parentheses. *** p<0.001, ** p<0.01, * p<0.05.

Figure 1S. E-values for significant coefficients.



Note: E-values were plotted using Mathur et al.' (2018) platform.