

The following publication Ma, G., & Wu, Q. (2019). Social capital and educational inequality of migrant children in contemporary China: A multilevel mediation analysis. *Children and Youth Services Review*, 99, 165-171 is available at <https://doi.org/10.1016/j.chilyouth.2019.02.002>.

Social capital and educational inequality of migrant children in contemporary China: A multilevel mediation analysis

Abstract

With the unprecedented migration in China, migrant children's wellbeing becomes a great social problem. There is an emerging literature on the educational inequality of migrant children, but most studies focus on either the institutional barriers or the individual factors.

This article argues for a holistic perspective, studying the mechanisms of *hukou* system and social capital through which children's migration affects their education. Based on the China Education Panel Survey and the random-intercept mediation model, the article shows that the educational outcome of migrant children is significantly worse than urban peers. Most of the negative effects are attributed to the *hukou*-related school quality and others are mediated by social capital within the family and the community. Surprisingly, the results show that the child-father interactions have a negative effect on children's education. The practical and policy implications for migrant children's wellbeing are discussed.

Keywords

Social capital, *Hukou* system, Educational inequality, Migrant children, Multilevel mediation

1. Introduction

China has experienced the unprecedented migration in history, with the migrant population increasing from 6.57 million in 1982 to 247 million in 2015 (National Bureau of Statistics of China, UNICEF China, & UNFPA China, 2017). This has greatly affected the children – both those that move with their migrant parents and those that are left behind in hometowns. In 2015, the number of migrant children was 34.26 million, and the number of left-behind children was 68.77 million (National Bureau of Statistics of China, UNICEF China, & UNFPA China, 2017). That is, children affected by migration account for more than one third of the total child population (271 million) in China. The migration has immediate consequences for children's wellbeing (Li & Jiang, 2018; Liang, 2016; Xu, et al., 2018; Li & Jiang, 2018). For example, studies have shown that migrant children are facing educational inequality in urban China (Ma et al., 2018; Wu & Zhang, 2015). This article mainly builds on this body of research.

There are two main mechanisms through which children's migration affects their education according to the literature (Liang & Chen, 2007). One explanation is the institutional barrier of the household registration system (*hukou*). Migrant children without

urban *hukou* are hard to receive urban public education, so they can only choose the low-quality migrant schools (Goodburn, 2009; Woronov, 2004). Although the central government has relaxed the *hukou* system recently, the institutional barrier still play an role in migrant children's education (Gong, Zhang, & Yao, 2015; Lai et al., 2014; Ma et al., 2018). Another explanation is the social capital theory, proposing that the migration process disrupts children's social networks and resources, resulting in impairment in educational outcomes in receiving areas (Coleman, 1988). Despite a long history in western literature, social capital has not been well studied in the field of migrant children's education in China. Meanwhile, the relevant research focus either on the *hukou* barrier or on the social capital impairment, which does not integrate both perspectives into a full picture.

Corresponding to above literature gap, the article aim to examine the following research questions: (a) How does children's migrant status affect their educational outcome? (b) How does the *hukou* affect migrant children's education? (c) How does social capital affect migrant children's education? In the following sections, we first provide an overview of the *hukou* system and social capital theory. Then we propose the conceptual framework and the hypotheses. Finally, the empirical method using the China Education Panel Survey and the

multilevel mediation will be conducted, followed by the discussion.

2. Literature review

2.1. The hukou system and school quality

The internal migration in China is very unique because of the *hukou* system (Huang, Song, Tao, & Liang, 2018). Originated in the 1950s, the *hukou* system was stipulated to “maintain social peace and order” for new China (Cheng & Selden, 1994, p. 662). Every Chinese citizen was distinguished not only by the agricultural status and non-agricultural status but also by their residences. The consequence is that the mobilization is strictly forbidden in the 1960s and 1970s (Chan & Zhang, 1999). Only talented rural children are permitted to change their *hukou* status through the educational channel (Wu & Treiman, 2007).

Since the economic reform in 1978, the migration has been permitted, and millions of migrants have rushed into the big cities. The migrant population increased from 6.57 million in 1982 to 221.43 in 2010 (Duan, Lv, & Zhou, 2013). However, few migrants can change their *hukou* to the cities, most are regarded as temporary migrants and are denied urban welfare provisions. Their children, who migrate with parents, are not allowed to access urban

public education. They can only choose migrant schools which are poor, unlicensed, and unstable (Goodburn, 2009; Woronov, 2004). It was estimated that there were more than 400 migrant schools in Beijing and Shanghai by the end of 2000 (Han, 2004; Zhu, 2001). Given the institutional school segregation, the *hukou* has made migrant children in an obviously disadvantaged position regardless other socioeconomic factors (Lu & Zhou, 2013).

In 2006, new Compulsory Education Law has been released, regulating that urban governments and public schools should be responsible for migrant children's education. The new law has led to a series of inclusive policies, such as the free compulsory education in 2008 and the open university entrance exam in 2012. By the end of 2015, 13.67 million migrant children have been admitted in urban educational system, and about 80% of migrant children are at public schools (China Ministry of Education, 2016; People's Web, 2015). Meanwhile, the quality of migrant schools, which are targeted for migrant children, has also been improved because they can apply for stable subsidies from the local governments.

Although the policy improvements have benefited many migrant children, the *hukou* barriers have not been fully removed . Qian and Walker (2015) show that the megacities like Shanghai and Beijing have actually tightened the migration regulation by introducing a new

restrictive system replacing original *hukou*. The standards for permanent residences are so high that migrant families can hardly obtain the official certificates. Meanwhile, although migrant children can access urban public schools without local *hukou*, they can only apply for the low-quality public schools, which are usually in urban industrial zones (Xu & Dronkers, 2016). The high-quality public schools, which are usually in the center of the cities, are still left for local children. Consequently, school quality, instead of school segregation, becomes one of the most important factors influencing migrant children's education.

2.2. Social capital in the migration

Besides the *hukou* system, social capital is also an important mechanism through which children's migration affects their education. Although the concept can be traced to the intellectual background in the nineteenth century, the systematic analysis of social capital is produced by French sociologist Pierre Bourdieu (Portes, 1998). He defined the concept as "the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance or recognition" (Bourdieu, 1986, p. 88). The concept is further developed by many social scientists, including scholars in the field of social work. Foster & Maas (2016), for example, conceptualize social

capital as the resources embedded within a set of social networks that can be used to produce socio-economic benefits.

The theoretical concept of social capital is first operationalized by James Coleman, who successfully identifies the relationship of social capital and human capital and paves the way for future empirical research (Portes, 1998). Coleman (1988, p. 109) proposes that “both social capital in the family and social capital in the community play roles in the creation of human capital in the rising generation.” Family social capital, operationalized by Coleman (1988), is the strength of child–parent interactions. Community social capital refers to the social networks and related resources out of the families, including peers and teachers at school, etc. (Chattopadhyay, 2014; Sun, 1999). Inspired by Coleman’s theory, many empirical research show that family and community social capital can significantly improve children’s development (Israel et al., 2001; Wu et al., 2010; Wu, 2014; Zhou and Kim, 2006; Shier, Gouthro & Goias).

Moreover, Coleman is also the first scholar who propose the mechanism of social capital through which children’s migration affects their education. He argues that “for families that have moved often, the social relations that constitute social capital are broken at each move.”

And, “whatever the degree of intergenerational closure available to others in the community, it is not available to parents in mobile families” (Coleman, 1988, p. 113). So Coleman hypothesizes that migrant children have poorer educational outcome than urban non-migrant children because social capital are disrupted during the migration. This hypothesis has been followed by empirical studies in the United States. For example, Hagan and colleagues (1996) show that negative effects of children’s migration are more pronounced within the unsupportive families. In terms of community social capital, Ream (2005) indicates that peer social capital is negatively affected if Mexican Americans have mobile histories. Pribesh and Downey (1999), using comprehensive measurements of family and community social capital, find that moving leads to a significant loss in various dimensions of children’s social capital.

The mechanism of social capital in the migration has been well studied in Western societies but rarely in the Chinese context, although some empirical studies in China have testified the positive effect of social capital for all children’s human capital. For example, Wu and colleagues (2010, 2014), based on surveys in Shanghai and Beijing, show that social capital has positive effects on the academic achievements of migrant children. Li, Zhang and Li (2018) indicate that social capital is closely associated with the resilience for left-behind

children. Cheng (2017), using a randomly assigned natural experiment, finds that adolescents' academic performance is significantly influenced by their peer social capital. These studies, however, have not shown whether social capital generates different educational outcome for migrant children and urban non-migrant children.

The literature gap in China, we guess, is attributable to the influence of hukou research. As Liang and Chen (2007, p. 30) state, "what distinguishes the case of China from that of other countries is the Chinese institution hukou." Thus, they argue that "social capital plays a less important role in affecting migrant children's educational outcomes in China." Their argument is quite reasonable because they conducted their research before the positive change of educational policy. As the hukou reform goes on, however, we suspect that social capital also plays an important role nowadays even if the hukou barrier still exists. As the institutional exclusion has gradually been replaced by social discrimination at public schools (Koo et al., 2014), we argue that social capital interventions will also be effective in the social work practice.

2.3. The conceptual framework

Based on the literature review above, we propose a theoretical framework in Fig. 1. It

shows the effects of social capital and school quality in the relationship between migrant status on educational outcome. We argue that the conceptual framework has the following contributions to the literature: First, previous research on the mediating effect of social capital rarely consider the institutional factor. For example, Coleman uses student-level data in his classic paper to analyze the correlations between school networks and high school dropout rates (Coleman, 1988). Statistically speaking, the students in one school or one type of school cannot be strictly independent, and it is more appropriate consider the school effect (Raudenbush and Bryk, 1986; Woltman et al., 2012). Perhaps the institutional barrier has minor influences in western societies, but it is of great importance in the complicated context like China (Lai et al., 2014; Qian and Walker, 2015).

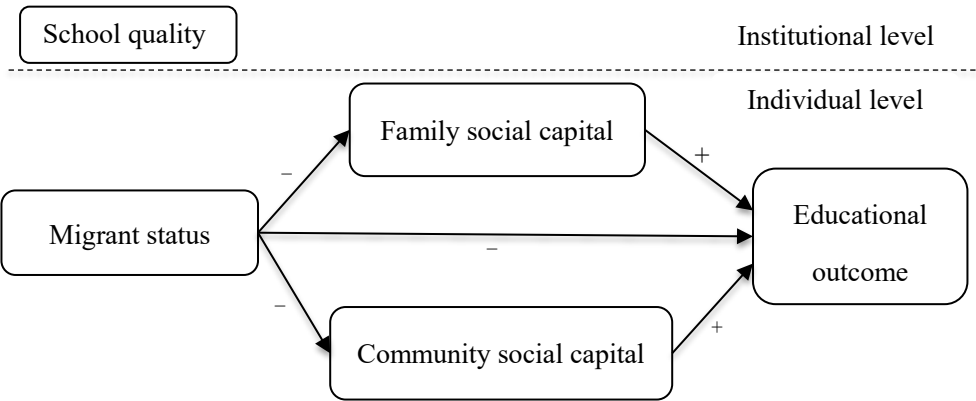


Fig. 1. The conceptual framework.

The framework also contributes to the research of the *hukou* system. Previous studies

have shown that the urban *hukou* discriminates migrant children, but few have investigated the extent of the negative effects. When confirming the adverse effects of children's migration, Wu and Zhang (2015, p. 188) ask: "To what extent, is the cause of negative consequences for education attributable to the fact of not having a local hukou rather than the loss of social capital?" Although some scholars have argued that the *hukou* system should be the main effect while social capital is a minor effect (Liang and Chen, 2007), no study, to our knowledge, provides a quantitative answer after the change of educational policies. Therefore, our findings will also contribute to the *hukou* research.

Based on the conceptual framework, we propose three hypotheses:

Hypothesis 1: Migrant children's education is worse than urban non-migrant children.

Hypothesis 2: The effect of migrant status on educational outcome is mediated by family social capital and community social capital.

Hypothesis 3: The effect of school quality on children's education is larger than that of social capital.

3. Methods

3.1. Data and sampling

The data used in this study were from the baseline wave of the China Education Panel Survey (CEPS). CEPS was the first nationally representative survey conducted in contemporary China in the academic year 2013-2014 (National Survey Research Center, 2015). The survey employed a stratified and multistage sampling design: First, 28 out of 2870 counties were randomly selected. Second, 4 schools were chosen within every selected county. Third, within the school, 2 seventh-grade classes (13 years old) and 2 ninth-grade classes (15 years old) were selected at random. Finally, all students within the selected classes were recruited. Consequently, CEPS collected 19,487 students from 438 classes, 112 schools, and 28 counties. The survey conformed to the ethical regulations of Renmin University of China. More details about the sampling, questionnaires, and other issues can be retrieved from the CEPS website (National Survey Research Center, 2015).

We employed three-step strategy to recruit the appropriate participants for our analysis. First, creating a multilevel sample. Because CEPS collected the information of students, parents, class teachers, and school managers, we established a new dataset by merging the student and school level variables based on the students' IDs. Second, restricting the participants. Our research interest is to study the educational differences of migrant children

and urban non-migrant children, so the 8460 children living in rural areas were not the focus.

Finally, imputing missing data. The missing values were computed automatically with the function of full information maximum likelihood (FIML) in the Mplus statistical software package. After the data cleaning, the sample was restricted to 11,027 children who lived in urban areas during the survey period.

3.2. Measurements

3.2.1. Dependent variable: educational outcome

Educational outcome was measured with a cognitive ability test. The test included three dimensions of language, geometry, and calculation, with 20 questions for seventh grade and 22 questions for ninth grade. Every student was required to take the test independently within 15 minutes. The mean was 9.94, and the standard deviation was 3.76. Based on the original score, CEPS used the item response theory (IRT) to anticipate the student's ability. IRT had three parameters: difficulty index, discriminative power index and guessing index. After the estimation of IRT, CEPS provided a new score for international comparisons. Our study utilized the new score as the measurement of educational outcome. The psychometric report of cognitive ability test was published on the website (National Survey Research Center, 2015).

3.2.2. Independent variable: migrant status

Migrant status was measured by the children's *hukou* status. Among the 11,027 participants who lived in cities, 7,527 had a local *hukou*. We categorized this group as urban non-migrant children. The other 3,500 students who did not possess a local *hukou* were categorized as migrant children. We used urban non-migrant children as the reference group.

3.2.3. Mediator: social capital

Social capital was measured by the child-parent interactions in the family and the child-school relations in the community (Coleman, 1988; Wu et al., 2010). Child-parent interactions were assessed by five indicators: frequency of discussing news at school, frequency of discussing relations with friends, frequency of discussing relations with teachers, frequency of discussing children's normal things, and frequency of discussing children's anxiety. Every participant was required to choose answers among "never, sometimes, and usually" on the two scales. We included child-mother interactions and the child-father interactions in the analysis, and both had high reliability (Cronbach's $\alpha = 0.85$). We extracted one factor from the child-mother interactions scale and one factor from the child-father interactions scale.

Community social capital was measured by the peer relations scale and the school climate

scale. The peer relations scale asked the students whether their good friends had the following 10 behaviors: good study, hardworking, expectations for college, playing truant, disobeying, fighting at school, smoking and drinking, playing games, chasing girls/boys, and dropping out. Every student were required to choose “none, a few, and many” for the ten indicators. The scale had high reliability (Cronbach’s $\alpha = 0.8$). We used extract a factor from the scale to represent peer relations. The school climate scale had 12 indicators: I am always late, I always play truant, my parents always receive teachers’ criticism, my head teacher always praises me, my head teacher always criticizes me, most classmates are friendly, I get well along with others, my class has a good atmosphere, I always attend extra activities, I feel close to people at school, I am bored at school, and I hope to switch to another school. Every student had to choose among “totally disagree, partly disagree, partly agree, and totally agree” for the indicators. The scale had acceptable reliability (Cronbach’s $\alpha = 0.76$). We used the factor analysis and extracted one factor from the scale to represent the school climate.

3.2.4. Institutional-level variable: school quality

Previous studies usually utilized the segregation of public schools and migrant schools as the measurement of school quality (Lai et al., 2014; Lu & Zhou, 2013). This, however,

neglected the positive change of educational policies in recent years as discussed in the literature review. In our sample, only 266 students were from migrant schools, while 10417 students were at public schools. So we argue for the school ranking as the assessment of school quality because migrant children were arranged to low-quality public schools even if they were admitted by urban educational system. The question was: “what is the ranking of the middle school in the county (district)?” It was answered by the school manager, ranging from the worst (1) to the best (5). The mean of the variable was 3.88, and the standard deviation was 0.83.

3.3. Analytical model

We employed a random-intercept mediation model in the Mplus program. The model was an integration of hierarchical linear modeling and structural equation modeling (MacKinnon & Valente, 2014). We assumed that the intercept of the educational outcome was varied by the school quality, but the slope was not. Children would receive different education in different schools, but they probably had the similar education within one school. Therefore, our focus would not on the interactions between the within-level variable and the between-level variable.

We used the following mathematical formulas as our analytical model:

$$\text{Within level: } Y_{ij} = \beta_{0j} + \beta_{1j}X_{ij} + \beta_{2j}M_{ij} + r_{ij} \quad (1)$$

$$M_{ij} = \alpha_{0j} + \alpha_{1j}X_{ij} + e_{ij} \quad (2)$$

$$\text{Between level: } \beta_{0j} = \gamma_{00} + \gamma_{01}S_{.j} + \mu_{.j} \quad (3)$$

Equations (1) and (2) are within-level path analysis models. Equation (1) represents the regression of a dependent variable (Y_{ij}) on an independent variable (X_{ij}) through a mediating variable (M_{ij}). β_{1j} and β_{2j} are the coefficients of the independent variable and the mediating variable, respectively. Equation (2) represents the association of an independent variable (X_{ij}) and a mediating variable (M_{ij}) through the coefficient α_{ij} . The intercepts in equations (1) and (2) are represented by β_{0j} and α_{0j} . And r_{ij} and e_{ij} represent the unexplained variability of related dependent variables, respectively. If there is more than one mediator, M_{ij} can be extended to $M_{1ij}, M_{2ij} \dots M_{kij}$. Equation (2) also should be extended to equation 2, 3...k, etc.

Equation (3) is at the between level. The dependent variable is the between-level intercept β_{0j} . It is equal to the grand mean γ_{00} , plus the independent variable S_j times the slope γ_{01} , plus the residual μ_j . The between-level residual refers to the unexplained differences between the group mean and the grand mean. To simplify the analysis, we assumed that the school quality was at the between level, and migrant status and social capital are at the within level.

4. Results

4.1. Descriptive statistics

Table 1 showed the descriptive statistics of our analysis. The means of educational outcome

and social capital for urban non-migrant children were obviously higher than those for migrant children. As shown in Table 1, urban non-migrant children achieved 0.183 in terms of the average educational outcome, but migrant children were only -0.030 . The t-test showed that the difference of educational outcome is statistically significant.

Table 1

Descriptive statistics of educational outcome and social capital by two groups of children (CEPS, 2013–2014).

Dependent and mediating variables	Number of participants	Urban non-migrant children		Migrant children	
		Mean	SD	Mean	SD
Educational outcome	11,027	0.183	0.010	-0.030	0.015
Family social capital					
Child–mother interactions	10,722	0.057	0.011	-0.123	0.016
Child–father interactions	10,231	0.021	0.011	-0.046	0.016
Community social capital					
Peer relations	10,622	0.034	0.012	-0.074	0.018
School climate	10,508	0.032	0.011	-0.070	0.016

Meanwhile, migrant children’s family social capital was also lower than that of non-migrant children. The means of the migrant children’s interactions with their mothers and fathers were only -0.123 and -0.046 , but the average interactions of urban non-migrant children were 0.057 and 0.021, respectively. In terms of community social capital, the statistical pattern was almost

the same. Urban non-migrant children had means of 0.034 and 0.032 for peer relations and school climate, but migrant children had only -0.074 and -0.070 . We conducted the t-test for all the comparisons, and the results showed that means were significantly different for the two groups of children.

4.2. Multilevel mediation

Based on the descriptive statistics, we then estimated the mediating effects of social capital in the random intercept model. Fig. 2 shows the final results.

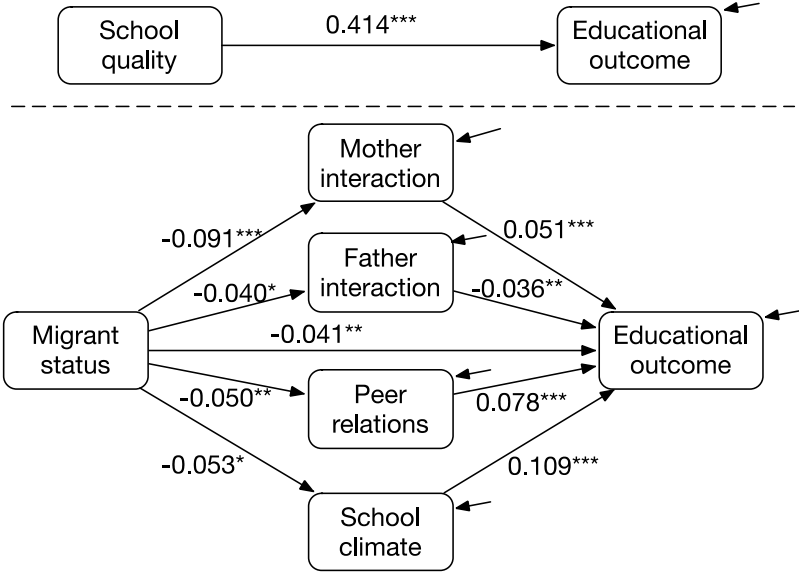


Fig. 2. The relations of migrant status and educational outcome through the mediation of social capital in the random intercept model.

At the within level, migrant status negatively affected educational outcome and various dimensions of social capital. As shown in Fig. 2, the relation between migrant status and educational outcome was significant but negative ($\beta = -0.041$). The coefficients of

children’s migration on family interactions were -0.091 for mothers and -0.040 for fathers. In addition, the association between migrant status and peer relations was significantly negative ($\beta = -0.05$). Migrant children also had fewer relations and resources at school than their urban peers ($\beta = -0.053$).

Despite the adverse effects of migrant status on the dependent variables, the relations between different dimensions of social capital and educational outcome were complicated. As shown in Fig. 2, child–mother interactions had a positive effect on children’s education ($\beta = 0.051$). However, to our surprise, the impact of child–father interactions on educational outcome was significant but negative. Moreover, both indicators of community social capital had statistically significant and positive influences on children’s academic development.

Table 2

Standardized total, indirect, and direct effects of migrant status on educational outcome.

Predictors	Total	Indirect	Direct
Migrant status	-0.089^{***} (0.024)	-0.021^{**} (0.007)	-0.068^{**} (0.024)
Mediation of child–mother interactions		-0.008^{**} (0.003)	
Mediation of child–father interactions		0.002^* (0.001)	
Mediation of peer relations		-0.007^* (0.003)	
Mediation of school climate		-0.010^*	

(0.004)

* $\alpha = 0.05$, ** $\alpha = 0.01$, *** $\alpha = 0.001$.

The mediating effects of social capital were shown in Table 2. The total effect of migrant status on educational outcome was -0.089 . The indirect effects were -0.021 , accounting for 23.6% of the total effects. The mediating effect of school climate was the highest ($\beta = -0.010$), and the indirect effects of child–mother interactions ($\beta = -0.008$) and peer relations ($\beta = -0.007$) were also statistically significant. However, unlike the other three mediators, the child–father interactions had a significant and positive effect on the relationship between migrant status and educational outcome. Finally, the direct effect of migrant status was still statistically significant, and the coefficient was -0.068 .

At the between level, school quality had a significant and positive effect on educational outcome ($\beta = 0.414$). As shown in Table 3, the intercept for educational outcome at the school level was -1.861 , and the residual variance was 0.829. Because the residual variance of the dependent variable at the individual level was 0.970, the intra-class correlation (ICC) was equal to 46%. Finally, the model showed that the R square was only 0.03 at the within level but 0.171 at the between level.

Table 3

The intercept, error and R square of Educational outcome in the two levels

Level	Educational outcome		
	Intercept	Residual variance	R square
Within level	NA	0.970***	0.030***
Between level	-1.861***	0.829***	0.171*

* $\alpha = 0.05$, ** $\alpha = 0.01$, *** $\alpha = 0.001$.

5. Discussion

As China continues to be urbanized in the future, there will be more and more migrant children living in the cities. In order to protect the wellbeing of these vulnerable children, there is an urgent need to better understand why migrant children are falling behind and how social workers can practically intervene. Although there is an emerging literature on the educational inequality of migrant children, existing studies mainly focus on either the institutional barriers or the individual factors. This article adopts a holistic perspective, studying the mechanisms of *hukou* system and social capital in the relationship between children's migration and their education. Based on the nationally representative CEPS and the random-intercept mediation model, the conceptual framework is analyzed. The results are interpreted in the following.

First, our results show that the educational outcome of migrant children is still worse than urban non-migrant children after the change of educational policies. This is consistent with findings by some recent studies (Huang et al., 2018; Wang, 2008). Why are migrant children

still falling behind when most of them are admitted urban public schools? One of the explanations, we suspect, is attributed to the school quality. Our findings have shown that the school quality has a large effect on children's educational outcome at the between level.

Although migrant children can access urban educational system nowadays, they can only go to low-quality public schools in the industrial zones (Xu & Dronkers, 2016). Ma and Wu (2016) argue that the *hukou*-related barriers are hard to be abolished because of the welfare boundary. According to their analysis, the boundary cannot be neglected in the welfare services because it is the compromise of "the upward universalism of the social rights and the downward distribution of the social resources" (Ma and Wu, 2016, p. 130). Even if the *hukou* is abolished, there will be other boundaries, like the new regulation in Shanghai. Therefore, migrant children are still discriminated by the *hukou*-related barriers.

Besides the *hukou* system, another explanation for migrant children's educational problem is the disruption of social capital in the migrant process. Our results show that social capital significantly mediates the negative effects of children's migration on their education. Such findings indicate that migrant children have less social capital than their urban peers, resulting in their educational problems. This is consistent with previous studies in the western societies

(Pribesh & Downey, 1999; Ream, 2005). Our study extends the social capital theory by considering the institutional context. Coleman (1988) explains that children's education needs the closure of family relations and community networks. Migrant children, however, break their social relations in the original residences, and have an unstable closure in urban destinations. Therefore, migrant children have less social capital than urban peers, resulting in the educational problems. We wonder whether the *hukou* system is also a form of social closure. Children with the local *hukou* seem to have the social closure for their social capital, leading to their better academic performance. Migrant children, on the other hand, do not have the social closure which adversely affects their education.

Third, we are very surprised by the finding that the child–father interactions negatively affects children's educational outcome. According to social capital theory, both child-mother and child-father interactions should be positive for children's educational outcome.

Meanwhile, previous empirical studies also show that father's role is important for child development. For example, Guo (2014, p. 238) finds that “children with a father who often tutored at home were 2.546 times more likely to have high educational expectations”. Our finding, however, shows a reverse direction. Why does the child-father interaction play a

negative role in children's education? One possible reason, we suspect, is that only the naughtiest children need the most engaged fathers. According to traditional Chinese culture, the father should be strict and the mother warm. Fathers do not intervene in daily education until children's behavior is beyond their mothers' control (playing truant, dropping out, playing games, etc.). We hope for more research on the role of father in the future.

Finally, the effects of school quality on educational outcome at the between level are many times larger than that of social capital at the within level. The R square of educational outcome was 0.171 at the school level but only 0.03 at the individual level. This result confirms the argument by Liang and Chen's (2007, p. 30): "what distinguishes the case of China from that of other countries is the Chinese institution *hukou*". And it also provides a quantitative answer to the question proposed by Wu and Zhang's (2015, p. 188), "to what extent, is the cause of negative consequences for education attributable to the fact of not having a local *hukou* rather than the loss of social capital". It seems that the *hukou*-related barriers should be always considered in the studies of migrant children's education. Several scholars even find that there is a new trend in the megacities such as Beijing and Shanghai, that the hukou system is more restrictive rather than relaxed (Gong et al., 2015; Lai et al.,

2014; Qian and Walker, 2015). Therefore, there is still a long road for the migrants to claim the equal rights in the cities.

6. Policy implications

This study has important practical and policy implications for migrant children's educational services. In terms of social work practice, we suggest that a social support system should be built to help migrant children when they move to cities. Public schools should embrace equal educational principles for migrant and non-migrant students. For example, head teachers can design extra curriculum activities to help multi-background children to develop friendships. In addition, the focus of practical intervention should also be on migrant families, because the child-mother interactions are of great importance for migrant children's social capital. With the help of family and community service workers, mothers can be more involved in their children's educational development.

In the level of social policy, our findings suggest that the central government should continue to change the educational policies as well as the *hukou* system. More attentions should be on the school quality as migrant children are still hard to receive high-quality education in urban areas. The urban governments should launch the educational programs

targeting the quality of schools where migrant children are admitted in. The findings also enlighten the social services in other developing countries because the educational problems of migrant children also exists in other societies, such as Indonesia, Mexico, and Turkey (Berker, 2009; McKenzie & Rapoport, 2011; Resosudarmo & Suryadarma, 2014). Although China's *hukou* system seems somewhat unique, policies of inclusive migration are suitable for every society.

Finally, this study has several limitations. First, based on the cross-sectional survey, it is hard to generate the causal inference from our model because we cannot exclude omitted variables. Second, as migrant and non-migrant children are not randomized, this study cannot solve the selective problem. And Third, our measurements of social capital and school quality may cause bias to some extent, because the analysis is restricted by the available information in the CEPS. Despite these limitations, this study contributes unique knowledge to our understanding of the mechanism through which migration affects education. we hope this study can ultimately improve the well-being of migrant children in China and the world.

Acknowledgement

This work was sponsored by China's National Social Science Fund (grant number 18CSH023).

We acknowledge Renmin University Scientific Research Foundation, Social Survey Foundation of National Survey Research Center, and National Science Foundation for their data “China Education Panel Survey”.

References

- Berker, A. (2009). The impact of internal migration on educational outcomes: Evidence from Turkey. *Economics of Education Review*, 28(6), 739–749.
<http://doi.org/10.1016/j.econedurev.2009.03.003>
- Bourdieu, P. (1986). The forms of capital. In J. Richardson (Ed.), *Handbook of Theory and Research for the Sociology of Education* (pp. 241–258). New York: Greenwood.
- Chan, K. W., & Zhang, L. (1999). The “hukou” system and rural-urban migration in China: processes and changes. *The China Quarterly*, 160, 818–855.
<http://doi.org/10.1017/S0305741000001351>
- Chattopadhyay, T. (2014). School as a site of student social capital: An exploratory study from Brazil. *International Journal of Educational Development*, 34(1), 67–76.
<http://doi.org/10.1016/j.ijedudev.2012.05.001>
- Cheng, C., 2017. Peer social capital and academic achievement: Evidence from a randomly assigned natural experiment. *Sociological Studies*, 6, 141-164.
- Cheng, T., & Selden, M. (1994). The origins and social consequences of China’s hukou system. *The China Quarterly*, 139, 644.
<http://doi.org/10.1017/S0305741000043083>
- China Ministry of Education. 2009. Compulsory Education Law of the People’s Republic of China.
http://en.moe.gov.cn/Resources/Laws_and_Policies/201506/t20150626_191391.

html/ Accessed 31 Jan 2019.

Coleman, J. S. (1988). Social capital in the creation of human capital. *American Journal of Sociology*, 94(1988), s95-120. <http://doi.org/10.1086/228943>

Duan, C., Lv, L., & Zhou, X. (2013). Major challenges for China's floating population and policy suggestions: An analysis of the 2010 population census data. *Population Research*, 37 (2), 17-24.

Foster, K. A., & Maas, C. D. (2016). An exploratory factor analysis of the resource generator-United States: A social capital measure. *British Journal of Social Work*, 46(1), 8–26. <http://doi.org/10.1093/bjsw/bcu111>

Gong, X., Zhang, H., & Yao, H. (2015). The determinants of compulsory education performance of migrant children in Beijing: An analysis of two cohorts. *International Journal of Educational Development*, 45(July 2014), 1–15. <http://doi.org/10.1016/j.ijedudev.2015.09.002>

Goodburn, C. (2009). Learning from migrant education : A case study of the schooling of rural migrant children in Beijing. *International Journal of Educational Development*, 29, 495–504. <http://doi.org/10.1016/j.ijedudev.2009.04.005>

Guo, J. (2014). Educational expectations of parents and children: Findings from a case of China. *Asian Social Work and Policy Review*, 8(3), 228–242. <http://doi.org/10.1111/aswp.12037>

Hagan, J., MacMillan, R., & Wheaton, B. (1996). New kid in town: Social capital and the life course effects of family migration on children. *American Sociological*

Review, 61(3), 368–385. <http://doi.org/10.2307/2096354>

- Han, J. (2004). Survey report on the state of compulsory education among migrant children in Beijing. *Chinese Education and Society*, 37(5), 29–55. <http://doi.org/10.1080/10611932.2004.11031663>
- Huang, Y., Song, Q., Tao, R., & Liang, Z. (2018). Migration, family arrangement, and children's health in China. *Child Development*, 89(2), e74–e90. <http://doi.org/10.1111/cdev.12699>
- Israel, G. D., Beaulieu, L. J., & Hartless, G. (2001). The influence of family and community social capital on educational achievement. *Rural Sociology*, 66(1), 43–68. <http://doi.org/10.1111/j.1549-0831.2001.tb00054.x>
- Koo, A., Ming, H., & Tsang, B. (2014). The doubly disadvantaged : How return migrant students fail to access and deploy capitals for academic success in rural schools. *Sociology*, 48(4), 795–811. <http://doi.org/10.1177/0038038513512729>
- Lai, F., Liu, C., Luo, R., Zhang, L., Ma, X., Bai, Y., ... Rozelle, S. (2014). The education of China's migrant children: The missing link in China's education system. *International Journal of Educational Development*, 37. <http://doi.org/10.1016/j.ijedudev.2013.11.006>
- Li, C., & Jiang, S. (2018). Social exclusion, sense of school belonging and mental health of migrant children in China: A structural equation modeling analysis. *Children and Youth Services Review*, 89 (2018), 6-12.
- Li, C., Zhang, Q., & Li, N. (2018). Does social capital benefit resilience for left-behind children? An evidence from Mainland China. *Children and Youth Services Review*,

93 (2018), 255-262.

Liang, Z. (2016). China ' s great migration and the prospects of a more integrated society. *Annual Review of Sociology*, 42, 451–471.

<http://doi.org/10.1146/annurev-soc-081715-074435>

Liang, Z., & Chen, Y. P. (2007). The educational consequences of migration for children in China. *Social Science Research*, 36(1), 28–47.

<http://doi.org/10.1016/j.ssresearch.2005.09.003>

Lu, Y., & Zhou, H. (2013). Academic achievement and loneliness of migrant children in China: School segregation and segmented assimilation. *Comparative Education Review*, 57(1), 85–116.

<http://doi.org/10.1086/667790>

Ma, G., & Wu, Q. (2016). The welfare boundary: A hidden mechanism of the Hukou regulation and migrant workers' rights in China. In Q. Xu & L. P. Jordan (Eds.), *Migrant Workers* (pp. 125–134). New York: NOVA.

Ma, Y., Hou, X., Huang, J., Wang, W., Li, Y., Zhou, X., & Du, X. (2018). Educational inequality and achievement disparity: An empirical study of migrant children in China. *Children and Youth Services Review*, 87(October 2017), 145–153.

<http://doi.org/10.1016/j.childyouth.2018.02.026>

MacKinnon, D. P., & Valente, M. J. (2014). Mediation from multilevel to structural equation modeling. *Annals of Nutrition and Metabolism*, 65, 198–204.

<http://doi.org/10.1159/000362505>

McKenzie, D., & Rapoport, H. (2011). Can migration reduce educational attainment? Evidence from Mexico. *Journal of Population Economics*, 24(4), 1331–1358.

<http://doi.org/10.1007/s00148-010-0316-x>

National Bureau of Statistics of China, UNICEF China, UNFPA China (2017), "Population status of children in China 2015: Facts and figures". <http://www.unicef.cn/en/publications/comprehensive/3210.html/> Accessed 31 Jan 2019.

National Survey Research Center, Renmin University of China, 2015. China Educational Panel Survey. <http://ceps.ruc.edu.cn/index.php?r=index/index&hl=en/> Accessed 31 Jan 2019.

People's Web. 2015. Ministry of Education: By the end of 2014, 80% migrant children are admitted by public schools (jiaoyubu: jiezhì 2014 niandi quanguo 80% suiqianzìnv zài gōngbānxuexiào jiùxué). <http://society.people.com.cn/n/2015/0228/c1008-26612401.html/> Accessed 31 Jan, 2019.

Portes, A. (1998). Social capital: Its origins and applications in modern sociology. *Annual Review of Sociology*, 24, 1–24. <http://doi.org/10.1177/03063127067078012>

Pribesh, S., & Downey, D. B. (1999). Why are residential and school moves associated with poor school performance? *Demography*, 36(4), 521–534. <http://doi.org/10.2307/2648088>

- Qian, H., & Walker, A. (2015). The education of migrant children in Shanghai: The battle for equity. *International Journal of Educational Development*, 44, 74–81.
<http://doi.org/10.1016/j.ijedudev.2015.07.009>
- Raudenbusch, S., & Bryk, A. S. (1986). A hierarchical model for studying school effects, *Sociology of Education*, 59(1), 1–17.
- Ream, R. K. (2005). Toward understanding how social capital mediates the impact of mobility on Mexican American achievement. *Social Forces*, 84(1), 201–224.
<http://doi.org/10.1353/sof.2005.0121>
- Resosudarmo, B. P., & Suryadarma, D. (2014). The Impact of Childhood Migration on Educational Attainment: Evidence from rural–urban migrants in Indonesia. *Asian Population Studies*, 10(3), 319–333.
<http://doi.org/10.1080/17441730.2014.942954>
- Shier, L. M., Gouthro, S., & Goias, D. R. (2018). The pursuit of social capital among adolescent high school aged girls: The role of formal mentor-mentee relationships. *Children and Youth Services Review*, 93 (2018), 276-282.
- Sun, Y. M. (1999). The contextual effects of community social capital on academic performance. *Social Science Research*, 28, 403–426.
<http://doi.org/10.1006/ssre.1999.0661>
- Wang, L. (2008). The marginality of migrant children in the urban Chinese educational system. *British Journal of Sociology of Education*, 29(6), 691–703.
<http://doi.org/10.1080/01425690802423361>
- Woltman, H., Feldstain, A., Mackay, J. C., & Rocchi, M. (2012). An introduction to

- hierarchical linear modeling. *Tutorials in Quantitative Methods for Psychology*, 8(1), 52–69. <http://doi.org/10.2307/2095731>
- Woronov, T. E. (2004). In the eye of the chicken. *Ethnography*, 5(3), 289–313. <http://doi.org/10.1177/1466138104044631>
- Wu, Q. (2014). Effects of social capital in multiple contexts on the psychosocial adjustment of Chinese migrant children. *Youth & Society*, 49(2), 150–179. <http://doi.org/10.1177/0044118X14530133>
- Wu, Q., Palinkas, L. A., & He, X. (2010). An ecological examination of social capital effects on the academic achievement of Chinese migrant children. *British Journal of Social Work*, 40(8), 2578–2597 20p. <http://doi.org/bjsw/bcq051>
- Wu, Q., Tsang, B., & Ming, H. (2014). Social capital, family support, resilience and educational outcomes of chinese migrant children. *British Journal of Social Work*, 44(3), 636–656. <http://doi.org/10.1093/bjsw/bcs139>
- Wu, X., & Treiman, D. J. (2007). Inequality and equality under Chinese socialism: The hukou system and intergenerational occupational mobility. *American Journal of Sociology*, 113(2), 415–445. <http://doi.org/https://doi.org/10.2753/CSA2162-0555470103>
- Wu, X., & Zhang, Z. (2015). Population migration and children's school enrollments in China, 1990-2005. *Social Science Research*, 53, 177–190. <http://doi.org/10.1016/j.ssresearch.2015.05.007>
- Xu, D., & Dronkers, J. (2016). Migrant children in Shanghai: A research note on the PISA-Shanghai controversy. *Chinese Sociological Review*, 48(3), 271–295.

<http://doi.org/10.1080/21620555.2016.1165605>

Xu, L., Cheung, M., Leung, P., & Xu, Y. (2018). Migrant child phenomenon in Child: subjective happiness factors for assessing service needs. *Children and Youth Services Review*, 90 (2018), 66-73.

Yang, J., Huang, X., & Liu, X. (2014). An analysis of education inequality in China. *International Journal of Educational Development*, 37, 2–10.
<http://doi.org/10.1016/j.ijedudev.2014.03.002>

Zhou, M., & Kim, S. (2006). Community forces , social capital , and educational achievement. *The Harvard Educational Review*, 76(1), 1–31.

Zhu, M. (2001). The education problems of migrant children in Shanghai. *Child Welfare*, 80(5), 563–569.