The Impact of Parental Migration on Depression of Children: New Evidence from a 2017 Survey in Rural China

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Abstract

China's massive rural to urban migration has significant repercussions for millions of children who are left behind. Much of previous studies focus on education and physical health issues.   In this paper, using a most recent survey of 5th grade students in Shaanxi province in western China, we examine how parental migration affects children's mental health. Our key aim is to investigator the impact of parental migration on children's depression and identify possible mediation variables. Our results reveal that students from migrant households exhibit higher probability of mental health issues. In addition, we tested mediation hypothesis using two variables: parenting practice and quality of parent-child communication.   Parenting practice is shown to be one key mediating variable in affecting children's mental health.

Keywords: left behind children, parental migration, depression, China

Introduction

In recent decades, China has experienced rapid urbanization and accelerating rural-urban migration. By the end of 2017, 58.52% of China's population lived in urban areas, of whom about 224.8 million were rural-urban migrants (National Bureau of Statistics of the People's Republic of China, 2018). China's tidal wave of migration has significant repercussions for family members left behind, especially children. The estimate of the number of left behind children (LBCs), namely children for whom at least one of their parents migrated. The current estimate of LBC was around 58 million during the mid-2000s and had reached to 69 million by the time of China's 2010 census (Duan et al., 2013).

The plight of left behind children has often been reported in the main stream media in China and abroad (Browne, 2014; Liang, 2016). For example. In 2012, five boys (left behind children whose parents work in cities) in Guizhou province died of carbon monoxide (Whiteman, 2012). In 2015, another tragedy struck the same province, 4 left behind children (a brother and three sisters) committed suicide by drinking pesticide (Miller, 2015). Some have argued that this is hidden cost of China's fast faced economic growth and urbanization (Liang, 2016; Ye, 2011), many social scientists have been trying to carry out systematic studies of education and health consequences of migration for children in China. Though most researchers studied how children education and physical health are affected by parental migration, we choose to focus on mental health issue, in particular depression. We argue that the issue of mental health is important because mental health can affect other important outcomes for children such as learning outcomes and educational expectations. Mental health also has implications for children's social relations and friendship networks. In addition, compared to education outcomes which can easily gaged by objective outcomes/measures by teachers such as exams and class participation, mental health issue is often hidden and difficult to detect by casual day to day observations.

In this paper, we use our newly collected 2017 survey data in Shaanxi Province in western China to study mental health consequences of parental migration for children. Working with a multidisciplinary team of researchers, we develop and apply a children's inventory of depression using a series of questions for 5th grade students. We perform OLS regression of children's depression scale and also conduct mediation analysis to identify possible mechanisms of the relationship between being left behind and depression scale. Some policy discussions are offered at the end of the paper.

Background and Hypotheses

China not only has the largest number of migrants but also the largest number of children who are affected by the migration process. Duan (2013) estimated the size of left behind children to be around 61 million along with migrant children of 31 million. Altogether, the total number of children affected by migration is nearly 100 million. This presents a major challenge as China continues its path of urbanization. Our paper focuses on the mental health issue of left behind children.

Most of the earlier studies on the well-being of left behind children deal with either physical health and education. Given the large size of China's LBC, the issue has gained a major national attention as reflected in the media coverage in China and abroad (Chao 2007, Chen 2015). In light of the broad coverage of rural China and longitudinal design, the China Health and Nutrition Survey (CHNS) has been used in several studies on LBC. Chen (2013) studied time allocation of kids and found that LBC were spending more time doing household chores than other kids. Consistent with Chen's findings of time use, de Brau and Mu (2011) divided the sample into two age groups: 2-6 years old and 7-12 years old. They found that LBC in the 2-6 year old group are more likely to overweight and the LBC in the 7-12 year-old group are more likely to be underweight. De Brau and Mu (2011) argue that the latter finding is likely due to more time allocated to household work among 7-12 year old LBC. Tong et al. (forthcoming) also find a strong association between childhood illness and parental migration. Taking advantage of longitudinal design of CHNS, Lu (2012) pays attention to education outcomes of LBC and find that having sibling migrants contributes to a more favorable educational outcomes, a finding that is similar to what Kuhn (2007) finds in the context of Bangladesh.

There are many other studies that use different data sources. For example, Wen and Lin (2012) use data from Hunan province to study the impact of parental migration on LBC. They find that LBC suffer disadvantages in healthy behavior and school engagement, but not in life satisfaction. In a most recent study by Xu and Xie (2015) who use data from the 2010 China Family Panel Study to examine impact of parental migration on the well-being of children. With the framework of causal analysis and applying the technique of propensity score analysis, Xu and Xie(2015) find very little impact of parental migration on the left behind children. Likewise, another paper by Wen and Lin (2015) reveals no significant negative consequences of parental migration on children ages 10-17.

Compared to studies on education and physical health, relatively a small number of researchers turned the attention to the issue of mental health and children's emotional

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development.   A 2009 study led by a team of psychologists reveals significant negative impact of parental migration on children's depression scale (Liu et al., 2009). They also show that younger children suffer significantly more than children at older ages. Another team of scholars of public health used data from Fujian province and their results show that girls who are left behind are more likely to suffer depression than girls whose parents are not migrants (Bjorn, Qin, and Hong, 2013).   Using national survey data with a special module for children's emotional health, sociologists Ren and Treiman (2016) examined the emotional devilment for left behind children of 10-15 years old.   Their key conclusion is that being left behind by one or both parents has little effect on emotional health.   Some other studies generally show that being left-behind is positively associated with mental health problems such as higher rates of depression, anxiety, loneliness, and low self-esteem (Gao et al., 2007; Jia and Tian, 2010; Zhao et al., 2014; Zhan et al., 2014; Myerson, 2015).

The current paper will build upon earlier studies and also aims to improve the literature in three ways.   First, we will use more refined measure of migration as our survey that contains much more detailed and precise measures on migration than previous studies.   For example, we can distinguish interprovincial vs. intraprovincial migration. It is possible that children whose parents are interprovincial migrants suffer more emotional stress than children whose parents are intraprovincial migration.   Second, our analysis will also consider the impact of return migrant parents.   In earlier studies, return migrants are often lumped together with non-migrants.   This is especially true for cross-sectional research design.   Therefore, to the extent parental migration causes children to suffer emotional stress, combining children of return migrant parents with non-migrants will be likely to dilute the potential negative impact of parental migration on children's emotional health.   Third, we use mediation analysis to identify possible mechanisms that parental migration lead to children's mental health status. This approach is important if we aim to design policies and interventions to improve the well-being of left behind children.

Family Structure, Migration, and Possible mechanisms of negative outcomes for children

The issue of how parental migration affecting the well-being of children has clearly drawn the attention of scholars from multiple disciplines (Amato, 2005).   The evidence seems to be quite conclusive in the context of other developed countries.   For example, children who lived in single parent households are more likely to have poor school outcomes, more likely to drop out from high schools, less likely to go to college. In addition, children who grow up with single parents are also suffering socio-psychological problems and showing higher prevalence in shyness and aggression (McLananhan and Percheski, 2008; Putman, 2016)).   In fact, family structure (living with one parent or no

parent) is increasingly viewed as a source of reproduction of inequality in the context of the United States (Putman, 2016).   Today similar issue in family structure is challenging Chinese families as millions of children are living without two biological parents due to parental migration.

It may be comforting to know that the situation of parental migration and separation from parent(s) in China is not identical as in the case of children who live in single parent households in the U.S.   The big difference between the cases of the U.S. and China is that migrant parents, in most cases, continue to provide financial support in the form of remittances.   However, it is a major concern that left behind children in China often experience prolonged separation with their parents (Liang, Yue, and Li, 2017).   One key goal of our paper is to identify possible mechanisms for the negative consequences of parental migration on children's emotional outcomes (i.e. depression).   The current literature suggests three possible mechanisms in the case of family structure and inequality in the case of U.S.:   economic hardship, quality of parenting, and exposure to stress.   In our case, we argue that the economic situation for migrant households is likely to be better off as compared to other non-migrant households as high proportion of migrant households send remittances. There is certain a lot of stress on children in the form of increased possibility/burden for children's participation in household chores and in some cases even farm work or taking care of younger siblings.

Mediation Analysis

In the current paper, we zero in on the issue of quality of parenting for migrant households and parent-child communications. We argue the quality of parenting is more likely to be compromised for migrant household.   We use two variables to our mediation analysis: parent-child communication and quality of parenting.   Parent-child communication captures the dimension that how often parents (either biological father or mother) talks to the child on different issues of children's concern.   It taps into some broad level of communication between parents and children.   Quality of parenting is trying to capture more of the supervisory role of parenting such as if parents encourage children to do certain things and if parents will check children's homework or attend teacher-parent conferences (see Appendix 2 for the details of measures of quality of parenting).   The logic of our argument is described in Figure 1.

Data and Methods

We rely on a 2017 survey of migration and children that was carried in two counties (Dali and Nanzheng) in Shaanxi province in western China.   A total of 1293 5th grade

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students in 19 schools were surveyed. We used 4 questionnaires: student questionnaire, questionnaire for homeroom teachers (who evaluates each student in class), questionnaire for Primary Care Giver (PGC) and school questionnaire.   PCG could be a parent or a relative. We also have collected student transcripts.   These questionnaires cover issues such as education, behavior, physical health, mental health, and parental migration history. In total we have collected 1293 student questionnaires, 1297 teacher questionnaires, and 1269 questionnaires for primary care giver.

We should note here that most of earlier studies rely on data that are not designed for migration research. Thus, research designs that often rely on measures that are not ideal. In this regard, our data have several advantages that set them apart from many other data sets used in previous studies.   First, we have a set of careful measures of migration for parents.   We have detailed history of parental migration (which includes timing of migration and duration) along with student self-report of experience of being left behind. We also have information on parental return migration. Second, we have systematic measures of physical health and mental health for children.   Third, in addition to information from student questionnaire, we obtained information from parents or primary care giver (PCG) as well.   Fourth, given the importance of student friendship network in studies of child wellbeing, we have collected student friendship network information using standard network measures so that we can being to map out student networks. Finally, we collected spatial location of each household using GPS device.   This gives us the opportunity to explore how spatial locations of students are related to other variables of our interests.

Measures

Dependent variable: depression

Children's depressive symptoms were measured by the Chinese version of Childhood Depression Inventory (CDI), a 14-item self-report questionnaire. All items were scored on a three-point Likert scale ranging from rarely (scored 0) to most of the time (scored 2), and summed across the fourteen items to provide a total depression score.   A sample item is "how often do you feel unhappy". This scale was found to have adequate reliability for the current study (Cronbach's alpha = 0.770).   The scale has been validated and modified in the Chinese context (Chen et al., 2012).   For the full version of depression scale, see Appendix 1.

Independent variables

The key independent variable is parental migration status.   In this version of the paper

we use student's self-report on parental migration status, as a key independent variable. Using this variable, we classify children into two broad categories: left behind children and non-left behind children.

We have two mediators.   The first one is parental child rearing practices (quality of parenting).   This parenting practice scale includes a total of 13 questions.   Here are two sample questions: (1) if you have done something wrong, your parents will ask you the reason and discuss with you what to do. (2) your parents check your homework.   The second mediation variable is parent-child communication. This scale has 8 questions on parent-child communication and interactions.   Each question has 6 possible responses, ranging from "never" to "every day". We coded these response categories into 0, 1,2,3,4,5 and sum up all responses for each respondent.   One of the questions is the following: in the past month, how often did you talk to your mom about your recent situation?

Preliminary Results

In Table 2, we present basic descriptive statistics.   Magnitude of depression scale varies across type of parental migration status.   The highest level of depression is found in children whose father migrated, followed by children whose both parents migrated.   It is also clear that children whose parents did not migrate have the lowest value in depression scale, giving initial evidence that parental migration is related to children's mental health conditions.   We also observe that left behind children have lower scores in parent-child interaction and parenting practice. Again, this suggests parental migration affects parent-child communications and parenting practice. Results from correlation analysis (Table 3) are consistent with what we observe in Table 2.

In Table 4.3, we performed OLS regression analysis of children's depression.   We see that left behind children (LBC) experience higher level of depression as compared to children whose parents did not migrate.

To examine further the link between parental migration and depression of rural children and identify impact of mediation variables, we conducted mediation analyses in multiple mediator models with the PROCESS Version 3.0 developed by Hayes (2018) in the IBM SPSS Statistics 21.0. Results from model 2 reveal that LBC status reduces the degree of parent-child communications) (coefficient of -2.046, p<0.001).   Likewise, results from model 3 suggest LBC status also reduces the degree of parenting practice (coefficient of -1.398, p<.05).

More importantly, if we look at medication analysis results in Model 4, we find that

indirect effect of parenting practice on depression is 0.145 and is statistically significant. In addition, the direct effect of parenting practice on depression is also sizable and statistically significant.   Similar results are observed for mediation variable of parent-child communication, but results are not statistically significant.

In Table 4-4, we use Bootstrap testing method to provide further statistical testing (95% confidence intervals are provided).   We see clearly that the total indirect effect of two variables is 22.97%.   Parenting practice is more important (14.81%) than the indirect effect of parent-child communication (8.16).   To visualize the results, we show the path analysis in Figure 2.

Future Analysis Plan:

The forgoing discussion and analysis outline our analytic strategy to examine LBC status on depression through mediation analysis. The initial results suggest that parental migration elevates the level of depression through parental practice.   This is our first effort to identify medication variables in order to have a better understanding of the relationship between parental migration and mental health of children left behind.

In coming weeks/months, we plan to carry out further analysis.   First, we will distinguish two types of migration: interprovincial vs. intraprovincial migration to test if there is any difference and if impact of parental migration on depression differs by type of parental migration. Second, consider include a new category of children, e.g. children whose parents are return migrants. Most of current studies treat children of return migrants as part of children of non-migrant parents. We argue that , this research design can bias the results.   We will experiment with three types of children: (1) currently left behind children, (2) former left behind children, and (3) children whose parented never migrated.   Third, we will provide detailed analysis of how parental migration's impact on depression differs by different types of LBC status: father migrant, mother migrant, both parents are migrants. Finally, we could explore other potential mediator variables such as household work burden (such as increased household chores and taking care of younger siblings),

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Table 1 Distribution of children by type of parental migration (N=1,199)

	Percentage
Left-behind Children	**45.5%**
Only Father Out	20.2%
Only Mother Out	5.5%
Both Out	19.8%
Non-left-behind Children	**54.5%**

Table 2 Means (Standard Deviations) and ANOVA Results of Depression, Parent-child Communication, and Parenting practice by Parental Migration Status

Children's type	depression	ANOVA	Parents'-child Communicati-on	ANOVA	Parenting practice of PCG	ANOVA
Left-behind Children						
Only Father Out	4.93(3.99)		15.41(7.85)		38.22(8.05)	
Only Mother Out	4.15(3.17)		15.37(7.90)		36.69(8.33)	
Both Out	4.63(4.21)	p<0.05	13.59(8.45)	P<0.001	36.25(8.68)	P<0.01
Non-left-behind Children	4.12(3.31)		17.27(9.36)		38.36(7.56)	
Total Sample	4.38(3.65)		16.16(8.87)		37.82(7.97)	

Table 3 Correlation matrix of parental migration, depression, parents-child communication, and parenting practice

	parental migration	Depression	Parents' Social Support	Guardian Responsiveness
parental migration	1			
Depression	0.080**	1		
Parent-child communication	-0.148***	-0.242***	1	
Parental practice	-0.073*	-0.367***	0.503***	1

Table 4 Regression Models of Mediation Analysis for Different Outcome Variables

Variable	Model 1: Depression		Model 2: Parent-child communication		Model 3: Parenting practice		Model 4: Depression	
	B	SE	B	SE	B	SE	B	SE
Left-behind Children	0.977**	0.339	-2.046***	0.757	-1.398*	0.704	0.753*	0.331
Control Variables								
Dali County (Nanzheng=0)	-0.394	0.341	0.958	0.761	-0.914	0.708	-0.451	0.332
Child's Gender (male=1)	0.426	0.300	0.788	0.669	-0.356	0.622	0.420	0.291
Parents' educational level	-0.073	0.050	0.122	0.112	0.177	0.104	-0.050	0.049
Family size (No. of people)	-0.100	0.132	0.354	0.294	-0.178	0.273	-0.104	0.128
Logged per capita income	0.146	0.301	-0.382	0.672	-0.742	0.625	0.054	0.292
Family property	0.022	0.066	-0.069	0.148	0.103	0.137	0.030	0.064
Pocket Money (Yuan)	-0.0002	0.004	0.005	0.008	0.013	0.008	0.001	0.004
Do your parents frequently quarrel with each other? (reference=Never)								
Seldom	0.715*	0.342	-0.221	0.763	-1.134	0.709	0.589	0.332
Sometimes	1.589***	0.442	-1.471	0.988	-2.370*	0.918	1.286**	0.431
Frequently	4.883***	0.629	-2.862*	1.404	-5.585***	1.306	4.194***	0.620
Duration of parents' migration	-0.133*	0.063	-1.114	0.141	0.041	0.131	-0.134*	0.061
Social relation with friends	-0.060	0.034	0.869***	0.076	0.534***	0.071	0.029	0.038
Social relation with teachers	-0.048	0.041	0.462***	0.091	0.156	0.085	-0.013	0.041
Have you ever been bullied (never)								
Slightly	1.151***	0.317	-0.754	0.707	-0.661	0.657	1.053***	0.307
Moderately	0.953	0.613	-0.220	1.368	0.052	1.272	0.950	0.593
Seriously	2.245***	0.522	0.261	1.165	-0.398	1.083	2.214***	0.505

Academic performance at school	-0.152*	0.063	0.036	0.094	0.472***	0.087	-0.102*	0.040
Mediating Variables								
Parent-child communication							-0.039	0.021
Parenting practice							-0.104***	0.023
Indirect effects of parental migration through mediating variables								
Parent-child communication							0.080	0.051
Parenting practice							0.145**	0.087
Adjusted R^2	0.26		0.35		0.27		0.31	

Note: * $p<0.05$, ** $p<0.01$, *** $p<0.001$.

Table 5 Results of Mediation Analysis: total effect, direct effect, and indirect effect

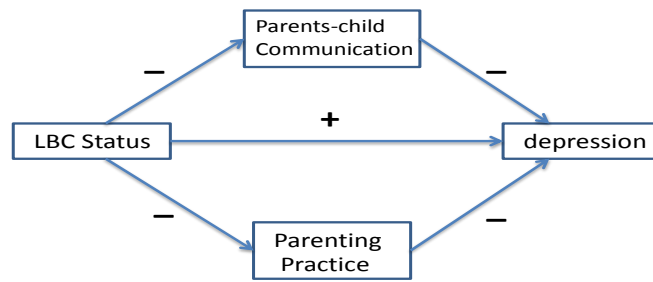|	Effects	SE	CI or 95% bootstrapped CI	Indirect effect / Total effect (%)
Total effect	0.977	0.339	(0.311,1.643)	
Direct effect	0.753	0.331	(0.102,1.403)	
Total indirect effect	0.224	0.102	(0.043,0.444)	22.97
Indirect effects of parental migration on depression through mediating variables				
Parent-child communication	0.080	0.051	(-0.005,0.191)	8.16
Parenting practice	0.145	0.087	(0.002,0.343)	14.81

Figure 1. Model of mediation of two key variables on depression.
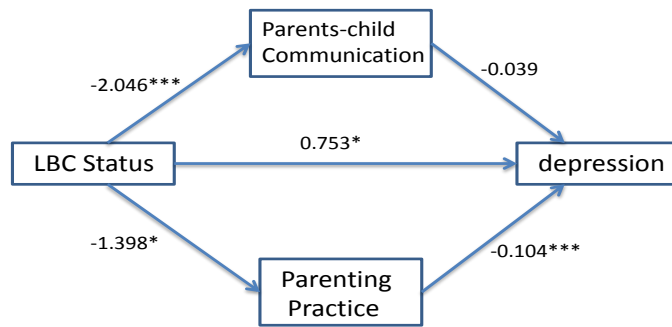
Figure 2. Results of mediation analysis

Appendix 1. The Children's Depression Scale

	Please choose the answer which comes closest to how you have felt in the past two weeks
1	1. I felt sad occasionally; 2. I felt sad very often; 3. I felt sad most of the time.
2	1. I felt terrible and things would not get better for me; 2. I was not sure whether things would get better for me; 3. I was sure that things would get better for me;
3	1. I could do many things well; 2. I often did something wrong; 3. I always did something wrong;
4	1. I thought I had some bad luck occasionally; 2. I worried that I might have some bad luck; 3. I was sure that I would have bad luck soon.
5	1. I hated myself; 2. I didn't like myself very much; 3. I liked myself;
6	1. I wanted to cry every day; 2. I wanted to cry every few days; 3. I wanted to cry sometimes only;
7	1. There was always something that made me annoyed; 2. There was often something that made me annoyed; 3. There was occasionally something that made me annoyed;
8	1. I am good-looking; 2. Some changes in my appearance make me look rather ugly; 3. I am not very good-looking;
9	1. I felt tired occasionally; 2. I often felt tired; 3. I always felt tired.
10	1. I didn't feel lonely; 2. I often felt lonely; 3. I always felt lonely.
11	1. I didn't feel like going to school at all; 2. Sometimes I felt like going to school but sometimes I didn't;

	3. I often feel like going to school;
12	1. I had a lot of friends; 2. I had some friends; 3. I didn't have any friends.
13	1. I was not as good as other children; 2. I could be as good as other children if I want to; 3. I was as good as other children.
14	1. No one really liked me; 2. I had no idea if anyone liked me; 3. I was sure that someone liked me.

Appendix 2.   Parental Rearing Practices in Childhood

	Read through each question carefully and consider which one of the possible answers applies to you.
1	When you do something wrong, parents will ask you the reason and discuss with you what to do.
2	Parents encourage you to work hard to be the best.
3	Parents are very friendly when speaking to you.
4	Parents trust you and encourage you to think independently.
5	Parents will tell you the reasons when they ask you to do something.
6	Parents like to talk and have conversation with you.
7	Parents ask you how you enjoy your school life.
8	Parents check your homework.
9	Parents help you with your homework.
10	Parents participate in activities with you ((such as playing chess and hiking)
11	Parents praise you.
12	Parents criticize you.
13	Parents attend parents' meeting held in school.