PARENTAL LABOR MIGRATION AND TIME USE OF CHILDREN LEFT BEHIND IN RURAL CHINA

Yunlin Li

A thesis submitted to the faculty at the University of North Carolina at Chapel Hill in partial fulfillment of the requirements for the degree of Master of Arts in the Department of Sociology in the College of Arts and Sciences.

Chapel Hill
2021

Approved by:

Barbara Entwisle

Jacqueline Hagan

Ted Mouw

ABSTRACT

Yunlin Li: Parental Labor Migration and Time Use of Children Left Behind in Rural China
(Under the direction of Barbara Entwisle)

This study examines the relationship between parental migration and children's time use within the setting of rural China. Through drawing on two large survey datasets and distinguishing between various forms of migration (father-only migration, mother-only migration, and the migration of both parents), I find that having a migrant parent is associated with more domestic work time among left-behind children, particularly for teenage girls with migrant mothers. When mothers are absent, adolescent daughters tend to step into a parenting role, take on additional domestic responsibilities and household tasks that are normally performed by the mothers. As a result, the gender gap in domestic labor increases and the traditional gendered division of labor becomes reinforced among left-behind children. Overall, this paper sheds light on the gendered implications of parental migration, especially maternal migration.

ACKNOWLEDGEMENTS

This research received support from NIH's Population Research Infrastructure Program awarded to the Carolina Population Center (P2C) and the Population Research Training grant (T32) at The University of North Carolina at Chapel Hill by the Eunice Kennedy Shriver National Institute of Child Health and Human Development. I would also like to thank my thesis committee for their guidance and support.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF ABBREVIATIONS

CFPS	China Family Panel Studies
CHNS	China Health and Nutrition Survey

INTRODUCTION

Globally, population migration has witnessed dramatic increase since the start of the 21st century. The number of international migrants worldwide reached an estimate of 272 million in 2019, up from 221 million in 2010 and 174 million in 2000 (UN DESA 2019). Transnational families have become an increasingly prevalent family form. Changing legal contexts, including restrictive immigration policies and the rise in deportations, have resulted in more divided families across national borders than ever before (Boehm 2017; Hagan et al. 2018). Meanwhile, transnational families turn to migration and family separation as cooperative survival strategies (Abrego 2014; Dreby 2010). Migrants seek employment in destination countries where there are more economic opportunities, whereas other family members stay behind, keeping most consumptive activities in home countries where the cost of living is relatively low (Dreby and Adkins 2010).

In many developing countries, a disproportionate number of children are affected by parental migration and grow up with at least one parent living abroad (UNICEF working paper). Among migrant parents, it is not uncommon for them to make a difficult yet rational decision—to leave their children behind. Anticipating that their lives as migrant workers will be challenging with busy work schedules and poor living conditions, many parents have chosen to migrate by themselves (Dreby 2010; Dreby and Adkins 2010). Under stricter immigration policies, migration with children also adds greater uncertainty about access to social services like health care and the educational system, especially for the undocumented (Dreby 2010). A lack of safe and legal pathways for joint family migration has prevented parents from bringing their

children along (Dreby 2015). Numerous studies have examined experiences of living in a transnational family and reveal mixed effects of parental migration on children who are left behind (Abrego 2014; Cortes 2015; Dreby 2010; Graham and Jordan 2011; Menjívar, Abrego, and Schmalzbauer 2016; Vanore, Mazzucato, and Siegel 2015).

Yet it is important to note that such phenomenon of family separation is not only unique to international migration; children are also affected when their parents migrate internally. China is a prominent example. Since the economic reform in 1978, China's rapid development and urbanization have induced substantial rural-urban migration. In 2018 an estimated 288 million rural migrants were living and working outside their hometowns; migrant workers made up more than one third of the entire working population (National Bureau of Statistics of China 2018). In China, rural-urban migration is often considered temporary due to institutional arrangements related to the *hukou* (household registration) system, which classifies all citizens into a rural-urban dichotomy. While citizens with urban *hukou* are granted various social benefits, the rural population has very limited access to state-provided services. Opportunities to change *hukou* status are highly restricted, which precludes rural-urban migrants from being fully incorporated into cities (Chan 2012; Liang 2001). As a result of the *hukou* system and challenging living conditions in urban areas, many parents decide to migrate without their children. According to the 2010 population census, more than 61 million children aged 17 years or younger were left behind, accounting for over one-fifth of China's child population (National Bureau of Statistics of China 2010).

A growing body of literature has researched the well-being of children left behind in rural China (Murphy, Zhou, and Tao 2016; Ren and Treiman 2016; Wen et al. 2015; Wen and Lin 2012; Xu et al. 2018; Xu and Xie 2015). While most studies focus on education and health

outcomes (Jordan, Ren, and Falkingham 2014; Lu 2012; Tong, Luo, and Piotrowski 2015; Zhang et al. 2014; Zhou, Murphy, and Tao 2014), a few examine other aspects of children's lives, such as time use practices (de Brauw and Mu 2011; Chang, Dong, and MacPhail 2011; Chen 2013). Time use has great significance for household economic production and investment in schooling, particularly for rural households, where children are able to contribute directly to family economy. On the one hand, parents increase their earnings through migration and the remittances sent back help alleviate household financial constraints, thereby increasing spending on education and reducing the demand for child labor (Lu and Treiman 2011; Yang 2008). On the other hand, parental absence as a result of migration may translate into less family input into child's education; it may also require children who are left behind to help meet labor shortage through undertaking more domestic work (McKenzie and Rapoport 2011; Tong et al. 2015). With added household responsibilities, children have less time for school-related activities, which may negatively affect their academic outcomes. Therefore, the impact of parental migration on children left behind is not clear-cut and still remains an empirical question.

Informed by the existing literature (both international and China-specific) on migration and family separation, this study extends prior research by exploring the complex effects of parental migration on children's time use. Using the China Family Panel Studies (CFPS) and the China Health and Nutrition Survey (CHNS), I examine the following research questions: what is the overall impact of migration on children left behind in rural China? Does it matter which parent migrates? Are effects magnified when both parents are absent? I distinguish different parental migration practices (i.e. father-only migration, mother-only migration, and the migration of both parents) to capture various forms of family separation and living arrangements. Further, I intend to assess if the effects vary by children's age and gender. The paper is organized as below:

first, I review the relevant literature on migration and time use; then I will introduce China as the study setting. Next, the research questions, data, measures, and analytic approach are outlined. The following sections present descriptive statistics and key results. This paper ends with a conclusion and discussion of the study implications.

BACKGROUND

Parental Migration and Left-behind Children

Past studies undertaken in many settings reveal mixed effects of parental migration on children who are left behind. Some suggest that children benefit economically from the remittances, especially when remittances are used to improve their living conditions, fund their education, and increase human capital investment (Lu and Treiman 2011; Yang 2008). Others have documented that children who stay behind may suffer emotionally due to the lack of parental support and the psychological cost of family separation; their emotional suffering tends to lower their school performance and academic aspirations (Abrego 2014; Dreby 2010; Parreñas 2005). In Dreby's (2010) ethnographic work of Mexican transnational families, the emotional consequences eventually overtook the economic benefits, and the unmet expectations of parents to provide care and support for their children became a source of great difficulties during long-term family separation. Additionally, parental migration may generate social remittances, including ideas, knowledge, perceptions, and practices, which have both positive and negative impacts on child development (Levitt 1998). Kandel and Kao (2001) argue that children growing up in migrant households have more access to information and social networks, which will increase their own prospects of migration and potentially reduce their educational aspirations, particularly when migration appears to provide an alternative path to economic success.

While a large body of literature has evaluated the complex, countervailing effects of parental migration, less research was conducted to compare across different forms of migration, for example, the migration of one versus both parents. In their study of left-behind children's

cognitive development in rural China, Zhang and colleagues (2014) show that children had significantly lower test scores when both parents were absent; the impact of being left behind by one parent was much smaller and not as significant. Their findings indicate that students with both migrant parents may experience greater deficits in family inputs. They also suggest a potential substitution effect between fathers and mothers in educating children when there is only one parent away.

Other studies, however, focus on different implications of maternal and paternal migration, highlighting the migrant parent's gender (Dreby 2010; Menjívar et al. 2016). Since mothers are usually the caregivers, their absence tends to produce a more deleterious effect than fathers' absence, and it is more difficult for the extended family to substitute for the mother's role (Parreñas 2005). In her in-depth study of Salvadoran transnational families, Abrego (2014) found that maternal absence caused greater emotional distress and disruptions than paternal absence. Although all children of migrants expressed sorrow resulting from family separation, children in mother-away families would use more emotional language and reveal greater suffering in their narratives, as opposed to those whose fathers left. Similarly, Dreby's study (2015) also suggests that maternal absence engenders greater resentment among left-behind children, whereas children express more ambivalent, normalized attitudes toward fathers' absence. Other research using quantitative methods has identified a more detrimental impact of maternal migration on children's school engagement and health (Cortes 2015; Murphy et al. 2016; Wen and Lin 2012).

Clearly, the gender of the migrant parent will influence gender dynamics within left-behind households, and thus shape different outcomes for children of different sexes. For instance, in the case of paternal absence, the lack of a male role model may negatively affect

sons' academic performance, while daughters' understanding and appreciation of their mothers' difficulties can motivate them to study harder (Huang et al. 2018). Using the Gansu Survey of Children and Families, Lee and Park (2010) found that father-only migration reduced school enrollment for boys, but had a positive effect on girls' academic achievement. Antman's (2012) study of children left behind in Mexico points out a significant positive association between paternal US migration and educational attainment among girls. When fathers are away from home, mothers who stay behind may have more decision-making power and invest more resources in their daughters' education. On the contrary, if mothers out-migrate for work, adolescent girls tend to step into a parenting role, take on more responsibilities for caregiving and household chores than adolescent boys, who are usually less responsive to maternal absence (Huang et al. 2018; Menjívar et al. 2016). Taken together, prior research has established a complex relationship between parental migration and child outcomes. It underscores the need to consider different forms of migration and to examine the effect by child's gender.

Migration and Time Use

Time use has been widely recognized in the literature as important to children's well-being. It is linked to cognitive development, physical and emotional outcomes (Bianchi and Robinson 1997; Larson and Verma 1999). For example, more time spent on reading and studying is often associated with positive educational achievement and higher standardized test scores, whereas watching a lot of TV may predict negative school outcomes and lower cognitive scores. Labor within households has mixed implications (Menjívar et al. 2016). While activities such as sibling care and household chores may bring extra burden on children and sidetrack them from school (Katz 2014; Telzer and Fuligni 2009), such activities can also develop their sense of

responsibility and skills that are favorable to adulthood (Katz 2014; Orellana 2001; Schmalzbauer 2014).

In agricultural families, all members are expected to contribute their labor, and children in rural areas are more likely to participate in housework (Menjívar et al. 2016; Xu and Minca 2008). They may also need to assist with farm work or family business from time to time. When parents migrate, children undertake more tasks because of labor shortage (McKenzie and Rapoport 2011; Tong et al. 2015). Yet the remittances sent back can help relax household budget constraints, thereby reducing the demand for child labor to some extent (Lu and Treiman 2011; Yang 2008). It remains unclear whether the economic returns from migration would actually offset the loss of labor and how children fare in the face of parental migration. Further, it is important to note that the division of household labor is gendered. Traditionally, routine chores and caring activities are strongly defined as feminine (Sullivan 2013). As women bear primary responsibility for housework and family care, they have less leisure time at their disposal (Bittman and Wajcman 2000). How parental migration shapes gender dynamics among left-behind children is worth investigating. Time use provides us with quantitative assessments of the uneven distribution of household labor and reflects potential gender inequality.

In their study of migration and educational attainment in rural Mexico, McKenzie and Rapoport (2011) show that living in a migrant household has a strong positive effect on girls' participation in housework, especially for girls aged 16 to 18, which could potentially account for the decrease in their schooling. Chen (2013) examined children's time use in household production using the China Health and Nutrition Survey and found that children left behind were more likely to do chores when their fathers migrated. However, she looked at the probability of

doing chores rather than the amount of time spent on them.[1] Furthermore, she studied only the father-migration scenario. Another research on the differential nutritional outcomes of left-behind children reports that parental migration was associated with higher underweight incidence among children aged 7-12 in rural China (de Brauw and Mu 2011). This could be partly explained by the higher amount of time allocated to household chores among children of this age group. Chang, Dong, and MacPhail (2011) also found that the out-migration of parents increased the time children spent in domestic and farm work. A gender-differentiated impact has been well documented: girls tend to share more domestic responsibilities than boys, reinforcing a traditional gendered division of labor (Ye and Pan 2011).

In addition to time spent on housework, other research has discussed the impact of parental migration on children's study time, which is an important indicator of how much effort children put into school and is closely related to their educational outcomes. In her study of Mexican fathers' migration to the US, Antman (2011) found that in the short term, children who stayed behind would reduce their study hours in response to paternal migration, and the impact was particularly pronounced for 12-15 year-old boys. Within the context of China, Xu and Minca (2008) observed that rural children living with only one parent (as a proxy of parental migration) were more likely to read and do homework, compared to those living with both parents. The authors attribute this unexpected finding to household socioeconomic background and migrant selectivity; rural parents who out-migrate for work may have more human capital than those who do not.

Existing studies on parental migration and children's time use provide us some valuable insights, but have several limitations as well. First, few of them investigate the potentially

[1] Chen made this decision because she used 1989-2000 waves of the CHNS, where detailed data on time use was collected inconsistently across waves and thus could not be used in the analysis.

different effects of various migration forms. As seen in the previous section, maternal and paternal migration could differentially affect boys and girls. Parental migration results in the reallocation of resources and redistribution of labor within a household, and such shifts may depend on the migrant parent's gender as well as the child's gender. Second, earlier studies are often unable to disentangle the impact of migration with that of remittances. It would have been helpful to further explore the role of remittances and to assess whether the economic benefits could outweigh the negative impact resulting from loss of labor. Third, most prior research focuses on only one category of time use, while it may be worth considering multiple domains at the same time. In order to fill the above gaps, this study paints a fuller portrait of how left-behind children allocate their time in daily life and sheds light on any potential age- or gender-differentiated effects. The large-scale internal migration in China provides us a compelling setting to study the consequences of parental labor migration, as a great number of children are being left behind in rural areas and the restricted *hukou* system has posed many challenges for migrant workers as well as their families.

China's *Hukou* System

Internal migration in China is unique in that it is largely controlled and regulated by the *hukou* (household registration) system, which assigns each citizen a registration status, classified as "rural" or "urban," in a specific administrative unit (Chan 2012). The *hukou* system was established by the Chinese government in 1958 with the aim of controlling geographic mobility, but over time it has become a far-reaching policy with social, economic, and political implications (Liang 2016). It is linked to individuals' access to entitlement and benefits. Citizens with urban *hukou* are guaranteed access to social welfare, public housing, and importantly, public schooling for children. In contrast, the rural population lacks full access to state-provided

goods and services (Liang 2016; Solinger 1999). This bifurcated social institution has not only exacerbated the urban-rural divide, but also created various structural barriers for rural migrant workers and their children to fully integrate into cities. Furthermore, opportunities for *hukou* conversion, change from rural to urban status, are tightly controlled and highly restricted.

Migrants with rural *hukou*, though working in urban jobs and living in cities for a long period of time, are not legally equivalent to urban workers; nor are they treated as "locals" (Chan 2010). Analogous to undocumented immigrants in the international literature, their "temporary" legal status and ineligibility for local "citizenship" disadvantages them and makes them especially vulnerable (Chan 2012; Solinger 1999). The disadvantages experienced by migrants may also negatively affect their children. Since *hukou* status is hereditary, children whose parents hold a rural *hukou* will have a rural *hukou* as well. Therefore, children of migrant workers have limited access to urban-based schooling and healthcare, even if they are born in a city.

In the last quarter century, China has witnessed an increasing number of migrants without urban *hukou*, also called "non-*hukou* migrants" or the "floating population" (*liudong renkou*). The *hukou* system in China has made it possible to completely separate *de jure* and *de facto* migration, the actual movement and the eligibility for community membership at the destination (Chan 2010). In restricting rural-urban migrants' access to public services, the *hukou* system functions as a system of social control and highlights the role of state in regulating internal migration.

Living Arrangements and Caregiving in Rural China

According to the new economics of labor migration (NELM) model, migration is a household livelihood strategy to diversify labor and to minimize risks (Massey et al. 1993; Stark and Bloom 1985). In this view, parents orchestrate their migration in a way that they will work and earn in the city, while their children and parents remain behind and spend in the village. Parallel to family separation as a survival strategy within the context of international migration (Abrego 2014; Dreby 2010; Dreby and Adkins 2010), internal migrants also decide to leave their children behind and purposely split their families, after weighing the economic opportunities available in cities with the costs of bringing children along. Difficult living conditions, unstable employment and long work hours, along with the constraints of *hukou* system have discouraged many parents from migrating with children. As a result, a large number of children are left behind in villages, under the supervision of grandparents or other relatives (Huang et al. 2018).

In China, grandparents play an important role in taking care of grandchildren. It is not only a result of Chinese cultural tradition that values extended families and filial piety, but also meets the practical needs of elderly parents, their adult children, and grandchildren (Chu, Xie, and Yu 2011). It highlights the patterns of intergenerational exchange, where caring for grandchildren can be viewed as a strategy to ensure old-age support for the older generation (Chen, Liu, and Mair 2011). The extensive involvement of grandparents in childcare is even more evident in the cases of parental absence. When parents out-migrate for work, children who remain behind usually live with their grandparents. Such living arrangements seem to bring certain benefits: while migrant parents send back remittances to improve the material resources of the left-behind family, the presence of grandparents helps buffer some negative effects of parent-child separation (Tong et al. 2015). Nonetheless, grandparents cannot fully substitute for

the parents' role, especially as they grow older. They face various physical and mental burdens, and may find it increasingly difficult to provide the guidance and support that young children need (Lu 2012). In rural China, grandparents are relatively poorly educated, lacking adequate knowledge of modern parenting practices (Zeng and Xie 2014). A study based on 400 children left behind in 10 rural communities suggests that many grandparents, as temporary guardians, perceive caregiving as simply providing food and clothing, with little attention devoted to children's education and psychological well-being (Ye and Pan 2011). It also points out that children left with grandparents may need to care for the elderly sometimes, which reverses the traditional pattern of caregiving and burdens children with extra responsibilities.

In addition to grandparents, older siblings are also actively involved in supporting younger ones (Menjívar et al. 2016). Ethnographic research on immigrant families in the US highlights the practice of sibling caretaking, in which older children supervise and socialize younger siblings (Hafford 2010). For instance, among Mexican immigrant children, older siblings are often in charge of taking younger children home from school, preparing meals for them, and modeling desired behavior (Hurtado-Ortiz and Gauvain 2007). In the setting of rural China, such practice has also been prevalent, even during the time of one-child policy, since the policy was mainly enforced in urban areas (Ebenstein 2010). Mothers in rural provinces were generally allowed to have an additional birth (a "1.5-child" policy), if their first child was a girl (Ebenstein 2010; Goodkind 2011). As Smith and colleagues (2004) argue, having older siblings in the household may be a protective factor, particularly in the face of parental migration, whereas the presence of younger siblings increases stress for the older child charged with their care. Meanwhile, sibling relations are not always smooth or conducive to child development. There may be tensions, like competition among multiple children for limited household

resources (Menjívar et al. 2016). As extended living arrangements and sibling caretaking are fairly common in rural China, it is important to take them into account when we examine the relationship between parental migration and children's time use, especially for time spent on chores and caregiving.

CURRENT STUDY

My main research question is: does parental migration affect left-behind children's time use, and if so, how? I examine this question within the setting of rural China and differentiate between various forms of parental migration, including father-only migration, mother-only migration, and the migration of both parents. I am mainly interested in children's time spent on studying, doing housework (as well as caregiving), and leisure activities. I expect that children living in households with both parents away will fare the worst; they may share greater domestic responsibilities than their counterparts but spend less time on studying, reading, and other leisure activities. As paternal migration is more common, many children may have normalized their fathers' absence. In contrast, they may experience greater changes in daily routine after their mothers leave. As household tasks normally performed by mothers may be redistributed among those who remain, daughters are the ones typically more affected. They may be charged with extra household chores and sibling care. With respect to age differences, I expect that older children will be more responsive to parental migration than younger children, and they are more likely to assist families to meet labor shortage.

METHODS

Data and Sample

This paper uses data from two large-scale survey projects: (1) the China Health and Nutrition Survey (CHNS); (2) the China Family Panel Studies (CFPS). These two datasets have complementary strengths, which make them suitable for this study. While the CFPS provides a nationally representative sample of the Chinese population, the CHNS sample better represents the rural population. Both surveys collected time use data, with CHNS covering a broad age range for children aged 6 or older and CFPS focusing on children aged 10 to 15. Since the CHNS was not originally designed to study migration, it lacks detailed information with respect to parental migrants, such as their education level and income. In contrast, the CFPS contains richer data related to migration, including remittances that migrants sent back. To better address my research question regarding how parental migration affects children's time use and to further explore variations by child's age and gender, I capitalize on both datasets and will now describe them in detail.

China Health and Nutrition Survey (CHNS) is a longitudinal survey led by researchers at the University of North Carolina at Chapel Hill, which examines a wide range of social, economic, and health outcomes of the Chinese population.[2] The CHNS sample was not designed to be nationally representative, nor is it representative of urban areas, but it is representative of the rural population of nine selected provinces, which vary substantially in social and economic

[2] See https://www.cpc.unc.edu/projects/china for further details.

development.[3] The survey applied a stratified multistage cluster sampling technique to draw households from urban and rural areas of these nine provinces, and conducted interviews to collect information on all members of the households. The average response rate is quite high, around 88% at the individual level and 90% at the household level (Popkin et al. 2010). The survey was conducted in multiple waves, with the first round in 1989, and additional panels collected from 1991 to 2015.

For the purpose of this paper, I use the 2009 and 2011 waves. I restrict my sample to children aged 6 to 17 living in rural areas with agricultural *hukou* during these two survey years. I consider the households in which both parents were typically coresident (excluding the cases where at least one parent was no longer a household member), and I am primarily interested in parental absence due to labor migration (excluding the cases in which parents did not live in the household for other reasons). Dropping observations with missing information on time use yields a sample of 1101 child-year observations. Based on school enrollment status, I further exclude those children who were not in school at the survey time, as children attending school may spend their time very differently from those who do not.[4] My final analytic sample consists of 1013 child-year observations; the 2009 and 2011 cross-sectional samples contain 534 and 479 subjects, respectively.

To complement the CHNS data, I draw on the first wave of the China Family Panel Studies (CFPS), a nationally representative longitudinal survey of Chinese communities, families, and individuals. CFPS examines the economic as well as non-economic wellbeing of

[3] The nine provinces are Henan, Hubei, Heilongjiang, Liaoning, Shandong, Guizhou, Jiangsu, Guangxi, Hunan.

[4] Different survey questions about time use were asked of those respondents attending school vs. those not attending school.

the Chinese population, covering a broad range of topics such as economic activities, educational outcomes, family relationships and dynamics, migration and health (Xie et al. 2017). Only the 2010 baseline survey is used in this study, since later waves did not collect detailed information about children's time use. The CFPS baseline survey successfully interviewed members of 14,960 households from 635 communities, including 33,600 adults and 8,990 children, for an approximate response rate of 81% at the household level and 84% at the individual level (Xie et al. 2017).[5] The sample was drawn from 25 provinces, cities, and autonomous regions in Mainland China.[6] The survey applied a stratified multistage sampling technique, with six initial strata specified as four provinces (Gansu, Guangdong, Henan, and Liaoning), a provincial-level city (Shanghai),[7] and a sixth stratum consisting of the remaining 20 sampled provinces.[8] Within each of the strata, administrative districts or counties were chosen with probability proportional to size (PPS). In the second stage, villages or neighborhood communities were chosen PPS within each county. Finally, within each village or neighborhood, households were sampled at random with equal probability (Xie and Lu 2015). This multistage design ensures that the CFPS sample represents 95% of the total population in China in 2010.[9]

As with the CHNS sample, I focus on rural children who were living with both parents or at most one parent because the other parent (or both parents) had migrated for work. CFPS

[5] Based on AAPOR estimation (see CPFS Technical Report 5).

[6] Tibet, Qinghai, Xinjiang, Ningxia, Inner Mongolia, and Hainan provinces were excluded from the sample to reduce costs.

[7] These five provinces (or administrative equivalents) are representative at the regional level.

[8] The twenty provinces are: Jiangsu, Zhejiang, Fujian, Jiangxi, Anhui, Shandong, Hebei, Shanxi, Jilin, Heilongjiang, Guangxi, Hubei, Hunan, Sichuan, Guizhou, Yunnan, Tianjin, Beijing, Chongqing, Shaanxi.

[9] The excluded provinces and autonomous regions make up 5% of the Chinese population.

defines those younger than age 16 as children, so my analytic sample is restricted to children aged 10 to 15, who completed self-report questionnaires with a time use module. I exclude 204 children who were from non-intact families because their parents had divorced or one of them had died. I further exclude 161 children with at least one parent not economically related to them, or in other words, not typically coresident.[10] Among 3,099 children meeting these criteria, 1,708 were of rural origin (born in villages or townships) and lived in rural areas with an agricultural *hukou* during the survey year. Based on the reasons for parental absence, I exclude eight cases in which parents left hometown for other purposes (like visiting friends or relatives) than labor migration. After omitting the cases with missing information on time use and employing a multiple imputation procedure to impute values on other variables, I obtain a sample size of 1689 children. Among them, 1633 were enrolled in school at the time of data collection, who constitute my final analytic sample.

Measures

The key independent variable of interest is parental migration status. In this study, parents who did not reside in the household during the time of the interview and had left home to seek employment elsewhere are considered migrants. Accordingly, a rural child in non-migrant household refers to someone whose place of residence is classified as rural, who possesses an agricultural hukou, and lives with both parents. A left-behind child is someone with at least one parent who has gone out for work. Among left-behind children, I further disaggregate the measure to distinguish between father-only migration, mother-only migration, and the migration of both parents.

[10] This study only considers the cases in which parents and children are financially dependent family members and belong to the same household.

The outcome variable time use is measured by the number of hours that respondents spent on different activities per week. CFPS asked children aged 10-15 to complete a time use module and to report average daily hours they spent on specific types of activities. Time spent on a weekday and during the weekend were recorded separately. To compute the weekly hours, I multiplied weekday time by five and weekend time by two, then summed them up. After combining certain activities, I have created three categories of time use, including study time, domestic time, and leisure time. Studying involves doing homework, reviewing course materials, and reading after school; domestic responsibilities include doing chores and taking care of family members; leisure activities include watching TV, playing games, exercising, hanging out with friends, and engaging in any kind of hobbies. In the CHNS, children aged 6 and older attending school were asked to report hours and minutes per week spent in a number of physical as well as sedentary activities.[11] They were also queried about their time allocation on household chores and childcare duties. To better compare with the CFPS sample, I mainly focus on sedentary time, domestic time, and leisure time. Sedentary activities include doing homework, extracurricular reading, writing, and drawing; domestic work refers to chores such as cleaning the house, preparing food, and washing clothes; leisure activities mainly include watching TV and playing games.

I incorporate several covariates that are potentially associated with parental migration and children's time use. Demographic controls include child's age and gender. Other covariates include household socioeconomic status, which is captured by the highest education level attained by any household member from the CHNS and parents' years of education from the

[11] Physical activities were queried separately for time spent outside of and during school hours, whereas sedentary activities were asked only regarding time before and after school.

CFPS.[12] To avoid over-controlling, I do not include household income in the model, as it is very likely to be influenced by the event of migration (Xu and Xie 2015). Following previous work, I use two indicators from the CFPS to capture early family socioeconomic environment in which the children were raised—one is an indicator of whether a child was born in a hospital/clinic versus at home or other non-clinic setting, another indicator is whether the child has ever attended kindergarten (Xu and Xie 2015). For the purpose of analysis, I construct a dichotomous measure for children who were born at home and never attended kindergarten (0) versus those who were born in a hospital/clinic or attended kindergarten (1). Whether the household engaged in agriculture and any nonfarm business is also included in the model.[13] To account for household composition and living arrangements, I construct measures of whether the child lived with grandparents and the number of children living in the same household. For CHNS, I further create a measure of living with younger and older siblings.

Other migration related variables include remittances, migration distance, and duration of absence. To explore the impact of remittances on time use, I incorporate a measure of economic returns from migration, which is captured by the CFPS survey question, "Last year, how much money did the family members who worked away from your hometown send or bring back?" This question was asked in the cases where at least one family member out-migrated for work. It is not the most ideal measure since it did not exclusively query about the remittances sent back by migrant parents, but by other family members as well. Notwithstanding this limitation, the remittance measure still enables us to identify some of the economic benefits from migration.

[12] It would have been helpful to study the education level of migrants, but such information is unavailable in CHNS. CFPS collected more information on migrants who were living apart, so parental education level is available regardless of migration status.

[13] Whether the household engaged in agriculture is available in both datasets, whereas only CFPS contains information about whether the household was involved in any non-agricultural business.

Unfortunately, the CHNS did not collect any information about remittances. Migration distance is a dichotomous variable with intra- versus inter-provincial migration, depending on whether the migrant parent moved to a different province from the usual place of residence in the CFPS. The duration of parental absence is measured by the number of months that parents have been away from home. This measure is available in both datasets. To avoid overcontrolling, I do not include migration distance or duration in the model but only present them for a descriptive purpose.

Finally, since social and environmental contexts may affect parents' propensity for migration as well as child outcomes, I include some community-level characteristics from CHNS in the model, which are the percentage of the village labor force primarily engaged in agriculture, the percentage of the labor force worked out of town for >1 month last year, and two dummy variables based on whether the village has access to paved roads and childcare facilities.

Analytic Strategy

Linear regression models are estimated to examine the relationship between parental migration and children's time use. The basic model is specified as:

$$\mathbf{TimeUse}_{it} = \beta_0 + \beta_1 \mathbf{MigrantParent}_{it} + \beta_2 \mathbf{X}_{it} + \varepsilon_{it}, \quad (1)$$

where the outcome variable is the amount of time that child *i* spent on different activities in year *t*; $\mathbf{MigrantParent}_{it}$ is the key independent variable of interest which measures the parental migration status, using a binary (having at least a migrant parent or not) and a more detailed measure (both parents are migrants, fathers as the only migrant, and mothers as the only migrant); $\mathbf{X}_{it}$ is a vector of the covariates described earlier, including demographic controls such as child's age and gender, household characteristics such as SES, involvement in productive activities (including farming and operating small business), household composition and living arrangements (resident grandparents and siblings). The CHNS sample also includes a set of

community-level variables, including the percentage of agricultural population and the share of the labor force that were migrants, as well as the village's access to infrastructure. The CFPS contains a measure related to remittances, which I will incorporate in the analysis as described later. Despite the longitudinal nature of CHNS, I opt for a pooled cross-sectional analysis, since I only employ two survey waves and the attrition rate is high; a panel analysis would be inappropriate.[14] However, I do include province-year fixed effects to account for time-varying macro socioeconomic conditions.

To assess whether the effect of migration varies by gender, I include an interaction term between parental migration status and child's gender such that

$$\mathbf{TimeUse}_{it} = \beta_0 + \beta_1 \mathbf{MigrantParent}_{it} + \beta_2 \mathbf{X}_{it} + \beta_3 \mathbf{MigrantParent}_{it} \times \mathbf{Gender}_i + \varepsilon_{it}. \quad (2)$$

I use the CHNS sample to examine age differences as it covers a broad age range; I stratify the sample by two different age groups—one for younger children aged under 10, and another for older children aged 10 to 17 years. To account for the complex multistage study design of both surveys, I specify the village/neighborhood as the cluster variable and standard errors are clustered at the village level in all regressions. Further, for the CFPS child sample, I apply the population weights to both descriptive and OLS analyses, which take into account the differential sampling rates implied by the sample design, a correction for non-response situation, and any post-stratification adjustment (Xie and Lu 2015).

Further, the major concern with studying migration as the key independent variable is endogeneity, as there may be some unobserved factors that influence parental migration as well as child's time use behavior. Without controlling for selectivity, we might observe a spurious relation between parental migration and time use. To address the endogeneity issue, I follow

[14] Among the 765 children in the pooled sample, 517 of them were only interviewed once, and 248 children were surveyed in both waves.

previous work to employ an instrumental variable approach (Antman 2011; Chang et al. 2011; Hu 2012). I use the community-level migration network as an instrument, measured by the percentage of the labor force that worked out of town during the previous year in the CHNS. However, the Wu-Hausman test fails to reject, suggesting that endogeneity may not have been a big problem in the current study, and that the OLS and IV estimates are similar.

DESCRIPTIVE STATISTICS

Table 1 presents the descriptive statistics for the CHNS pooled sample by parental migration status. In 2009 and 2011, around 68.4% of the rural children aged 6 to 17 lived in non-migrant households; 31.6% were left behind by at least one migrant parent.[15] Among different forms of parental migration, the most common type was father-only migration (16.8%), followed by the migration of both parents (7.7%) and mother-only migration (7.1%). The mean age of children in the full sample was 10.6 years; children with both migrant parents were slightly younger than average whereas children with migrant mothers were slightly older. Over half of the sample were boys, reflecting son preference in rural China. The highest education level attained by any household member was around middle school, with 8.9 years of formal education being completed on average. Non-migrant households seem more advantageous than migrant households in terms of education; however, it is worth noting that the CHNS did not collect information on migrants' education level. It is likely that parents who chose to migrate were those with more human capital. Without relevant data on migrants themselves or pre-migration household SES, I cannot establish any argument about migrant selectivity. 69.2% of the sample households engaged in farming, with a slightly lower proportion among households that sent out both migrant parents. With respect to living arrangements, children left behind by both parents were much more likely to live with grandparents; they also lived in larger households and had a higher rate of residing with younger siblings who were under age 10. On the other hand, children

[15] This figure was slightly lower than the 2010 census statistics (~38%) but very close to the number (~30%) reported from the 2015 1% National Population Sample Survey on left-behind children.

left behind by migrant mothers were less likely to live with young siblings but had a higher chance of residing with older siblings (those aged 10-17). This finding supports prior research which showed that women with older children were more likely to pursue migrant work on their own and faced less pressure (Fan 2003). Finally, regarding time use patterns, we observe that children living in different types of households did not exhibit great variations in terms of their sedentary time or leisure time. Their involvement in domestic work, however, varied across parental migration status. Children with absent mothers spent two more hours per week doing housework, as opposed to their counterparts living in non-migrant households.

I will now turn to the CFPS sample and its descriptive statistics are presented in Table 2. The CFPS sample contains a narrow age range, restricted to children aged 10 to 15 years. In 2010, nearly 22% of the rural children from this age group lived in migrant households; this percentage was lower compared with the CHNS sample. Father-only migration was the most dominant form (12.8%), followed by the migration of both parents (6.2%), whereas mother-only migration was fairly rare (3%). The sex ratio in this sample was similar to that of the CHNS sample, consisting of more boys than girls. However, it is interesting to note that fewer boys lived in single-migrant households. With respect to parental education, there is some suggestive evidence of migrant selectivity, as the migrant parents were more educated than non-migrants on average. Regarding early family SES, mother-away households seem relatively better off. A higher percentage of the sample households (86.5%) were involved in agricultural work than those in the CHNS sample. Households with migrant mothers were more likely to engage in farming whereas households with migrant fathers were less likely to do so. Overall, the rate of operating nonfarm business was low for these rural households (only 6.1%), and migrant households were less likely to engage in such business as opposed to non-migrant households.

Consistent with the finding from the CHNS, extended living arrangement was fairly common in rural China and children left behind by both parents were highly likely to reside with grandparents. This highlights the extensive involvement of grandparents in childcare, especially when both parents are away. Literature also suggests that parents may decide to migrate together if intergenerational support is available (Fan 2008). On average, the sample households had more than one child, indicating that the practice of sibling caretaking may not be unusual. One benefit of the CFPS is that it collected data on remittances sent back by any family members who out-migrated for work. Not surprisingly, households with migrant parents had a higher chance of receiving remittances; when both parents were migrants, they also remitted the most. Finally, in terms of time use, no significant difference was found in children's study time by parental migration status. In the case of both parents' absence, children spent more time on leisure activities. Children in all types of migrant households allocated more time to housework compared with children from non-migrant households.

RESULTS

I will first discuss the results obtained from the CHNS 2009-2011 sample. Table 3 presents the OLS estimates predicting time use patterns of children living in rural China. There exist remarkable gender differences in domestic and leisure time. Regardless of parental migration status, boys spend less time on doing housework but allocate more time to leisure activities outside of school. As they grow older, children are more likely to share domestic responsibilities and contribute their labor. I have used both the dichotomous and the disaggregate measure of parental migration; however, no significant effect was found on children's time usage. In terms of other covariates, living with younger siblings corresponds to a remarkable increase in children's domestic time as they may be charged with extra sibling care.

To assess age differences, I stratified the sample by younger (those under age 10) versus older age (10 years and above) and ran separate analyses for these two groups. Table 4 shows the OLS results for the younger children. I have also included an interaction term between parental migration and child's gender, as seen in columns (2), (4), and (6). Before adding the interaction, parental migration has a marginally significant effect on all three time use categories. Parental migration seems to increase younger children's sedentary and leisure time, whereas reduces their housework time. After including gender interactions, we see that parental migration has a differential impact depending on the child's gender. While migration seems to ease child's labor burden to some extent, such effect is more pronounced for girls than boys. Further analysis using the disaggregate measure of parental migration reveals that such impact is largely driven by the migration of mothers (see Appendix Table 1).

Next, I look at the older children aged 10 to 17 years; the OLS results are presented in Table 5. When I use the aggregate measure, parental migration does not have a significant impact on any of the time use behaviors, and no interaction effect with child's gender has been detected. However, if I further differentiate between various forms of parental migration, I find that maternal migration significantly increases left-behind girls' participation in household labor (see Appendix Table 2).

While the CHNS sample serves as a great starting point to examine how children left behind in rural China may be affected by parental migration and allows us to examine potential variation by different age groups, I will now turn to the CFPS, which contains more information about migrants, including their education level and whether they sent back remittances. Consisting of a larger number of children aged 10 to 15, the CFPS sample may provide us a better picture of how older children are spending their time when parents migrate. As shown by Table 6, having at least one migrant parent tends to increase children's domestic time by 0.95 hour per week, net of other factors. When further disaggregating the measure of parental migration status, Model 5 indicates that the effect seems to be mainly driven by the migration of both parents. Meanwhile, children left behind by both parents also increase their time in leisure activities, by approximately 3.2 hours per week.

Regarding the impact of other covariates, we note a pronounced gender gap: boys spend 1.4-1.5 fewer hours per week than girls on studying and doing housework, respectively, whereas they spend three more hours watching TV, playing games, or hanging out with friends. As children become older and their grade level goes up, they face more schoolwork and spend more time on studying after school. Accordingly, they may have less time for leisure activities. I do not find any significant age difference in domestic time from the CFPS sample, possibly due to

its narrow age range. Turning to parental education and early family SES, father's education is positively associated with child's study time, whereas mother's education is negatively associated with child's housework time and positively related to leisure time. Children raised in better-off environments tend to spend less time on studying, if we hold other variables constant. Children living in agricultural households also spend less time on studying outside of school, possibly because they are burdened with extra labor demand that requires them to engage in some farm work.[16] Finally, the number of resident siblings in the household predicts more time that children allocate to chores and caregiving.

Next, to explore the role of remittances, I reran the analyses with existing controls but adding a dummy variable of whether the household received any remittances from their migrant members. While the measure of remittance appears insignificant across all models in Table 7, it mediates some of the effects that migration had on children's time use, especially for domestic time. In Model 2, the coefficient of parental migration is no longer significant. This seems to provide some support for previous findings which argue that the economic returns from migration can help lift the liquidity constraints of rural households, thereby reducing the demand for child labor. In Model 5, adding the remittance control also explains away the marginally significant impact of both parents' migration (compared with Model 5 in Table 6). As reported in the descriptive statistics, households with both migrant parents were more likely to receive remittances as opposed to other households, and the receipt of remittances may partially compensate for their loss of labor.

With respect to gender differences, maternal migration affects left-behind boys and girls in very different ways, as indicated by the statistically significant interaction term in column (5)

[16] Farm work is not included in domestic activities and is not the focus of this study. The CFPS has an independent question asking the respondents how many days per week on average they helped with housework/farm work.

of Table 8. Net of other factors, maternal migration increases girls' housework time to a great extent; compared with their counterparts living in non-migrant households, girls in mother-away households spend 3.6 hours more on doing chores and taking care of other family members each week. On the other hand, maternal migration reduces boys' participation in domestic work. Boys living in mother-away households allocate the least amount of time to assisting their families. As suggested by prior research, after mothers migrate, an increasing share of domestic responsibilities fall on the adolescent daughters who stay behind; they undertake more household tasks that are traditionally performed by the mothers. Adolescent sons, however, are not as much affected in their daily routine. Further, remittance behavior does not help relax girls' labor burden in this scenario. Both the unconditional effect of maternal migration and the gender interaction remain significant after controlling for remittances; the magnitude of the coefficients also changes very little (see Appendix Table 3).

CONCLUSION

In the present research I have examined the relationship between parental migration and children's time use within the setting of rural China. Through drawing on two survey datasets with complementary strengths, this study provides a fine-grained analysis that sheds light on the implications of parental migration, regarding how it affects left-behind children's time allocation across different domains in everyday life. By adopting a detailed measure of migration, this study provides a nuanced account of different migration practices, including father-only, mother-only, and both parents' migration. The study findings highlight age and gender differences. In particular, parental migration is associated with an increase in younger children's sedentary and leisure time after school, especially for boys; the migration of both parents increases older children's participation in leisure activities. With respect to domestic work, we observe a gender gap from both datasets, net of all else. On average, girls share more housework responsibilities than boys and this is true for children of all ages. Parental migration, particularly fathers' migration, helps mitigate such gap through reducing younger daughters' housework time. However, for older children, migration turns out to increase their labor burden. Maternal migration results in more domestic work taken up by adolescent daughters and reinforces the traditional gendered division of labor with household. This result is fairly robust as observed across both datasets. In line with findings that are documented in other contexts (McKenzie and Rapoport 2011; Menjívar et al. 2016; Parreñas 2005), when mothers out-migrate for work, adolescent girls experience greater changes in their daily routine; they are more likely to assist family with caregiving and maintenance activities than adolescent boys, who are usually less

responsive to maternal absence. Finally, this study has found suggestive evidence related to the economic benefits of remittances, which seem to buffer some negative impacts resulting from the loss of labor from migration. However, the receipt of remittances does not explain away the gender differences in housework when mothers are absent. Further, because of the limitations with the remittance measure, future research is needed to better establish the mediating mechanisms between migration and child outcomes.

Overall, this study adds to the literature on migration and family separation by investigating various forms of parental migration and by assessing age- as well as gender-differentiated impacts. I focus on internal migration and utilize China as a unique case, where its prominent rural-urban migration flows are tightly controlled by institutional arrangements associated with the *hukou* system. In the context of China, state serves as a powerful actor to regulate internal as opposed to international migration. Through examining left-behind children's time use patterns, this paper well complements prior research which has focused on other dimensions of well-being, such as education and health. The analysis suggests that parental migration tends to modify the household division of labor along gender lines. While younger girls seem to benefit from their fathers' migration, older daughters are particularly influenced by their mothers' absence. Maternal migration exacerbates the gender gap in domestic time among older children. Such study findings may be extended to other settings and apply to children whose parents have migrated internationally. As transnational labor migration has become increasingly feminized in many countries such as the Philippines and Indonesia, more children are left behind by migrant mothers (Graham and Jordan 2011). This paper sheds light on the implication of maternal migration and how it may shape the dynamics of time use among left-behind children.

Furthermore, while the empirical findings reveal that older children may spend more time on housework after their parent migrate, I do not detect a corresponding decrease in their study or leisure time, contrary to our expectations. This research does not lend support to earlier narratives that more family assistance, including chores and sibling care, would necessarily sidetrack children from school. It still remains unclear how these added domestic responsibilities would affect children's academic performance as well as health conditions. Explanation awaits further studies to fully explore the linkage between parental migration, time use, and developmental outcomes. Future research could also benefit from the use of longitudinal data to better assess the causal impacts of migration processes. This study has shown a complex picture of significant associations between parental migration and time use for children from different age groups and of different sexes, after accounting for potential confounders. It also points out a direction for future work to investigate the consequences of different types of migration, especially maternal migration, within other contexts.

Table 1. Sample Characteristics by Parental Migration Status, Rural Children Aged 6 to 17 Attending School in 2009 and 2011, China Health and Nutrition Survey (N=1,013)

Variables	All	Non-migrant	Both migrants	Father-only	Mother-only
Age	10.6	10.7	9.92	10.3	11.5
Male	55.6%	56.4%	57.7%	52.9%	51.4%
HH highest education level (years)					
	8.86	9.34	6.50	8.18	8.42
HH engaged in agriculture	69.2%	69.0%	66.7%	70.6%	70.8%
HH size	4.81	4.63	6.15	4.85	4.93
Living with grandparents	42.8%	38.5%	80.8%	44.7%	38.9%
# of children in the household	1.71	1.68	1.88	1.75	1.82
Living with					
Children under age 10	32.9%	31.5%	47.4%	35.3%	25.0%
Children aged 10-17	27.9%	27.3%	26.9%	25.9%	40.3%
Duration of paternal absence (months)			18.4	7.37	
Duration of maternal absence (months)			15.2		14.9
% of the village labor force					
Engaged in agriculture	47.5%	46.0%	49.1%	49.5%	55.9%
Worked out of town	28.5%	26.2%	38.7%	32.4%	29.9%
Access to paved roads	79.7%	78.8%	76.9%	83.5%	81.9%
Access to childcare facilities	53.9%	56.4%	46.2%	48.8%	50.0%
Time use (hours per week)					
Sedentary	25.9	25.4	28.4	26.9	26.2
Domestic	2.79	2.61	3.17	2.52	4.75
Leisure	16.2	16.0	18.3	15.8	16.8
N	1013	693	78	170	72

Table 2. Sample Characteristics by Parental Migration Status, Rural Children Aged 10-15 Enrolled in School, China Family Panel Studies 2010 (N=1,633)

Variables	All	Non-migrant	Both migrants	Father-only	Mother-only
Age	12.4	12.4	12.3	12.6	11.4
Male	53.2%	54.1%	54.7%	46.8%	48.5%
Fathers' education (years)	5.70	5.43	6.31	7.18	5.61
Mothers' education (years)	3.91	3.91	4.51	3.35	5.23
Early family SES					
Born in a hospital	34.5%	34.9%	32.1%	31.2%	45.9%
Ever attended kindergarten	51.9%	50.4%	41.1%	62.6%	76.2%
HH engaged in agriculture	86.5%	86.5%	91.1%	82.2%	95.9%
HH engaged in nonfarm business	6.1%	7.2%	1.4%	1.9%	3.2%
Living with grandparents	37.8%	35.1%	99.3%	20.6%	45.2%
# of resident siblings	2.02	2.01	2.04	2.10	1.88
Received remittances past year	31.2%	20.5%	84.3%	64.5%	71.7%
Amount of remittances[17]	3000	1757	8244	7740	6118
Fathers' migration distance					
Intra-province			19.0%	42.2%	
Inter-province			81.0%	57.8%	
Mothers' migration distance					
Intra-province			17.7%		39.9%
Inter-province			82.3%		60.1%
Duration of paternal absence (months)			19.5	10.9	
Duration of maternal absence (months)			17.3		9.75
Time use (hours per week)					
Study	13.86	13.81	14.99	13.93	12.01
Domestic	5.70	5.50	6.95	6.29	5.92
Leisure	20.15	19.95	23.32	19.84	19.79
N	1633	1273	101	210	49

[17] Unit: *yuan*. At the time of data collection, 6.77 *yuan* ≈ 1 USD.

Table 3. OLS Regression Predicting Time Use, Rural Children Aged 6 to 17 Attending School, China Health and Nutrition Survey 2009-2011 (N=1,013)

	Dependent variable:					
	sedentary	domestic	leisure	sedentary	domestic	leisure
	(1)	(2)	(3)	(4)	(5)	(6)
Male	-0.312	-1.243**	2.676**	-0.353	-1.236**	2.626**
	(1.037)	(0.441)	(0.835)	(1.026)	(0.425)	(0.831)
Age	-0.096	0.301***	-0.254+	-0.098	0.293***	-0.258+
	(0.201)	(0.068)	(0.143)	(0.195)	(0.070)	(0.141)
Migrant parents (ref. non-migrant)	1.063	0.175	0.059			
	(1.380)	(0.437)	(1.019)			
Both migrants				2.360	-0.136	1.700
				(3.116)	(1.198)	(1.852)
Father migrant				0.727	-0.204	-0.401
				(1.869)	(0.430)	(1.236)
Mother migrant				1.001	1.274	0.063
				(2.121)	(0.956)	(1.589)
HH education	0.140	-0.083	0.028	0.176	-0.096	0.072
	(0.209)	(0.072)	(0.169)	(0.214)	(0.066)	(0.177)
HH size	-0.189	0.100	-0.403	-0.247	0.113	-0.476
	(0.523)	(0.185)	(0.383)	(0.572)	(0.201)	(0.408)
Farming	1.306	0.856	0.228	1.386	0.861+	0.331
	(1.440)	(0.540)	(0.994)	(1.502)	(0.521)	(1.017)
Living with grandparents	0.008	-0.448	1.115	-0.072	-0.429	1.014
	(1.339)	(0.530)	(1.082)	(1.302)	(0.538)	(1.087)
Young siblings	-0.584	2.348***	0.405	-0.560	2.363***	0.437
	(1.294)	(0.637)	(1.018)	(1.320)	(0.643)	(1.022)
Old siblings	0.869	-0.296	1.489	0.928	-0.325	1.563
	(1.307)	(0.649)	(1.056)	(1.318)	(0.643)	(1.062)

Note: +p<0.1; *p<0.05; **p<0.01; ***p<0.001

Community-level controls and province-year fixed effects are included in the models but omitted from the table.

Table 4. OLS Regression Predicting Time Use by Gender, Rural Children Aged 6 to 9 Attending School, CHNS 2009-2011 (N=385)

	Dependent variable:					
	sedentary		domestic		leisure	
	(1)	(2)	(3)	(4)	(5)	(6)
Male	0.302	-1.557	-1.180*	-1.640*	1.019	-0.449
	(1.628)	(1.937)	(0.500)	(0.658)	(1.235)	(1.559)
Migrant parents (ref. non-migrant)						
	3.627+	0.191	-0.789+	-1.641*	3.192+	0.479
	(2.203)	(2.394)	(0.405)	(0.656)	(1.741)	(2.120)
Migrant parents*male		5.927*		1.469+		4.681*
		(2.880)		(0.803)		(2.302)
Note:				+p<0.1; *p<0.05; **p<0.01; ***p<0.001		

Table 5. OLS Regression Predicting Time Use by Gender, Rural Children Aged 10 to 17 Attending School, CHNS 2009-2011 (N=628)

	Dependent variable:					
	sedentary		domestic		leisure	
	(1)	(2)	(3)	(4)	(5)	(6)
Male	-0.984	-1.685	-1.383*	-1.187	3.181**	3.030*
	(1.378)	(1.556)	(0.685)	(0.898)	(1.011)	(1.225)
Migrant parents (ref. non-migrant)						
	-0.500	-1.665	0.885	1.210	-1.713	-1.962
	(1.729)	(2.162)	(0.630)	(0.910)	(1.171)	(1.381)
Migrant parents*male		2.188		-0.611		0.468
		(2.969)		(1.364)		(2.186)

Note: The same set of covariates are included in Table 3, 4, and 5.

Table 6. Weighted OLS Regression Predicting Time Use, Rural Children Aged 10-15 Enrolled in School, China Family Panel Studies 2010 (N=1,633)

	Dependent variable:					
	study	domestic	leisure	study	domestic	leisure
	(1)	(2)	(3)	(4)	(5)	(6)
Male	-1.442***	-1.409**	3.148***	-1.462***	-1.418**	3.111***
	(0.430)	(0.441)	(0.720)	(0.422)	(0.439)	(0.722)
Age	0.798***	0.157	-0.714***	0.792***	0.156	-0.729***
	(0.139)	(0.129)	(0.191)	(0.139)	(0.128)	(0.190)
Migrant parents (ref. non-migrant)	0.250	0.954*	0.774			
	(0.734)	(0.451)	(0.961)			
Both migrants				1.588	1.506+	3.221*
				(1.196)	(0.906)	(1.562)
Father migrant				-0.279	0.696	-0.075
				(0.952)	(0.550)	(1.095)
Mother migrant				-0.545	0.814	-1.247
				(1.269)	(1.016)	(1.971)
Father's education	0.149*	0.023	0.183	0.152*	0.026	0.186
	(0.070)	(0.055)	(0.115)	(0.070)	(0.055)	(0.115)
Mother's education	-0.049	-0.102*	0.310*	-0.055	-0.106*	0.301*
	(0.078)	(0.052)	(0.120)	(0.078)	(0.052)	(0.121)
Early SES	-1.248*	-0.626	0.596	-1.212*	-0.612	0.665
	(0.590)	(0.531)	(1.091)	(0.585)	(0.533)	(1.097)
Farming	-1.365*	0.959	0.982	-1.368*	0.953	0.991
	(0.628)	(0.849)	(1.153)	(0.633)	(0.852)	(1.155)
Nonfarm business	1.475+	1.687	0.557	1.508+	1.700	0.622
	(0.895)	(1.105)	(1.512)	(0.896)	(1.108)	(1.511)
Living with grandparents	-0.047	0.198	-0.091	-0.315	0.084	-0.571
	(0.472)	(0.426)	(0.814)	(0.470)	(0.410)	(0.870)

# of children living in the HH	-0.150	0.692**	0.665	-0.146	0.695**	0.669
	(0.315)	(0.261)	(0.638)	(0.313)	(0.262)	(0.640)
Constant	6.196**	2.559	22.368***	6.350**	2.606	22.699***
	(2.179)	(2.284)	(3.193)	(2.159)	(2.256)	(3.161)
Note:						$^{+}$p<0.1; *p<0.05; **p<0.01; ***p<0.001

Table 7. Weighted OLS Regression Predicting Time Use with the Remittance Control, Rural Children Aged 10-15 Enrolled in School, CFPS 2010 (N=1,633)

	Dependent variable:					
	study	domestic	leisure	study	domestic	leisure
	(1)	(2)	(3)	(4)	(5)	(6)
Male	-1.443***	-1.413**	3.143***	-1.462***	-1.420**	3.108***
	(0.431)	(0.443)	(0.721)	(0.422)	(0.441)	(0.722)
Age	0.798***	0.156	-0.716***	0.793***	0.155	-0.730***
	(0.139)	(0.129)	(0.190)	(0.139)	(0.129)	(0.189)
Migrant parents (ref. non-migrant)	0.234	0.857	0.620			
	(0.801)	(0.568)	(1.049)			
Both migrants				1.616	1.405	3.112+
				(1.264)	(1.064)	(1.661)
Father migrant				-0.260	0.625	-0.152
				(0.996)	(0.599)	(1.155)
Mother migrant				-0.523	0.731	-1.335
				(1.281)	(1.074)	(2.017)
Received remittances	0.031	0.193	0.306	-0.045	0.162	0.175
	(0.488)	(0.516)	(1.000)	(0.493)	(0.528)	(1.006)

Note: +p<0.1; *p<0.05; **p<0.01; ***p<0.001

Other covariates are not reported here, which are the same as those included in Table 6.

Table 8. Weighted OLS Regression Predicting Time Use with Gender Interactions, Rural Children Aged 10-15 Enrolled in School, CFPS 2010 (N=1,633)

	Dependent variable:					
	study	domestic	leisure	study	domestic	leisure
	(1)	(2)	(3)	(4)	(5)	(6)
Male	-1.348**	-1.220*	3.338***	-1.347**	-1.228*	3.341***
	(0.460)	(0.478)	(0.827)	(0.459)	(0.478)	(0.827)
Age	0.797***	0.156	-0.715***	0.791***	0.161	-0.728***
	(0.140)	(0.129)	(0.191)	(0.139)	(0.127)	(0.191)
Migrant parents (ref. non-migrant)	0.478	1.410+	1.231			
	(1.009)	(0.728)	(1.053)			
Both migrants				1.332	0.487	3.999*
				(1.360)	(1.032)	(2.007)
Father migrant				0.452	1.417	0.068
				(1.260)	(0.983)	(1.365)
Mother migrant				-1.173	3.612*	0.768
				(2.140)	(1.581)	(2.510)
Migrant parents*male	-0.451	-0.899	-0.901			
	(1.187)	(1.146)	(1.566)			
Both migrants*male				0.505	1.795	-1.477
				(1.501)	(1.682)	(3.067)
Father migrant*male				-1.529	-1.473	-0.261
				(1.479)	(1.349)	(2.023)
Mother migrant*male				1.296	-5.743**	-4.118
				(2.530)	(1.764)	(3.545)

Note: +p<0.1; *p<0.05; **p<0.01; ***p<0.001

Other covariates are omitted from the table, which are the same as those in Table 6.

APPENDIX 1. OLS Regression Predicting Time Use by Gender, Rural Children Aged 6 to 9 Attending School, CHNS 2009-2011 (N=385)

	Dependent variable:					
	sedentary	domestic	leisure	sedentary	domestic	leisure
	(1)	(2)	(3)	(4)	(5)	(6)
Male	0.286	-1.193*	1.003	-1.564	-1.605*	-0.474
	(1.630)	(0.497)	(1.248)	(1.952)	(0.664)	(1.583)
Parental migration status (ref. non-migrant)						
Both migrants	3.334	-0.094	4.727	-3.066	-0.337	-0.363
	(3.461)	(1.081)	(2.955)	(3.471)	(2.046)	(2.405)
Father migrant	3.931	-0.970+	2.657	1.320	-2.469***	0.719
	(2.782)	(0.525)	(2.017)	(3.350)	(0.645)	(2.674)
Mother migrant	2.482	-0.830	3.804+	0.775	-0.430	2.059
	(2.254)	(0.632)	(2.230)	(2.270)	(0.762)	(2.798)
Both migrants*male				10.812*	0.316	8.613*
				(4.733)	(1.866)	(3.870)
Father migrant*male				4.339	2.643**	3.201
				(4.799)	(0.907)	(3.210)
Mother migrant*male				2.489	-1.198	2.875
				(5.305)	(1.119)	(5.179)

APPENDIX 2. OLS Regression Predicting Time Use by Gender, Rural Children Aged 10 to 17 Attending School, CHNS 2009-2011 (N=628)

	Dependent variable:					
	sedentary	domestic	leisure	sedentary	domestic	leisure
	(1)	(2)	(3)	(4)	(5)	(6)
Male	-1.111	-1.369*	3.107**	-1.859	-1.174	2.943*
	(1.344)	(0.681)	(0.995)	(1.555)	(0.900)	(1.225)
Parental migration status (ref. non-migrant)						
Both migrants	2.893	0.144	0.322	-5.141	-0.388	-2.817
	(4.982)	(1.504)	(2.595)	(3.209)	(1.630)	(1.888)
Father migrant	-1.840	0.479	-2.345+	-0.390	0.298	-1.400
	(1.846)	(0.579)	(1.334)	(2.124)	(0.907)	(1.590)
Mother migrant	0.104	1.942	-1.642	-1.186	3.999*	-2.096
	(2.955)	(1.209)	(2.073)	(4.746)	(2.038)	(2.812)
Both migrants*male				13.757+	1.020	5.347
				(7.339)	(2.922)	(3.639)
Father migrant*male				-2.913	0.459	-1.886
				(2.599)	(1.317)	(2.085)
Mother migrant*male				2.285	-3.786+	0.794
				(4.952)	(2.295)	(3.423)

APPENDIX 3. Weighted OLS Regression Predicting Time Use with Gender Interactions, Including the Remittance Control, Rural Children Aged 10-15 Enrolled in School, CFPS 2010 (N=1,633)

	Dependent variable:					
	study	domestic	leisure	study	domestic	leisure
	(1)	(2)	(3)	(4)	(5)	(6)
Male	-1.348**	-1.223*	3.333***	-1.346**	-1.231*	3.337***
	(0.460)	(0.478)	(0.828)	(0.459)	(0.479)	(0.827)
Age	0.797***	0.154	-0.718***	0.791***	0.160	-0.730***
	(0.140)	(0.129)	(0.190)	(0.139)	(0.128)	(0.190)
Migrant parents (ref. non-migrant)	0.462	1.313+	1.078			
	(1.048)	(0.741)	(1.158)			
Both migrants				1.380	0.375	3.868+
				(1.396)	(1.062)	(2.125)
Father migrant				0.491	1.327	-0.037
				(1.290)	(0.978)	(1.430)
Mother migrant				-1.142	3.541*	0.686
				(2.146)	(1.607)	(2.516)
Received remittances	0.033	0.197	0.310	-0.082	0.190	0.222
	(0.488)	(0.518)	(1.000)	(0.494)	(0.526)	(1.009)
Migrant parents*male	-0.451	-0.903	-0.907			
	(1.188)	(1.148)	(1.567)			
Both migrants*male				0.510	1.783	-1.491
				(1.505)	(1.693)	(3.067)
Father migrant*male				-1.535	-1.459	-0.244
				(1.480)	(1.339)	(2.029)
Mother migrant*male				1.319	-5.797**	-4.181
				(2.521)	(1.767)	(3.543)

Note: +p<0.1; *p<0.05; **p<0.01; ***p<0.001

REFERENCES

Abrego, Leisy J. 2014. *Sacrificing Families: Navigating Laws, Labor, and Love Across Borders*. Redwood City, CA: Stanford University Press.

Antman, Francisca M. 2011. "The Intergenerational Effects of Paternal Migration on Schooling and Work: What Can We Learn from Children's Time Allocations?" *Journal of Development Economics* 96(2):200–208. doi: 10.1016/j.jdeveco.2010.11.002.

Antman, Francisca M. 2012. "Gender, Educational Attainment, and the Impact of Parental Migration on Children Left Behind." *Journal of Population Economics* 25(4):1187–1214. doi: 10.1007/s00148-012-0423-y.

Bianchi, Suzanne M., and John Robinson. 1997. "What Did You Do Today? Children's Use of Time, Family Composition, and the Acquisition of Social Capital." *Journal of Marriage and the Family; Minneapolis* 59(2):332–44. doi: http://dx.doi.org.libproxy.lib.unc.edu/10.2307/353474.

Bittman, Michael, and Judy Wajcman. 2000. "The Rush Hour: The Character of Leisure Time and Gender Equity." *Social Forces* 79(1):165–89. doi: 10.2307/2675568.

Boehm, Deborah A. 2017. "Separated Families: Barriers to Family Reunification after Deportation." *Journal on Migration and Human Security* 5(2):401–16. doi: 10.1177/233150241700500209.

de Brauw, Alan, and Ren Mu. 2011. "Migration and the Overweight and Underweight Status of Children in Rural China." *Food Policy* 36(1):88–100. doi: 10.1016/j.foodpol.2010.08.001.

Chan, Kam Wing. 2010. "The Household Registration System and Migrant Labor in China: Notes on a Debate." *Population and Development Review* 36(2):357–64.

Chan, Kam Wing. 2012. "Migration and Development in China: Trends, Geography and Current Issues." *Migration and Development* 1(2):187–205. doi: 10.1080/21632324.2012.739316.

Chang, Hongqin, Xiao-yuan Dong, and Fiona MacPhail. 2011. "Labor Migration and Time Use Patterns of the Left-behind Children and Elderly in Rural China." *World Development* 39(12):2199–2210. doi: 10.1016/j.worlddev.2011.05.021.

Chen, Feinian, Guangya Liu, and Christine A. Mair. 2011. "Intergenerational Ties in Context: Grandparents Caring for Grandchildren in China." *Social Forces; a Scientific Medium of Social Study and Interpretation* 90(2):571–94. doi: 10.1093/sf/sor012.

Chen, Joyce J. 2013. "Identifying Non-Cooperative Behavior among Spouses: Child Outcomes in Migrant-Sending Households." *Journal of Development Economics* 100(1):1–18. doi: 10.1016/j.jdeveco.2012.06.006.

Chu, C. Y. Cyrus, Yu Xie, and Ruoh Rong Yu. 2011. “Coresidence With Elderly Parents: A Comparative Study of Southeast China and Taiwan.” *Journal of Marriage and Family* 73(1):120–35. doi: 10.1111/j.1741-3737.2010.00793.x.

Cortes, Patricia. 2015. “The Feminization of International Migration and Its Effects on the Children Left Behind: Evidence from the Philippines.” *World Development* 65:62–78. doi: 10.1016/j.worlddev.2013.10.021.

Dreby, Joanna. 2010. *Divided by Borders: Mexican Migrants and Their Children*. Berkeley, CA: University of California Press.

Dreby, Joanna. 2015. “U.S. Immigration Policy and Family Separation: The Consequences for Children’s Well-Being.” *Social Science & Medicine* 132:245–51. doi: 10.1016/j.socscimed.2014.08.041.

Dreby, Joanna, and Timothy Adkins. 2010. “Inequalities in Transnational Families.” *Sociology Compass* 4(8):673–89. doi: 10.1111/j.1751-9020.2010.00297.x.

Ebenstein, Avraham. 2010. “The ‘Missing Girls’ of China and the Unintended Consequences of the One Child Policy.” *The Journal of Human Resources* 45(1):87–115.

Fan, C. Cindy. 2003. “Rural-Urban Migration and Gender Division of Labor in Transitional China.” *International Journal of Urban and Regional Research* 27(1):24–47. doi: 10.1111/1468-2427.00429.

Fan, C. Cindy. 2008. *China on the Move: Migration, the State, and the Household*. New York, NY: Routledge.

Goodkind, Daniel. 2011. “Child Underreporting, Fertility, and Sex Ratio Imbalance in China.” *Demography* 48(1):291–316. doi: 10.1007/s13524-010-0007-y.

Graham, Elspeth, and Lucy P. Jordan. 2011. “Migrant Parents and the Psychological Well-Being of Left-Behind Children in Southeast Asia.” *Journal of Marriage and Family* 73(4):763–87. doi: 10.1111/j.1741-3737.2011.00844.x.

Hafford, Carol. 2010. “Sibling Caretaking in Immigrant Families: Understanding Cultural Practices to Inform Child Welfare Practice and Evaluation.” *Evaluation and Program Planning* 33(3):294–302. doi: 10.1016/j.evalprogplan.2009.05.003.

Hagan, Jacqueline Maria, Ricardo Martinez-Schuldt, Alyssa Peavey, and Deborah M. Weissman. 2018. “Family Matters: Claiming Rights across the US-Mexico Migratory System.” *Journal on Migration and Human Security* 6(2):167–80. doi: 10.1177/2331502418777456.

Hu, Feng. 2012. “Migration, Remittances, and Children’s High School Attendance: The Case of Rural China.” *International Journal of Educational Development* 32(3):401–11. doi: 10.1016/j.ijedudev.2011.08.001.

Huang, Youqin, Zai Liang, Qian Song, and Ran Tao. 2018. “Family Arrangements and Children’s Education Among Migrants: A Case Study of China.” *International Journal of Urban and Regional Research* 0(0). doi: 10.1111/1468-2427.12649.

Hurtado-Ortiz, Maria T., and Mary Gauvain. 2007. “Postsecondary Education Among Mexican American Youth: Contributions of Parents, Siblings, Acculturation, and Generational Status.” *Hispanic Journal of Behavioral Sciences* 29(2):181–91. doi: 10.1177/0739986307299584.

Jordan, Lucy P., Qiang Ren, and Jane Falkingham. 2014. “Youth Education and Learning in Twenty-First Century China.” *Chinese Sociological Review* 47(1):57–83.

Kandel, William, and Grace Kao. 2001. “The Impact of Temporary Labor Migration on Mexican Children’s Educational Aspirations and Performance.” *The International Migration Review* 35(4):1205–31.

Katz, Vikki S. 2014. *Kids in the Middle: How Children of Immigrants Negotiate Community Interactions for Their Families*. New Brunswick, NJ: Rutgers University Press.

Larson, Reed W., and Suman Verma. 1999. “How Children and Adolescents Spend Time across the World: Work, Play, and Developmental Opportunities.” *Psychological Bulletin* 125(6):701–36. doi: 10.1037/0033-2909.125.6.701.

Levitt, Peggy. 1998. “Social Remittances: Migration Driven Local-Level Forms of Cultural Diffusion.” *The International Migration Review* 32(4):926–48. doi: 10.2307/2547666.

Liang, Zai. 2001. “The Age of Migration in China.” *Population and Development Review* 27(3):499–524. doi: 10.1111/j.1728-4457.2001.00499.x.

Liang, Zai. 2016. “China’s Great Migration and the Prospects of a More Integrated Society.” *Annual Review of Sociology* 42(1):451–71. doi: 10.1146/annurev-soc-081715-074435.

Lu, Yao. 2012. “Education of Children Left Behind in Rural China.” *Journal of Marriage and Family* 74(2):328–41. doi: 10.1111/j.1741-3737.2011.00951.x.

Lu, Yao, and Donald J. Treiman. 2011. “Migration, Remittances and Educational Stratification among Blacks in Apartheid and Post-Apartheid South Africa.” *Social Forces* 89(4):1119–43. doi: 10.1093/sf/89.4.1119.

Massey, Douglas S., Joaquin Arango, Graeme Hugo, Ali Kouaouci, Adela Pellegrino, and J. Edward Taylor. 1993. “Theories of International Migration: A Review and Appraisal.” *Population and Development Review* 19(3):431–66. doi: 10.2307/2938462.

McKenzie, David, and Hillel Rapoport. 2011. “Can Migration Reduce Educational Attainment? Evidence from Mexico.” *Journal of Population Economics* 24(4):1331–58. doi: 10.1007/s00148-010-0316-x.

Menjívar, Cecilia, Leisy J. Abrego, and Leah C. Schmalzbauer. 2016. *Immigrant Families*. Cambridge : Polity Press, 2016.

Murphy, Rachel, Minhui Zhou, and Ran Tao. 2016. "Parents' Migration and Children's Subjective Well-Being and Health: Evidence from Rural China." *Population, Space and Place* 22(8):766–80. doi: 10.1002/psp.1955.

Orellana, Marjorie Faulstich. 2001. "The Work Kids Do: Mexican and Central American Immigrant Children's Contributions to Households and Schools in California." *Harvard Educational Review; Cambridge* 71(3):366–89.

Parreñas, Rhacel Salazar. 2005. *Children of Global Migration: Transnational Families and Gendered Woes*. Stanford University Press.

Popkin, Barry M., Shufa Du, Fengying Zhai, and Bing Zhang. 2010. "Cohort Profile: The China Health and Nutrition Survey—Monitoring and Understanding Socio-Economic and Health Change in China, 1989–2011." *International Journal of Epidemiology* 39(6):1435–40. doi: 10.1093/ije/dyp322.

Ren, Qiang, and Donald J. Treiman. 2016. "The Consequences of Parental Labor Migration in China for Children's Emotional Wellbeing." *Social Science Research* 58:46–67. doi: 10.1016/j.ssresearch.2016.03.003.

Schmalzbauer, Leah. 2014. *The Last Best Place?: Gender, Family, and Migration in the New West*. Redwood City, CA: Stanford University Press.

Smith, Andrea, Richard N. Lalonde, and Simone Johnson. 2004. "Serial Migration and Its Implications for the Parent-Child Relationship: A Retrospective Analysis of the Experiences of the Children of Caribbean Immigrants." *Cultural Diversity and Ethnic Minority Psychology* 10(2):107–22. doi: 10.1037/1099-9809.10.2.107.

Stark, Oded, and David E. Bloom. 1985. "The New Economics of Labor Migration." *The American Economic Review* 75(2):173–78.

Sullivan, Oriel. 2013. "What Do We Learn About Gender by Analyzing Housework Separately From Child Care? Some Considerations From Time-Use Evidence." *Journal of Family Theory & Review* 5(2):72–84. doi: 10.1111/jftr.12007.

Telzer, Eva H., and Andrew J. Fuligni. 2009. "A Longitudinal Daily Diary Study of Family Assistance and Academic Achievement Among Adolescents from Mexican, Chinese, and European Backgrounds." *Journal of Youth and Adolescence* 38(4):560–71. doi: 10.1007/s10964-008-9391-7.

Tong, Yuying, Weixiang Luo, and Martin Piotrowski. 2015. "The Association Between Parental Migration and Childhood Illness in Rural China." *European Journal of Population* 31(5):561–86. doi: 10.1007/s10680-015-9355-z.

Vanore, Michaella, Valentina Mazzucato, and Melissa Siegel. 2015. "'Left behind' but Not Left Alone: Parental Migration & the Psychosocial Health of Children in Moldova." *Social Science & Medicine* 132:252–60. doi: 10.1016/j.socscimed.2014.08.040.

Wen, Ming, and Danhua Lin. 2012. "Child Development in Rural China: Children Left Behind by Their Migrant Parents and Children of Nonmigrant Families." *Child Development* 83(1):120–36. doi: 10.1111/j.1467-8624.2011.01698.x.

Wen, Ming, Shaobing Su, Xiaoming Li, and Danhua Lin. 2015. "Positive Youth Development in Rural China: The Role of Parental Migration." *Social Science & Medicine* 132:261–69. doi: 10.1016/j.socscimed.2014.07.051.

Xie, Yu, and Ping Lu. 2015. "The Sampling Design of the China Family Panel Studies (CFPS)." *Chinese Journal of Sociology* 1(4):471–84. doi: 10.1177/2057150X15614535.

Xu, Duoduo, Xiaogang Wu, Zhuoni Zhang, and Jaap Dronkers. 2018. "Not a Zero-Sum Game: Migration and Child Well-Being in Contemporary China." *Demographic Research* 38:691–726. doi: 10.4054/DemRes.2018.38.26.

Xu, Hongwei, and Elisabeta Minca. 2008. "How Chinese Children Spend Their Time." Pp. 299–334 in *Applied Demography in the 21st Century*, edited by S. H. Murdock and D. A. Swanson. Dordrecht: Springer Netherlands.

Xu, Hongwei, and Yu Xie. 2015. "The Causal Effects of Rural-to-Urban Migration on Children's Wellbeing in China." *European Sociological Review* 2015. doi: 10.1093/esr/jcv009.

Yang, Dean. 2008. "International Migration, Remittances and Household Investment: Evidence from Philippine Migrants' Exchange Rate Shocks." *The Economic Journal* 118(528):591–630.

Ye, Jingzhong, and Lu Pan. 2011. "Differentiated Childhoods: Impacts of Rural Labor Migration on Left-behind Children in China." *The Journal of Peasant Studies* 38(2):355–77. doi: 10.1080/03066150.2011.559012.

Zeng, Zhen, and Yu Xie. 2014. "The Effects of Grandparents on Children's Schooling: Evidence From Rural China." *Demography* 51(2):599–617. doi: 10.1007/s13524-013-0275-4.

Zhang, Hongliang, Jere R. Behrman, C. Simon Fan, Xiangdong Wei, and Junsen Zhang. 2014. "Does Parental Absence Reduce Cognitive Achievements? Evidence from Rural China." *Journal of Development Economics* 111:181–95. doi: 10.1016/j.jdeveco.2014.09.004.

Zhou, Minhui, Rachel Murphy, and Ran Tao. 2014. "Effects of Parents' Migration on the Education of Children Left Behind in Rural China." *Population and Development Review* 40(2):273–92. doi: 10.1111/j.1728-4457.2014.00673.x.