Dishonesty among Children: Rural/Urban Status and Parental Migration

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Abstract
Decades of economic reform have led to the unprecedented growth of economically driven rural-to-urban internal migration in China. Many migrant parents leave their children behind. According to China's 2010 census, more than 61 million children between birth and 17 years old were "left behind." These left-behind children represent an important segment of the new generation in China. It is important to understand whether their moral development and resultant behavioral choices are affected by parental absence. Moreover, it is also interesting to investigate whether there are differences in the development of moral behavior between urban and rural children regardless of parental presence or absence.

In this lab-in-field experiment, we explore whether parental migration status has a significant influence on whether or not a child chooses to cheat. We study samples from four populations: rural children left behind by both parents, rural children left behind by one parent, rural non-left-behind children, and urban children. When examining the relationship between rural/urban status, parental absence or presence and cheating behavior, we add controls for children's IQ levels, socio-demographic factors and/or psychological traits that may affect behavior. We also examine the effect of risk attitude on cheating. We find evidence of significant cheating among all four samples. However, grade-3 urban students have a significantly greater propensity to cheat than either grade-3 rural students or grade-5 students whether rural or urban. Parental migration status has no effect on the propensity to cheat among rural students in grade 3, but by grade 5 rural children with both parents at home appear less likely to cheat than those for whom both parents are absent.

Keywords: Left-Behind Children, Cheating, Lying, Experiment, China.

JEL Codes: C93, D91, I31, R23.

1. Introduction

Decades of economic reform have led to unprecedented growth fueled by economically driven rural-to-urban internal migration in China. With an urban population that has climbed to 52.6% in 2012 from 20.9% in 1982 (National Bureau of Statistics of China, 2013), China is experiencing what has often been described as the largest migration in human history. According to Lu and Xia (2016), 273 million people in China now live in a place where they do not have a local household registration or *hukou*,[1] and the majority of these people are rural-to-urban migrants. With the current push for further urbanization and industrialization, it is inevitable that rural to urban migration will continue and remain an important force behind China's economic growth.

Although migrant workers have made important contributions to the economic development of urban centers,[2] the discriminatory *hukou* system leads to their employment, social, and residential segmentation from the non-migrant urban population, and hinders their and their family members' access to key public-services such as education, health care, and social security in urban areas. Due to this institutional barrier as well as the financial burden of raising children in urban areas, the vast majority of migrant workers leave their children behind and entrust them to the care of a remaining parent or relatives and friends. These children have been called "left-behind" children (Asis, 2006; Liang and Ma, 2004). It is estimated that more than 61 million children under the age of 17 are classified as left-behind in China (Ai and Hu, 2016), a number equivalent to the number of all the children in the US (The Economist, 2015). In total, left-behind children account for 38 percent of all rural children and 22 percent of all children in China (All China Women's Federation Research Group, 2013).

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[1] *Hukou* (household registration) is a registration identity that classifies a person as either "nonagricultural" or "agricultural" and determines a specific *hukou* location, which is usually based on where one's parents originated. A *hukou* entitles a person at his/her location to employment and is linked to locally financed social security and public services. This often results in discrimination against migrants as very few people can change their *hukou* status and/or location.

[2] For example, Sun (2004) reported that the proportion of gross domestic product (GDP) created by migrant workers is 32% for Beijing, 31% for Shanghai and 30% for Guangdong.

There is a growing body of literature focused on migrant workers and various migration outcomes such as socioeconomic achievements, cultural integration, and health and health-care outcomes (Liang and Ma, 2004; Wen and Wang, 2009). However, this literature has concentrated primarily on adult migrants, largely ignoring a critical externality of the migration process, namely the children left in the original rural communities by one or both parents. A nascent literature on left-behind children has examined the psychological well-being, and educational and health outcomes of being left-behind. Many studies have provided evidence that the environment for left-behind children has been relatively unfavorable (e.g., Asis, 2006) with left-behind children being disadvantaged along a number of dimensions, ranging from physical health outcomes, cognitive and academic achievements, self-esteem, loneliness, and school engagement (e.g. Ai and Hu, 2016; Biao, 2007; Chang et al., 2011; Fan et al., 2010; Hu and Li, 2009; Hu et al., 2014; Li and Wen, 2009; Li, et al., 2010; Luo, et al, 2008; Song and Zhang, 2009; Tao et al, 2013; Ye et al., 2006; Zhang, Li et al., 2014; Zhao et al., 2014).

However, other studies have reported no such adverse effects on these children's psychological and/or physical well-being (e.g. Xu and Xie, 2015; Zhang, Behrman et al., 2014; Zhou et al, 2015). For example, Zhou et al. (2015), who examined several outcome variables including health, nutrition and education, concluded that left-behind children scored equally and in a few areas slightly better than those living with both parents. The authors suggested that there is a "care-versus-resources" trade-off as well as a selection effect at play. Firstly, while children living with both parents receive more face-to-face care from their parents than left-behind children, left-behind children have access to more financial resources than the children of non-migrants. Secondly, there is a self-selection effect as parental characteristics of migrant families may be fundamentally different from non-migrant ones.[3] Notwithstanding this main result, the authors warned that their findings should not be construed as implying that left-behind children

[3] For example, Hao et al. (2016) reported the first incentivized artefactual lab-in-field field experiment conducted in China to examine whether migrants differ from non-migrants in terms of preferences regarding risk, uncertainty and competition in various contexts. Their results show that, compared to non-migrants, migrants are significantly more likely to enter competitions and are more risk tolerant in a strategic environment.

are not vulnerable. Rather, they stress that all rural children sampled in their study perform poorly on most of the indicators considered, which is a consistent finding in the literature (e.g. Sylvia et al., 2015; Wang et al., 2015; Shi et al., 2015) and that "all rural children are vulnerable and need extra care, attention and resources" (p. 1969).

The left-behind children, and rural children in general, representing an important segment of the population directly affected by this massive rural-to-urban migration in China, demand serious research attention to understand fully the profound socioeconomic implications of this migration process. Although there is a burgeoning literature investigating the physical and mental outcomes of parental migration on children, to our knowledge, there has been no research effort to explore such children's moral development, which fundamentally shapes human socioeconomic interaction and outcomes. Our experiment represents the first such investigative endeavor.

The majority of the literature on internal migration in China defines a migrant family as having at least one parent who has migrated to an urban area. Thus, a left-behind child is defined as one who lives in a single parent family, or in a no-parent family within which he or she is cared for by grandparents, relatives, nonrelatives, or nobody at all (e.g., Liu, Li, and Ge, 2009). However, several studies have found that while having one parent at home makes little difference compared to having two parents at home, significant differences do occur when both parents have migrated to the city (e.g., Zhang, Behrman et al. 2014; Zhou, Murphy, and Tao, 2014). We therefore consider four subject groups: rural children left behind by both parents, rural children left behind by one parent, rural children with both parents at home, and urban children. We explore how parental migrant status and rural status may influence a child's propensity to cheat. Furthermore, we collect data about the children's school grade level (a proxy for age), gender, cognitive skills, number of siblings, family wealth, level of risk-aversion, locus of control, school engagement and explore the potential impact of these demographic and psychological variables on the propensity to exhibit cheating behavior.

We find evidence of significant cheating among all groups of students regardless of urban

or rural status, or the number of parents living in rural households. Grade-3 (8-9 year-old) urban students have a significantly greater propensity to cheat than either grade-3 rural students or grade-5 (10-11 year-old) students whether rural or urban. It is noteworthy that while urban students cheat significantly more than rural students in grade 3, urban cheating rates fall by grade 5 to levels comparable with their rural counterparts. While in grade 3, parental absence does not affect the propensity to cheat, by grade 5 rural children with both parents at home appear less likely to cheat than those for whom both parents are absent.

The remainder of this paper is structured as follows. Section 2 briefly discusses the related literature on moral development in children. Section 3 presents the details of our experimental design. Results are in section 4, and we conclude in section 5.

2. Related Literature on Moral Development in Children

Moral development is crucial for both a well-functioning society and individual mental health, and impacts the successful performance of individuals in families, peer groups, and other environments (Koenig, et al., 2004; Maccoby, 1992; Ryan, et al., 1995). In the field of developmental psychology, studies have reported that moral development and prosocial preferences develop with age during childhood (e.g. Eisenberg et al., 2006; Malti et al., 2012; Piaget, 1965; Warneken and Tomasello, 2006). Most of these studies have focused on pro-social behavior such as instrumental or altruistic helping or providing emotional support for needy others, and such behaviors are either measured experimentally, or assessed through observation, parent reports or teacher reports (see a comprehensive survey of related work in this area by Eisenberg and Fabes, 1998).

One key behavior that reflects moral development is the exhibition and inhibition of antisocial behaviors such as cheating and lying. Many psychological studies focusing on the evolution and development of deceitful behavior suggest a decreasing trend of cheating behaviors from late childhood, 8–10 years old, to early adolescence, 11–14 years old (e.g. Broomfield et al., 2002; Bussey, 1992; Talwar et al., 2007; Talwar and Lee, 2008; Xu et al.,

2010). In the field of developmental psychology, there is also research on the moral development of neglected, maltreated and non-maltreated children from low socioeconomic backgrounds. For example, using a variety of psychometric and behavioral tests, research has shown that physically abused children engaged in more stealing behaviors, while neglected and rejected children engaged in significantly more cheating behavior and less rule-compatible behavior (e.g. Koenig, et al., 2004; Rubin and Hubbard, 2004). Heyman et al. (in press) provide a thorough review of the methodologies employed and conclusions reached in the social psychology literature.

In experimental economics, investigating children's lying behavior is a relatively new area of study. Within this nascent literature, we have found only three papers, all of which focused on the influence of age on the development and evolution of moral reasoning, behaviorally manifested in lying behavior. When lying is unobservable, unverifiable and does not adversely affect other subjects, Bucciol and Piovesan (2011) found that the incidence of cheating among children does not differ significantly between the ages of 5 and 15. Comparing the behavior of children aged 10-11 with that of children 15-16 years, Glatzle-Rutzler and Lergetporer (2015), however, reported that the propensity to lie decreases with age. This effect is driven by the fact that compared to teenagers, younger children tell more lies to increase their own payoff when such lies have no impact on others. Lastly, with a sample of children aged between 7 and 14, Maggian and Villeval (2016) showed that while other-regarding preferences develop with age, lying behavior does not develop along the same path. Specifically, lying behavior neither increased nor decreased linearly across age groups. Instead, they found that 9-10 year-old children were more likely to lie than either the older or younger children in their study.

A key result from this literature pertinent to our study is that nurture and socialization both play important roles in the development and formation of moral thinking and related behavioral traits during childhood and adolescence. If nurture and socialization influence the development of moral reasoning and decision-making, then it is vital to examine whether and to

what extent a parent's migration and subsequent absence may influence socialization and thus the formation and shaping of his or her children's moral development. *A priori*, there are several plausible reasons why parental migration could matter: children may differ in the kind of socialization they receive; they may be exposed to different values, and they may grow up in very different family environments. A primary goal of our paper is thus to explore whether there is any impact of parental rural-urban migration on rural children's propensity to cheat.

It is possible that the preponderance of families with migrating parents not only affects the moral values of their own children, but also affects the entire rural community. Thus, it is possible that rural children in general may have a greater propensity to cheat than urban children. However, nurture and socialization may also differ between the city and the countryside for reasons apart from migration, reflecting the different requirements and/or values for success in each environment. This argument was put forward persuasively in the classic *Xiangtu Zhongguo* written in the mid 1940's by Fei Xiaotong and available in an excellent translation (Fei, 1992). It is possible that having to work closely with others in the tight-knit environment of the countryside results in more reliance on others and hence less cheating. Accordingly, a second goal of our paper is to investigate whether there are differences in the development of a propensity to cheat in the urban versus the rural environment in modern China.

3. Experimental Design and Procedure

3. 1 Subject pool and procedure

The rural area where the field experiment was carried out is Kaitang county in Guizhou province, which is located in the southwestern part of China. This province is one of the least developed provinces in China, with inhabitants having an average of 6.75 years of schooling and producing a GDP per capita of 6,742 Chinese Yuan in 2007, equal to just 32% of the national average of 21,049 Yuan (Carlsson et al., 2012). The comparable urban sample was collected in a primary school of similar size in the city of Kaili, also in Guizhou province. The urban and rural schools are about 30 kilometers from each other. All sessions were run in class during regular

school hours. We randomly selected ten classes in grades 3 and 5. A total of 470 students participated in the experiment: 280 from six classes in the rural area (50% are grade-3 students and 55% are boys) and 190 from four classes in the urban area (48% are grade-3 students and 52% are boys).

The cheating experiment discussed in this paper was one of several experiments conducted during the same session using the same participants. Some of the other experiments are discussed elsewhere (Cadsby, Song and Yang, 2018).[4] Upon our arrival, the teachers introduced us to the students and left the room for the duration of the session. The session then began with the experimenter describing the study as a scientific project that studies decision making in children but without revealing any details of the experiment. Students were informed that they would earn various kinds of "goodies" by playing some games. The "goodies" (e.g. candies, mechanical pencils, erasers, compasses, little toys etc.) were presented on the table at the front of the classroom and were shown throughout the session. We solicited each student's willingness to participate in the experiments. All students gave their consent.

The experiment was run as a paper-and-pencil experiment where participants had to indicate their decisions in a booklet, within which each decision was presented on a separate page. Each decision task was carefully explained one at a time and all participants had to answer one or two control questions to check their understanding before using the decision form at the bottom of the page to record their decisions for a given task. (See the Appendix for the complete set of experimental instructions and instruments for the cheating task.) In order to eliminate potential confounds of learning, reputation-building or other strategic motives, all games in the experiment were one-shot games and those games with partners used re-matching protocols between games and partners that were anonymous to each other. The cheating experiment

[4] The other experiments included social preference allocation tasks, a prisoner's dilemma game, and a trust game. The cheating experiment was positioned in between the allocation tasks and the prisoner's dilemma and trust games. Given that these experiments involved the same four sets of subjects (rural not left-behind with two parents at home, rural left-behind with one parent at home, rural left behind with no parents at home, and urban), there is some overlap in our descriptions of the background for this study and for Cadsby, Song and Yang (2018). However, the data analyzed and issues addressed in these two studies are different.

however was conducted individually for each participant with no partner involved. Moreover, students did not learn the outcome of any game until all games were completed. Lastly, all games were incentivized with different types of "goodies" to minimize satiation or wealth effects.[5]

After participants completed all the decision tasks, they were given another booklet to complete to enable us to gather additional demographic data. The first part of the second booklet was the Raven's Progressive Matrices test (Raven et al., 2004), a widely used and reliable nonverbal test of cognitive intelligence that has been used for children frequently in the literature. Besides intelligence, we also collected demographic information about each participant including: 1) gender; 2) grade level, 3 or 5 (age 8-9 or 10-11 respectively); 3) whether he/she was living with one or two parents at the time; 4) family wealth, proxied by the number of major electronic appliances such as TV set, fridge, etc., owned by the family; 5) number of siblings; 6) self-reported school engagement; and 7) locus-of-control. School engagement was measured by a three-question survey (Hu et al., 2014), producing a measure from 1 (highest engagement) to 4 (lowest engagement). Originally developed by Rotter (1966), the locus of control questionnaire measures the extent to which one believes that the outcomes of events in one's life are contingent on what one does (internal control orientation) or on forces outside one's personal control (external control orientation) with 1 representing the highest internal control orientation and 4 representing the highest external control orientation.

At the end of the session, a research assistant went over the earnings from each task with each participant and gave him/her the goodies he/she earned in the experiment according to the outcomes of the games. The whole session took about an hour to complete.

About six months later, we went back to the same research sites and elicited levels of

[5] While it is the usual practice with adult subjects to pay for one randomly selected task when there are multiple tasks in an experiment, paying for each task is common in experiments with children as subjects because it is simpler for children to understand. A legitimate concern with paying for each task is that children may think about the total allocations resulting from the multiple choices instead of considering payoffs in each individual game separately. This is unlikely in our setup, because the children made choices sequentially, they did not know how many choices were to come, and they did not know what the allocations in subsequent tasks would be. Furthermore, the payoff medium in each task was different, ranging from candies, chocolate bars, mechanical pencils, fancy erasers to little toys. For the cheating experiment, the payoff was a compass.

risk-aversion from the same subjects. We adopted a risk-aversion elicitation instrument based on Binswanger (1980) and Eckel and Grossman (2008). Participants were shown six options, depicted in Table 1. Each option includes two payoffs in Smarties, a popular candy, with each payoff occurring with a 50/50 chance. These six options are presented with the top one containing two identical numbers, representing a certain, risk-free payoff, while the subsequent five options represent lotteries that increase in both expected payoff and variance (risk). The last two options present lotteries with identical expected payoffs. However, the last option has a much higher variance to permit identification of participants who may not have risk-averse preferences. We used inverse coding in our statistical analysis so that a higher number would correspond to more risk-averse preferences.

Insert Table 1 about here.

This risk-attitude elicitation instrument is advantageous for field use for at least two reasons. First, 50/50 gambles are easy to understand and even children can intuitively make a choice. Second, the measure is visually presented in a manner that focuses the attention of subjects on the fact that the increase in expected earnings is associated with an increase in risk. We thus find this instrument appropriate to use. It has previously been used successfully among Peruvian farmers with limited education (Engle-Warnick, Escobal, and Laszlo, 2009, 2011).

Students were asked to indicate which one of the six lotteries they would prefer to play to earn actual Smarties. Since our participants were 8-9-year-old or 10-11-year-old children, we used the following wording translated here from the Chinese to help them intuitively understand the 50/50 probability:

> *"Now we are going to play a Card-and-Smarties Candy game. Please notice that I have two cards here. They look identical on the back. However, one has a red heart on the front while the other has a black heart on the front. I will place them face-down and shuffle them a few times. Then I will ask a volunteer to come to the front and pick a card. If he/she picks the red card, then everyone will receive the number of smarties specified*

under the red card column. If he/she picks the black card, then everyone will receive the number of smarties specified under the black card column. Now you must pick one option that you will use for this game. After everyone has picked their preferred option, we will ask one student to come to the front to pick the card."

In the urban area, the teachers were not present when the experimenter administered the risk-attitude elicitation. It was our intention to run the rural elicitation in an identical manner. However, on the day we had set to run the elicitation, there was a very heavy rainstorm, and the school was closed. It was not feasible financially or timewise for our team to stay in Guizhou and wait until the school reopened to administer the elicitation. Therefore, an administrator contacted some teachers who lived close to the school, and asked them come into the school despite the rain. We then carefully explained to these teachers how to administer the risk-elicitation instrument, and asked them to perform this task on our behalf once the school reopened several days later. The teachers administered the elicitation as we requested, and sent us all the files related to the session by mail. They also sent photos and reported that everything had gone smoothly. While this was not ideal, we want to stress that risk attitude was a control variable, and not the primary focus of our study. The cheating experiment itself was administered identically by us with the teachers absent from the session in both the urban and rural areas.

3. 2 Key measure of cheating versus honesty

In this paper, the focus was cheating versus honesty, measured by means of a die-roll game. This task was developed by Fischbacher and Föllmi-Heusi (2013) as a measure of honesty. In their original study (Fischbacher and Föllmi-Heusi, 2013), the authors asked each participant to report the outcome of a die roll that only the participant rolling the die could see, and then paid each participant based on a pre-announced schedule linking the reported outcome of the die roll with a sum of money. This methodology has become known as the "die-under-the-cup" method of examining the propensity of people to cheat. The authors found that people systematically over-reported the outcome of the private die-roll, thus receiving payoffs that were

higher on average that what they would have received with honest reporting. However, most people were only "partial" cheaters in the sense that they did not report the die outcome that would maximize their earnings. This is in line with the idea of "self-concept maintenance" suggested by earlier work in this area (e.g. Shalvi et al., 2011, 2012; Shalvi and Leiser, 2013; Gino and Ariely, 2012; Mazar, et al., 2008; Houser et al., 2012).

In our study, we used a modified version of the "die-under-the-cup" paradigm in order to adapt the methodology for our sample of elementary school-age children. Specifically, all participants were given a six-sided die and a cup. They were asked to roll the die privately in the cup and report the outcome of the die roll. They were told that they would receive a compass if the die-roll's result were an even number and receive nothing if the result were an odd number. Since the even-number outcome and odd-number outcome should happen with the same probability (50/50), we can compare the reported die-roll outcome at the aggregate level with the 50/50 benchmark to infer the propensity to cheat at the session level.

4. Results

4. 1 Data overview and demographic differences across treatment groups

All 470 children completed the study. In Table 2, we present an overview of our key data, categorizing all participants into rural left-behind children with no parents at home (n=132), rural left-behind children with one parent at home (n=98), rural children with both parents at home (n=50), or urban children (n=190). The urban/rural categorization is based on a whether a child's *hukou* residence and school were in the rural area or in the city. If we define a child's status as being left-behind when at least one parent is currently a migrant worker in the city and thus not living with the child, the majority of our rural sample (82%) are left-behind children. Among the left-behind children, more than half have neither parent at home. For those who have one parent at home, about half lived with their mothers (n=47).

Insert Table 2 about here.

The demographic differences are stark between the urban and rural children. Overall, urban children score significantly higher on the Raven IQ test ($p<0.001$), have fewer siblings ($p<0.001$), are wealthier ($p<0.001$), and exhibit higher internal (equivalently lower external) locus-of-control ($p=0.02$) and higher school engagement ($p=0.03$).[6] A parallel comparison between children left-behind by one or both parents and non-left-behind children living with both of their parents in the rural area, however, reveals much smaller gaps. Specifically, left-behind children score higher on the Raven IQ test with marginal significance ($p=0.07$), but are from poorer families ($p=0.002$). There are no significant differences in the number of siblings. In terms of psychological dimensions, left-behind children have significantly higher external (equivalently lower internal) locus of control ($p=0.009$). The only statistically significant difference between children left behind by one parent and children left behind by both parents is that the former come from slightly wealthier families ($p=0.02$). This demographic snapshot is consistent with a recent large-scale non-experimental study (Zhou et al., 2015) in that, compared to their urban counterparts, rural children in general are disadvantaged in terms of SES status.

4. 2 Key results concerning dishonesty

Result 1: There is significant cheating among all groups of students regardless of urban or rural status, whether or not a rural child was left-behind by one or both parents, or grade level.

For each sub-population group based on *hukou* status, migration status and grade, one-sided binomial tests showed that the reported frequencies of rolling an even number were all significantly higher than the statistical 1/2 probability of an even-number outcome on a random die roll, implying significant cheating from all population groups regardless of urban or rural

[6] For locus of control, 1 represents the maximum internal locus of control, while 4 represents the maximum external locus of control. For school engagement, 1 represents the highest level of school engagement, while 4 represents the lowest level.

status, whether or not the child was classified as left-behind by one or by two parents or grade level.[7]

Result 2: Grade-3 urban students have a significantly greater propensity to cheat than either grade-3 rural students or grade-5 students whether rural or urban.

Table 3 reports marginal effects based on two logit regressions with standard errors clustered by class. In both cases, we regress the propensity to report a compass-winning even number on the following independent variables: Rural, a dummy variable equal to 1 for children at the rural school and zero for children at the urban school; Grade-5, a dummy variable equal to 1 for students in grade 5 and 0 for students in grade 3; the interaction between Grade-5 and Rural; and Risk Aversion, a number from one to six with a higher number corresponding to a higher level of risk aversion as explained above. The results in standard non-italicized print are from a logit regression without any other demographic controls. In contrast, the italicized results are from a regression which adds a number of other demographic and psychological control variables, namely gender, Raven IQ score, family wealth level proxied by the number of material possessions reported as owned from a list prepared by the experimenters, number of siblings, school engagement and locus of control.

Insert Table 3 about here.

In both cases, the marginal effect of Rural is negative and significant ($p = 0.013$ without controls; $p = 0.074$ with controls) in grade 3, indicating that grade-3 rural children have a lower propensity to cheat than grade-3 urban children. There is however no such rural-urban difference in the propensity to cheat by grade 5. This is primarily because the urban propensity to cheat falls from grade 3 to grade 5 as indicated by the negative and significant marginal effect of the Grade-5 dummy for the urban children in both regressions ($p = 0.000$ without controls; $p = 0.000$ with

[7] We also performed similar one-sided binomial tests on other subgroups such as males and females, those with only mothers at home and those with only fathers at home, etc. Every such subgroup showed evidence of significantly more than 50% of the subjects reporting an even-number die roll.

controls). There is no significant change in the propensity to cheat between grades for rural children.

Result 3: Among rural children, there is no significant difference in the propensity to cheat related to the number of parents who have migrated versus the number at home in Grade 3. However, by grade 5 rural children with both parents at home appear less likely to cheat than those for whom both parents are absent.

We again employed logit regressions, which allow us to control for grade, risk-aversion and other demographic and psychological variables. Table 4 reports the marginal effects from two regressions, with standard errors clustered by class.[8] In both cases, we regress the propensity to report a compass-winning even number on the following independent variables: PH0, a dummy variable equal to 1 when there are no parents living at home and zero otherwise; PH1, a dummy variable equal to 1 when one parent is at home and zero otherwise;[9] PH2, a dummy variable equal to 1 when two parents are at home and zero otherwise; Grade-5, a dummy variable equal to 1 for students in grade 5 and 0 for students in grade 3; interactions between Grade-5 and PH0, between Grade-5 and PH1, and between Grade-5 and PH2, and Risk Aversion, defined as above. The results in standard non-italicized print are from a logit regression without any other demographic controls. In contrast, the italicized results are from a regression which adds the other demographic and psychological control variables described above.

Insert Table 4 about here.

The urban versus rural results from both regressions are consistent with Result 2 and the regressions reported to support that result. We focus here on the additional rural results. In grade 3, there are no significant differences in the propensity to cheat based on the number of parents at home. In grade 5, the only significant difference is that children with two parents at home appear

[8] Linear probability regressions not reported here but available from the authors yield results consistent with those of the logit regressions and associated tests reported in Table 3.

[9] For simplicity of exposition, we did not distinguish between whether the one parent at home was the mother or the father in the reported regressions. However, in regressions not reported here, we find no significant difference between the presence of a mother versus the presence of a father on a child's propensity to cheat.

to cheat significantly less often than those with no parents at home ($p = 0.034$ without controls; $p = 0.039$ with controls). The Grade-5 dummy is never significant for any subgroup of rural children. However, the combination of the positive albeit insignificant marginal effect of the Grade-5 dummy on cheating for the rural children with no parents at home and the negative but insignificant marginal effect of the Grade-5 dummy for the rural children with both parents at home jointly turn the insignificant difference in the propensity to cheat in grade 3 into a significant difference by grade 5. This suggests that over the period from grade 3 to grade 5 the presence versus absence of both parents may play a role in the development of an inclination versus an inhibition towards cheating behavior.

Result 4: Cheating is inversely related to risk attitude.

As one might expect, children who are more risk-averse are less likely to cheat. The marginal effect of increased risk-aversion is negative and significant in all four reported logit regressions (p-values ranging from 0.006 to 0.016).

5. Conclusions and Discussion

While there is a burgeoning research area that focuses on the role of parental background, most notably socioeconomic background, on the formation of cognitive and non-cognitive skills that directly affect key life outcomes of children (e.g., Bowles and Gintis, 2002; Bowles et al., 2008; Cunha et al., 2006), its role in the formation of morality preferences that shape socioeconomic behavior later in life, while of critical importance, is less explored. In the context of China, which has in recent decades experienced the largest rural-to-urban migration in human history, identifying the effects of rural versus urban background and parental migration on the formation of morality during childhood is potentially an important component to understanding the evolution of Chinese society. Perhaps surprisingly, however, in spite of any deprivations in love and care that may be experienced, we find no evidence that being left behind by one migrant parent has a statistically significant effect on a rural child's propensity to cheat. In contrast, while being left behind by both parents does not result in any statistically detectable differences in

cheating behavior in grade 3, it is associated with significantly more cheating in grade 5 compared to children with both parents at home. When comparing rural children in general with urban children, we find that grade-3 urban children have a greater propensity to cheat than grade-3 rural children. This effect dissipates by grade 5 when cheating among urban children falls to be comparable with rural levels. The results of this study are exploratory and suggestive, but not necessarily generalizable to other countries or even other regions within China. We chose to study children in Guizhou because it is a particularly poor province. There was thus a large population of left-behind children from which to sample. Whether analogous results would be obtained in a wealthier province where many parents have more options available is a subject for further study. Meanwhile, while it is somewhat reassuring that the absence of one parent is not associated with a greater inclination to cheat, this should not be construed as implying that there is no need for parents, grandparents, teachers, and policy makers to continue to be vigilant at mitigating, whenever possible, any deficits in parental care and moral education that may result from parental absence from their rural homes, while working in the city. Our results suggest that this may be particularly important when both parents are absent from the home, a situation that was associated with a statistically significant greater inclination to cheat for grade-5 rural children.

References:

Ai, H., and Hu, J. (2016). Psychological resilience moderates the impact of social support on loneliness of "left-behind" children. ***Journal of Health Psychology***, 21(6), 1066–1073.

Almas, I., Cappelen, A.W., Sørensen, E.O., and Tungodden, B. (2010). Fairness and the development of inequality acceptance. ***Science***, 328, 1176 -1178.

All China Women's Federation Research Group. (2013). Research report into the situation of rural left behind children and rural to urban migrant children. ***China Women's Movement,*** 6, 30–34. (In Chinese.)

Angerer, S., Glätzle-Rützler, D., Lergetporer, P., and Sutter, M., (2015a). How to measure time

preferences in children – A comparison of two methods. ***Journal of the Economic Science Association***, 1, 158-169.

Angerer, S., Glätzle-Rützler, D., Lergetporer, P., and Sutter, M., (2015b). Donations, risk attitudes and time preferences: A study on altruism in primary school children. ***Journal of Economic Behavior and Organization***, 115, 67-74

Asis, M. M. (2006). Living with migration: Experiences of left-behind children in the Philippines. ***Asian Population Studies***, 2(1), 45–67.

Bauer, M., Chytilova, J., and Pertold-Gebicka, B. (2014). Parental background and preferences in children. ***Experimental Economics***, 17, 24-46.

Bettinger, E., and Slonim, R. (2007). Patience among children. ***Journal of Public Economics***, 91, 343–363.

Biao, X. (2007) How far are the left-behind left behind? A preliminary study in rural China. ***Population, Space and Place,*** 13, 179–191.

Binswanger, H. P. 1980. Attitudes toward risk: Experimental measurement in rural India. American. ***Journal of Agricultural Economics***, 62, 395–407.

Bowles, S., and Gintis, H. (2002). The inheritance of inequality. ***Journal of Economic Perspectives***, 16, 3–30.

Bowles, S., Gintis, H., and Osborne-Groves, M. (2008). *Unequal Chances: Family Background and Economic Success*. Princeton University Press, Princeton.

Broomfield, K. A., Robinson, E. J., and Robinson, P. W. (2002). Children's understanding about white lies. ***British Journal of Developmental Psychology***, 20(1), 47–65.

Bucciol, A., and Piovesan, M. (2011). Luck or cheating? A field experiment on honesty with children. ***Journal of Economic Psychology***, 32(1), 73–78.

Bussey, K. (1992). Lying and truthfulness: Children's definitions, standards, and evaluative reactions. ***Child Development***, 63(1), 129–137.

Cadsby, C. B., Song, F., and Yang, X. 2018. Are "left-behind" children really left behind? The impact of rural versus urban residence and parental migration on children's economic

preferences and behavior in China. Unpublished manuscript.

Carlsson, F., He, H., Martinsson, P., Qin, P., and Sutter, M. (2012). Household decision making in rural China: Using experiments to estimate the influence of spouses. ***Journal of Economic Behavior and Organization***, 84, 525-536.

Chang, H., Dong, X., and MacPhail, F. (2011) Labor migration and time use patterns of the left behind children and elderly in rural China. ***World Development***, 39, 2199–2210.

Cunha, F., Heckman, J. J., Lochner, L., and Masterov, D.V. (2006). Interpreting the evidence on life cycle skill formation, in: Hanushek, E., Welch, F., (Eds.), ***Handbook of the Economics of Education***, Elsevier, Vol. 1, pp. 697–812.

Eckel, C., Grossman, P. J., Johnson, C., de Oliveira, A., Rojas, C., and Wilson, R. (2012). School environment and risk preferences: Experimental evidence. ***Journal of Risk and Uncertainty***, 45, 265-292.

Eckel, C. C., and Grossman, P. J. (2008). Forecasting risk attitudes: An experimental study using actual and forecast gamble choices. ***Journal of Economic Behavior and Organization***, 68, 1–17.

The Economist. (2015). *Pity the children: China's left-behind generation.* October 17, 2015. http://www.economist.com/news/briefing/21674712-children-bear-disproportionate-share-hidden-cost-chinas-growth-little-match-children.

Eisenberg, N., and Fabes, R.A., (1998). Prosocial development. In Eisenberg, N. (Ed.), ***Handbook of Child Psychology***, Vol. 3, pp. 701-778. John Wiley & Sons Inc.

Eisenberg N, Spinrad T. L., and Sadovsky, A. (2006). Empathy-related responding in children. In Killen M, Smetana J (eds.), ***Handbook of moral development.*** Mahwah, NJ: Lawrence Erlbaum. 517–549.

Engle-Warnick, J., Escobal, J., and Laszlo, S. (2009). How do additional alternatives affect individual choice under uncertainty? ***Canadian Journal of Economics***, 42, 113–140.

Engle-Warnick, J., Escobal, J., and Laszlo, S. (2011). Ambiguity aversion and portfolio choice in small-scale Peruvian farming. ***B.E. Journal of Economic Analysis and Policy***, 11, Article

68.

Fan, F., Su, L., Gill, M. K., and Birmaher B. (2010) Emotional and behavioral problems of Chinese left-behind children: A preliminary study. ***Social Psychiatry and Psychiatric Epidemiology*** 45(6): 655–664.

Fehr, E., Bernhard, H., and Rockenbach, B. (2008). Egalitarianism in young children. ***Nature***, 454, 1079–1083.

Fei, X. (1992). *From the Soil: The Foundations of Chinese Society*. A translation of Fei Xiaotong's Xiangtu Zhongguo. University of California Press.

Fischbacher, U., and Föllmi-Heusi, F. (2013). Lies in disguise: An experimental study on cheating. ***Journal of European Economic Association***, 11(3): 525–547.

Gino, F., and Ariely, D. (2012). The dark side of creativity: Original thinkers can be more dishonest. ***Journal of Personality and Social Psychology***, 102: 445–459.

Glatzle-Rutzler, D., and Lergetporer, P. (2015). Lying and age: An experimental study. ***Journal of Economic Psychology***, 46, 12–25.

Harbaugh, W.T., and Krause, K. (2000). Children's contributions in public good experiments: The development of altruistic and free-riding behavior. ***Economic Inquiry*****,** 38, 95-109.

Harbaugh, W.T., Krause, K. and Berry, T. (2001). GARP for kids: On the development of rational choice behavior. ***American Economic Review***, 91, 1539-1545.

Harbaugh, W.T., Krause, K., and Vesterlund, L. (2002). Risk attitudes of children and adults: Choices over small and large probability gains and losses. ***Experimental Economics***, 5, 53-84.

Harbaugh, W.T., Krause, K., Liday, S.J., and Vesterlund, L. (2003). Trust in children. In Ostrom, E., Walker, J., (Eds.), ***Trust and Reciprocity: Interdisciplinary Lessons from Experimental Research***. Russell Sage Foundation, New York, pp. 302-322.

Harbaugh, W.T., Krause, K., and Liday, S.J. (2003). Bargaining by children. **University of Oregon Economics Department Working Paper No. 2002-04.**

Hao, L., House, D., Mao, L., and Villeval, M. (2016). Migrations, risks, and uncertainty: A field

experiment in China. ***Journal of Economic Behavior and Organization***, 131: 126-140.

Heckman, J. J. (2006). Skill formation and the economics of investing in disadvantaged children. ***Science***, 312, 1900-1902.

Heyman, G.D., Zhao, L., Compton, B., and Lee, K. (in press). Dishonesty in Young Children. In A. Bucciol and N. Montinari (Eds.), ***Dishonesty in Behavioral Economics.***

Houser, D., Vetter, S., and Winter, J. (2012). Fairness and cheating. ***European Economic Review***, 56(8): 1645–1655.

Hu, F., and Li, S. (2009). Effect of parental migration on academic performance among left behind children in rural China. ***Management World***, 2: 67–74. (In Chinese).

Hu, H., Lu., S., and Huang, C. (2014). The psychological and behavioral outcomes of migrant and left-behind children in China. ***Child and Youth Service Review***, 46: 1-10.

Koenig, A., Cicchetti, D., and Rogosch, F. (2004). Moral development: The association between maltreatment and young children's prosocial behaviors and moral transgressions. ***Social Development***, 13, 87-106.

Li, D., and Wen, Y. (2009). Educational well-being of rural children left behind. ***Education Measurement Evaluation***, 4, 32–35. (In Chinese).

Li, X., Yuan, J., Gao, W., Luo, J., and Du, Y. (2010). Research on negative emotions, behavior, personal relationship caused by left-behind experience of rural children after growing up. ***China Journal of Health Psychology***, 18, 92–94. (In Chinese).

Liang, Z. and Ma, Z. (2004) China's floating population: New evidence from the 2000 census. ***Population and Development Review***, 30, 467–488.

Liu Z., Li X., and Ge X. (2009). Left too early: the effects of age at separation from parents on Chinese rural children's symptoms of anxiety and depression. ***American Journal of Public Health***, 99(11): 2049–2054.

Lu, M. and Xia, Y. (2016). Migration in the People's Republic of China. **Asian Development Bank Institute Working Paper 593**.

Luo, J., Peng, X., Zong, R., Yao, K., Hu, R., Du, Q., Fang, J., and Zhu, M. (2008). The status of

care and nutrition of 774 left-behind children in rural areas in China. ***Public Health Rep***. 123, 382–389.

Maccoby, E. E. (1992). The role of parents in the socialization of children: An historical overview. ***Developmental Psychology***, 28, 1006–1017.

Maggian, V. and Villeval, M. C. (2016). Social preferences and lying aversion in children. ***Experimental Economics***, 19, 663-685.

Malti T, Gummerum, M., Keller, M., Chaparro, M. P., and Buchmann, M. (2012) Early Sympathy and Social Acceptance Predict the Development of Sharing in Children. ***PLoS ONE*** 7(12): e52017.

Mazar, N., Amir, O., and Ariely, D. (2008). The dishonesty of honest people: A theory of self-concept maintenance. ***Journal of Marketing Research,*** 45(6): 633–644.

National Bureau of Statistics of China (2005). *China Statistical Yearbook*. Beijing: China Statistical Press.

National Bureau of Statistics of China (2014). *Annual Report of Monitoring Survey on National Rural-Urban Migrant Workers*. Beijing: China Statistical Press.

Piaget, J. (1965). *The moral judgment of the child*. New York: The Free Press.

Raven, J., Raven, J. C., and Court, J. H. (2003, updated 2004) *Manual for Raven's Progressive Matrices and Vocabulary Scales.* San Antonio, TX: Harcourt Assessment.

Rubin, R., and Hubbard, J. (2003). Children's verbalizations and cheating behavior during game playing: The role of sociometric status, aggression and gender. ***Journal of Abnormal Child Psychology***, 31, 65-78.

Ryan, R. M., Deci, E. L., and Grolnick, W. S. (1995). Autonomy, relatedness, and the self: Their relation to development and psychopathology. In D. Cicchetti & D. J. Cohen (Eds.), *Developmental Psychopathology, Vol. 1. Theory and methods*, pp. 618–655. New York: John Wiley & Sons.

Shalvi, S., Dana, J., Handgraaf, M., and DeDreu, C. (2011). Justified ethicality: Observing desired counterfactuals modifies ethical perceptions and behavior. ***Organizational***

Behavior and Human Decision Processes, 115: 181–190.

Shalvi, S., Eldar, O., and Bereby, Y. (2012). Honesty requires time (and lack of justifications). ***Psychological Science***, 23: 1264–1270.

Shalvi, S., and Leiser, D. (2013). Moral firmness. ***Journal of Economic Behavior and Organization,*** 93: 400–407.

Shi, Y., Zhang, L., Ma, Y., Yi, H., Liu, C., Johnson, N., Chu, J., Loyalka, P., and Rozelle, S. (2015). Dropout in rural China's secondary schools: A mixed methods analysis. ***The China Quarterly***, 224: 1048-1069.

Song, Y., and Zhang, Y. (2009). Parental migration, child health, and healthcare services utilization in rural China. ***Population Research***, 133, 57–65. (In Chinese).

Sutter, M., and Kocher, M. G., 2007. Trust and trustworthiness across different age groups. ***Games and Economic Behavior***, 59, 364–382.

Sutter, M., Kocher, M.G., Rutzler, D., and Trautmann, S. (2013). Impatience and uncertainty: Experimental decisions predict adolescents' field behavior. ***American Economy Review***, 103, 510-531.

Sylvia, S., Luo, R., Zhang, L., Shi, Y., Medina, A., and Rozelle, S. (2013). Do you get what you pay for with school-based health programs? Evidence from a child nutrition experiment in rural China. ***Economic Education Review***, 37: 1–12.

Talwar, V., Gordon, H. M., and Lee, K. (2007). Lying in the elementary school: Verbal deception and its relation to second-order belief understanding. ***Developmental Psychology***, 43(3), 804–810.

Talwar, V., and Lee, K. (2008). Social and cognitive correlates of children's lying behavior. ***Child Development***, 79(4), 866–881.

Tao, X., Guan, H., Zhao, Y., and Fan, Z. (2013). Mental health among left-behind preschool-age children: Preliminary survey of its status and associated risk factors in rural China***. Journal of International Medical Research***, 1-10.

Wang, H., Yang, C., He, F., Shi, Y., Qu, Q., Rozelle S, and Chu, J. (2015). Mental health and

dropout behavior: a cross-sectional study of junior high students in northwest rural China. ***International Journal of Educational Development***, 41:1–12.

Warneken F, and Tomasello M (2006) Altruistic helping in human infants and young chimpanzees. ***Science***, 311: 1301–1303.

Wen, M., and Wang, G. 2009. Demographic, psychological, and social environmental factors of loneliness and satisfaction among rural-to-urban migrants in Shanghai, China. **International Journal of Comparative Sociology**, 50, 155-182.

Xu, F., Bao, X., Genyue, F., Talwar, V., and Lee, K. (2010). Lying and truth-telling in children: From concept to action. ***Child Development***, 81(2), 581–596.

Xu, H., and Xie, Y. (2015). The Causal Effects of Rural-to-Urban Migration on Children's Wellbeing in China. ***European Sociological Review***, 31, 512-519.

Ye, J., Wang, Y., Zhang, K., and Lu, J. (2006). Effect of parental migration on academic performance among rural left behind children. ***Rural Economics***, 7, 119–23. (In Chinese).

Zhang, H., Behrman, J., Fan, C., Wei, X., and Zhang, J. (2014). Does parental absence reduce cognitive achievements? Evidence from rural China. ***Journal of Development Economics***, 111: 181-195.

Zhang, X., Li, S., Liu, C., and Zhang, L. (2014). Effect of migration on children's self-esteem in rural China. ***China and World Economy***, 22, 83-101.

Zhao, Q., Yu, X., Wang, X., and Glauben, T. (2014). The impact of parental migration on children's school performance in rural China. ***China Economic Review***, 31, 43-54.

Zhou L., Huangfu G., Keller M., Mou Y., and Danzhi C. (2008) The development of Chinese children's decision-making in ultimatum and dictator games. ***Acta Psychologica Sinica,*** 40: 402–408.

Zhou, C., Sylvia, S., Zhang, L., Luo, R., Yi, H., Liu, C., Shi, Y., Loyalka, P., Chu, J., Medina, A., and Rozelle, S. (2015). China's left-behind children: Impact of parental migration on health, nutrition, and educational outcomes. ***Health Affairs,*** 34: 1964-1971.

Zhou, M., Murphy, R., and Tao, R. (2014). Effects of parents' migration on the education of

children left behind in rural China. **Population and Development Review**, 40: 273-292.

Table 1 Risk-Aversion Measure

	Red Card Drawn	Black Card Drawn
Option 1	10 Smarties	10 Smarties
Option 2	8 Smarties	14 Smarties
Option 3	6 Smarties	18 Smarties
Option 4	4 Smarties	22 Smarties
Option 5	2 Smarties	26 Smarties
Option 6	0 Smarties	28 Smarties

Table 2 Key Data Overview: The honesty measure and demographic background variables

	Rural no parent at home (n=132)	Rural 1 parent at home (n=98)	Rural both parents at home (n=50)	Urban (n=190)
Reporting an even number$^{\alpha}$	0.71	0.69	0.61	0.79
Risk Aversion$^{\beta}$	3.97	4.01	4.32	4.56
Boys$^{\alpha}$	0.48	0.60	0.61	0.49
Raven-Intelligence$^{\delta}$	6.14	6.16	5.25	8.54
Family Wealth$^{\phi}$	2.50	2.87	3.20	4.23
Number of Siblings	1.96	2.12	1.78	1.03
School Engagement$^{\gamma}$	1.92	1.90	1.84	1.78
External Locus of Control$^{\gamma}$	2.16	2.07	1.69	1.74

Notes: α Frequency of reporting. β A higher number means more risk-averse. δ % of questions answered correctly in the Raven's test. ϕ Number of household material possessions. γ Level of school engagement (out of a high of 4 and low of 1) and level of external locus of control (out of a high of 4 and low of 1).

Table 3 The Impact of impact of rural/urban status on dishonesty

	Urban		Rural	
	Without Demographic Controls	With Demographic Controls	Without Demographic Controls	With Demographic Controls
Marginal Effect of Grade 5 Dummy	-0.13***	*-0.15****	0.04	*0.02*
	(0.01)	*(0.02)*	(0.10)	*(0.10)*
Marginal Effects in Grade 3 and Grade 5				
	Grade 3		Grade 5	
	Without Demographic Controls	With Demographic Controls	Without Demographic Controls	With Demographic Controls
Rural vs. urban baseline	-0.21**	*-0.17**	-0.03	*0.01*
	(0.08)	*(0.09)*	(0.06)	*(0.07)*
		Without Demographic Controls		With Demographic Controls
Marginal Effects of Risk-Aversion at grand mean		-0.03***		*-0.02****
		(0.01)		*(0.01)*

Note: *, ** and *** denote *p*-value at 10%, 5% and 1% for the marginal effects. Standard error terms are in parentheses, and clustered by class. Italic terms denote marginal effects with added demographic controls such as gender, Raven IQ score, family wealth level, locus of control, number of siblings and school engagement.

Table 4 The Impact of impact of rural/urban status and parental migration on dishonesty

	Urban		Rural no parent at home		Rural 1 parent at home		Rural both parents at home	
Marginal Effect of	Without Demographic Controls	With Demographic Controls	Without Demographic Controls	With Demographic Controls	Without Demographic Controls	With Demographic Controls	Without Demographic Controls	With Demographic Controls
Grade 5 Dummy	-0.13*** (0.01)	*-0.15*** (0.02)*	0.06 (0.09)	*0.04 (0.09)*	0.04 (0.16)	*0.01 (0.17)*	-0.004 (0.17)	*-0.01 (0.15)*

Marginal Effects in Grade 3 and Grade 5

	Grade 3		Grade 5	
	Without Demographic Controls	With Demographic Controls	Without Demographic Controls	With Demographic Controls
Rural, no-parent dummy (PH0) vs. urban baseline	-0.19** (0.08)	*-0.15* (0.08)*	0.0002 (0.05)	*0.05 (0.05)*
Rural, one-parent dummy (PH1) vs. urban baseline	-0.20 (0.13)	*-0.17 (0.14)*	-0.03 (0.09)	*0.004 (0.11)*
Rural, two-parent dummy (PH2) vs. urban baseline	-0.26** (0.13)	*-0.21* (0.13)*	-0.13 (0.11)	*-0.06 (0.07)*
Rural, one-parent dummy (PH1) vs. Rural, no-parent dummy (PH0)	-0.01 (0.14)	*-0.02 (0.12)*	-0.03 (0.08)	*-0.04 (0.07)*
Rural, two-parent dummy (PH2) vs. Rural, no-parent dummy (PH0)	-0.07 (0.06)	*-0.05 (0.06)*	-0.13** (0.06)	*-0.11** (0.05)*
Rural, two-parent dummy (PH2) vs. Rural, one-parent dummy (PH1)	-0.06 (0.16)	*-0.04 (0.13)*	-0.10 (0.12)	*-0.06 (0.11)*

Marginal Effects of Risk-Aversion at grand mean	Without Demographic Controls	With Demographic Controls
	-0.03*** (0.01)	*-0.02** (0.01)*

Note: *, ** and *** denote *p*-value at 10%, 5% and 1% for the marginal effects. Standard error terms are in parentheses, and clustered by class. Italic terms denote marginal effects with added demographic controls such as gender, Raven IQ score, family wealth level, locus of control, number of siblings and school engagement.