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CAN SUPERSTITION CREATE A SELF-FULFILLING PROPHECY? SCHOOL OUTCOMES OF DRAGON CHILDREN OF CHINA

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ABSTRACT

In Chinese culture those who are born in the year of the Dragon under the zodiac calendar are believed to be destined for good fortune and greatness, and parents prefer their kids to be born in a Dragon year. Using province level panel data we show that the number of marriages goes up during the two years preceding a Dragon year and that births jump up in a Dragon year. Using three recently collected micro data sets from China we show that those born in a Dragon year are more likely to have a college education, and that they obtain higher scores at the university entrance exam. Similarly, Chinese middle school students have higher test scores if they are born in a Dragon year. We show that these results are not because of family background, student cognitive ability, self-esteem or students' expectations about their future. We find, however, that the "Dragon" effect on test scores is eliminated when we account for parents' expectations about their children's educational and professional success. We find that parents of Dragon children have higher expectations for their children in comparison to other parents, and that they invest more heavily in their children in terms of time and money. Even though neither the Dragon children nor their families are inherently different from other children and families, the belief in the prophecy of success and the ensuing investment become self-fulfilling.

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I. Introduction

Cultural beliefs and preferences impact the behavior of individuals who hold these beliefs. For example, the strength of family ties, based on cultural heritage, negatively influence political participation and civic engagement (Alesina and Giuliano 2011); labor supply and fertility rates in a woman's country of ancestry have explanatory power in determining work and fertility decisions (Fernandez and Fogli 2009), and cultural preferences towards leisure have an impact on the labor market activity of women (Mocan and Pogorelova 2015). The extent to which residents of a country consider people of another country as untrustworthy has an influence on trade and foreign direct investment between these countries (Guiso et al. 2009).

Beliefs and behaviors, even those that can be thought of as having been engrained in the fabric of culture, react to the economic and institutional environment (Mocan and Raschke 2016, Mocan et al. 2017). Yet, there is substantial persistence in beliefs over long periods of time, and beliefs are transmitted through generations (Voigtlaender and Voth 2012; Guiso, Sapienza and Zingales 2008). Such persistence raises the question of whether cultural beliefs, even if they are completely untrue, can be self-fulfilling. For example, Nunn and Sanches de la Sierra (2017) describe a superstitious belief which has emerged in the Democratic Republic of Congo regarding how to become a bulletproof person through a ritual. They show that, although untrue, this belief helped villagers coordinate their defense activities against a group of bandits who possessed firearms, and it allowed the villagers to defeat the bandits. Even though some villagers died in the process because the

ritual never made them bulletproof, that most people believed in this superstition generated a successful mass movement of organized and successful defense against the perpetrators, which then reinforced people's beliefs in this particular superstition.

In this paper we investigate whether a cultural belief about the characteristics of a group of people is self-fulfilling, and we analyze the mechanism which is the source of the self-fulfilling belief. We focus on the wide-spread belief in Asian cultures that people born in certain zodiac years are inherently different from those born in other years. Specifically, in China people born in Dragon years are believed to be superior, powerful and destined for good fortune.

Because there is no biological reason for people who are born in a certain time period to be more successful economically in comparison to those who are born in adjacent time periods, it is surprising that this superstition has persisted for many centuries. In a related domain, researchers started exploring the production and the reasons for persistence of "motivated belief distortions," including such concepts as wishful thinking and willful blindness (Benabou and Tirole 2016, Benabou 2015). For example, Benabaou and Tirole state that "People thus hold certain beliefs in part because they attach value to them, as a result of some (usually implicit) tradeoff between *accuracy* and *desirability*. Such beliefs will therefore be resistant to many forms of evidence, with individuals displaying non-Bayesian behaviors such as not wanting to know, wishful thinking, and reality denial."

We first analyze province level panel data from China and find that the number of marriages go up during the two years before a Chinese Dragon year, arguably because newly-wed parents would like their offspring to be born in a Dragon year. Consistent with

this hypothesis, using province panels we also show that the number of births rise in Dragon years.

If the cohort size of Dragon children is larger because of parents' demand for a "Dragon child" and the resultant increase in the number of birth in Dragon years, this would intensify competition among children of that cohort in terms of educational resources. For example, class sizes in schools would be larger for kids born in Dragon years, which may reduce the quality of education they receive. Similarly, competition for a slot in a high-quality college, and competition for good jobs could be more intense because kids born in Dragon years would have to compete with a larger group of same-age peers. If this is the case, and if children born in a Dragon year have worse educational outcomes in comparison to their peers who are similar in age and in other attributes, this would beg the question of how this particular belief about Dragon children being destined for good fortune greatness could persist.[1]

Against this backdrop, we investigate whether educational outcomes of Dragon children are different from that of their peers. We analyze two separate micro data sets and find that students born in Dragon years are *more likely*, as opposed to less likely, to receive higher scores in the national college entrance examination, and that they are more likely to have attained at least a college education in comparison to similar individuals who are of the same age (or who are very similar in age), but who have different zodiac year designations.

[1] Suen (2004) shows that in a Bayesian framework if information is difficult to obtain or if the person receives information from like-minded people who provide coarse information, then the existing priors (beliefs) are reinforced, and incorrect beliefs can persist.

When we analyze a third data set that contains detailed information on middle school students we find that the same pattern exists in middle school. Middle school students who are born in a Dragon year have higher test scores in comparison to other students who are in the same grade, holding constant many determinants of test scores, including cognitive ability and family background characteristics.

In all three data sets we find that the mothers and fathers of Dragon children and parents of other children have similar educational attainment. The same is true regarding family income, and the propensity of parents having white collar jobs. This suggests that the differential educational success of Dragon children is not related to family background. Better educational outcomes of Dragon children cannot be related to teacher behavior either because it is unlikely for teachers to know the exact birth dates of their pupils to determine their zodiac, and the university entrance exam scores are graded with no information about student identity.

One potential mechanism that can generate better educational outcomes for Dragon children is higher self-esteem of these children. If children born in Dragon years believe that they are superior to other children and if they have higher self-esteem, this may impact their success in school as higher self-esteem and confidence may lead to better learning. The data set on middle school children allows us to analyze this potential channel because it includes questions designed to gauge the self-esteem of the students and their aspirations about their own future. We find that students who are born in a Dragon year do *not* consider themselves as having higher ability than other students. Similarly, Dragon children in middle school are *not* more likely to believe that they will have a successful future.

On the other hand, we find that *the parents* of these Dragon children have substantially higher expectations of their children regarding their children's educational attainment and about their children's future success in comparison to other parents. In addition, we find that parents of Dragon children invest more in their children compared to other parent in terms of time and money. Holding a host of parent and family background attributes constant (ranging from family income to parent education), parents of Dragon children are more involved in their children's education (they have a higher propensity to talk to their child's teacher spontaneously during a semester), they are more likely to enroll their child in kindergarten, they give their child more pocket money, and they protect their child from doing chores around the house.

These results indicate that even though children born in a Dragon year are no different from other children in the dimensions we observe in our data, ranging from cognitive ability to family background, from self-esteem to expectations and aspirations about their future, these students are more successful in school. This is because the parents of Dragon children have higher expectations of their children and they invest in their children more intensely. In the end, these higher expectations yield better educational outcomes. Put differently, these expectations create this self-fulfilling prophecy.

In Section II we provide the background regarding the belief on zodiacs in the Chinese culture. Sections III and IV present some stylized facts showing the existence of preferences for Dragon kids in China using national and provincial panel data. Empirical framework is explained in Section V. The data used in the paper are presented in Section VI, and the empirical results are reported in Section VII. Section VIII is the conclusion.

II. Background and Previous Literature

In traditional Chinese culture and in Asian cultures generally, there are 12 creature-zodiacs, which represent different characteristics of the cohorts born in different Chinese lunar years. The order of the zodiacs, depicted in Figure 1, are Rat, Ox, Tiger, Rabbit, Dragon, Snake, Horse, Sheep, Monkey, Rooster, Dog and Pig. The Chinese zodiacs follow Chinese lunar calendar, and each zodiac appears approximately every 12 years. For example, the Dragon year of 1988 started on February 17, 1988 (the first day of 1988 in Chinese lunar calendar) and ended on February 5, 1989 (the last day of 1988 in Chinese lunar calendar). Following a 12-year cycle, another Dragon year covered the time span between February 5, 2000 and January 23, 2001.[2]

Of these 12 creatures, Dragon is considered as special because of its place in the legends and mysteries. Dragon is a symbol of auspiciousness and power in Chinese culture. One adage in Chinese states "wang zi cheng long", which can be literally interpreted as "hope that my children become Dragons." Chinese people believe that babies born in a Dragon year will have better fortunes than babies born in others years.

There is evidence, reported by previous work, that in many Asian countries the fertility rate goes up during dragon years. Vere (2008) reported that the number of live births in Hong Kong increased significantly in the years of 1988 and 2000 which were two Dragon years. The same pattern in birth rates was found among Chinese in Taiwan, Singapore and Malaysia[3], suggesting that people of Asian culture indeed time their birth

[2] Therefore, if a child was born in 1988, the child's zodiac sign could be Rabbit (the zodiac before Dragon) or Dragon depending on the specific date of his/her birthday. Similarly, if a child was born in 1989, the zodiac sign of this child may be Dragon or Snake (the zodiac after Dragon), again depending on the specific date of birth.

[3] Also see Sim (2015), Yip et al. (2002), Wong and Yung (2005) and Goodkind (1991).

to coincide with the Dragon years. Yet, no evidence was found in mainland China to indicate the existence of birth timing for Dragon children. Goodkind (1991) argued that compared to Taiwan, Hong Kong, and Malaysia, local institutional conditions in China in the 1970s and 1980s, the Cultural Revolution between 1966-1976, and China's birth control policies were factors that prevented China from experiencing baby booms in the Dragon years of 1976 and 1988. During the period of Cultural Revolution, any activity connected with superstition was strictly forbidden, and the One Child Policy had been implemented in China starting in the late 1970s. According to the policy, every couple was allowed to have only one child, and if a couple just missed a Dragon year to have a baby, it would be hard for them to plan for a Dragon baby unless they were willing to wait for 12 years to have a child. Nevertheless, along with the process of becoming more open, the Dragon symbol became acceptable in China again (Goodkind 1991).

As explained in the next section, we show that despite these institutional barriers, parents in mainland China do in fact time the birth of their children. Using national and provincial data on live births we show that the number of live births spiked in the two most recent Dragon years (2000 and 2012)[4]. We also show that the number of marriages goes up during the two years before a Dragon year, which supports the conjecture that couples try and time their marriages and the subsequent pregnancy so that the birth of their child would coincide with the Dragon year.

A handful of studies have examined whether people born in Dragon years have better "fortunes." Using census datasets from Hong Kong, after controlling for education, Wong

[4] Our finding indirectly support the argument of Goodkind (1991). It seems that when local institutional conditions got better and when the impacts of the Cultural Revolution gradually faded away, the favor of Dragon children re-appeared in mainland China.

and Yung (2005) did not find a significant correlation between being born in a Dragon year and labor income. Sim (2015) suggested that due to the large number of new babies born in the Dragon year of 1976 in Singapore, the Dragon cohort should face higher competition when they apply for universities. He found a negative impact of being born in the year of 1976 or 1977 on the probability of obtaining a college degree in Singapore, although the very small sample size he employed and potential misclassification of the Dragon students make the interpretation problematic[5]. Johnson and Nye (2011) compared Asian immigrants to the U.S. to non-Asian immigrants and reported a positive impact of being born in a Dragon year on educational attainment among Asian immigrants.

III. Aggregate Fertility and Zodiacs in China

It is worth noting that, not only the Dragon zodiac, but each of the other 11 zodiac symbol is associated with character attributes, mostly with good or benign connotations. For example, Monkey stands for wisdom, and Snake indicates flexibility. One possible exception is Sheep, which represents being gentle, and Chinese couples worry that their babies, if born in a Sheep year, could be too gentle and thus they could become a follower instead of a leader when they grow up. There is also a superstitious Chinese saying about the zodiac sign of Sheep, which essentially claims that 9 out of 10 people born in a Sheep year would lead bad lives. As a consequence, many couples try to avoid having a baby in

[5] According to the Chinese lunar calendar, the Dragon year of 1976 started on January 31, 1976 and ended on February 17, 1977. This means that the "Dragon cohort" in Sim (2015) included not only Dragons but also Rabbits (the cohort right before a Dragon cohort) and Snakes (the cohort right after a Dragon cohort). Therefore, the negative "Dragon effect" on college entrance does not indicate that the Dragon cohort but the mix of three cohorts had lower propensity of getting into a college in Singapore on average. In fact, the authors mentioned that in the analysis sample, the Dragon cohort was on average better educated in the sense that a higher proportion of the Dragon cohort were college graduates in their sample compared with that among other cohorts.

a Sheep year by rushing to the hospitals to give birth in a Horse year (a year, which is believed to be a good one, that precedes the Sheep year), or, by delaying the birth to the year of the Monkey (another good year, which follows the Sheep year).[6]

Figure 2 presents the annual number of live births in mainland China between 1990 and 2015, obtained from China Health Statistical Yearbook. An important reason for the sharp decline in the number of births after 1991 is that the central government of China promulgated an act, called the "one-vote-down" campaign, to control the birth rate in China and to strictly implement the One Child policy in 1991 (Yi, 1996). Specifically, in order to force local authorities to effectively control the birth rate, the central government requested that local chief officers should be responsible for making sure that the One Child policy was strictly carried out. If the officers were not able to successfully accomplish their mission of implementing the policy, they would lose their jobs. Therefore, fertility was strictly controlled and the number of births declined dramatically after 1991.

As Figure 2 shows, live births jumped up significantly in 2000 and 2012 which are the two most recent Dragon years. Specifically, the number of live births increased by 289,224 in 2000 and by 935,854 in 2012, compared to those in 1999 and 2011, respectively. Even after the implementation of a new policy at the end of 2013 allowing parents to have a second child as long as each of the parents was a single child in his/her family, the number of babies born in China in 2014 was still much lower than that in 2012, which was a Dragon year. Figure 2 also shows that in the year of the Sheep in 2003 the number of

[6] See, for example, "Chinese mothers not keen on births during year of the sheep because of zodiac superstitions," International Business Times, 2015; "Chinese couples rush to get pregnant before dreaded year of the sheep," The Washington Post, 2014; "It's year of the monkey, and good for babies," The New York Times, 1992.

births plummeted by more than 400,000 compared to the number of births in 2002, and that the number of live births dropped to the lowest level since 1993.

IV. The Impact of Dragon Years on Marriages and Births: Evidence from Province Panels

In this section, using province level panel data on the number of marriages newly registered by the government every year between 1979 and 2013, we investigate whether couples are more likely to get married before a Dragon year (so that it would be easier for them to have a Dragon baby); and whether they avoid getting married before a Sheep year in order to avoid having a baby in the Sheep year. Similarly, using the province-level data on live births, we are able to analyze whether more babies were born in Dragon years and fewer babies born in Sheep years[7]. We control for per capita income of the province to account for the impact of economic conditions, and province-level unobservables are accounted for by province fixed effects and province specific-linear trends.

Because the Chinese zodiacs follow the Chinese lunar calendar but the provincial data on the number of marriages and live births follow the Gregorian calendar, and because the two calendars do not overlap perfectly, an adjustment needs to be made to the reported births and marriages. For example, in the lunar calendar the period from February 5, 2000 to January 23, 2001 was a Dragon year. The province-level data on the number of marriages and live births are annual, which are recorded over a Gregorian year from January 1 to December 31. To adjust for the imperfect overlap between the two calendars, we created

[7] The provincial marriage data are from the China Civil Affair's Statistical Yearbook 1979-2014. The data are available for the period of 1978 – 2013. The provincial live births data are collected from the China Health Statistical Yearbook 2004-2014 covering the time period between 2003 and 2013.

dummy variables that capture the proportion of a year that is covered by a given zodiac. For instance, we let Dragon = (366-31-4)/366 for the year 2000. This is based on the fact that the entire month of January and the first 4 days in February of 2000 do not belong to the Dragon year. Therefore, only (366-31-4) days in the year of 2000 (there are 366 days in 2000 since the year of 2000 is a leap year) belong to the Dragon year. We let Dragon take the value of 23/365 in the year 2001 because the first 23 days in 2001 were still inside the range of the Dragon year. We define Tiger, Rabbit, and Sheep similarly.

In panel A of Table 1 the outcome is the number of marriages approved by the government annually per 10,000 population. The data are from 29 provinces/municipalities of China, spanning the years 1979 to 2013.[8] Standard errors, clustered at the province level, are reported in parentheses. The results indicate that more people get married in a Tiger year and a Rabbit year, which are the two consecutive years before the Dragon year. This is presumably because getting married within two years before a Dragon year makes it easier for couples to plan for a Dragon baby. In contrast, the number of marriages declines in the Sheep year.

In panel B of Table 1 we report the impact of the Dragon and Sheep years on the number of live births. The data span 2003 to 2013, and the dependent variable is in logarithms, with a mean value of 12.67. Province-specific linear trends are controlled for in all regressions, along with province fixed-effects. The results show that more births are given in a Dragon year, and fewer births were given in a Sheep year. Thus, Table 1 indicates that that Chinese who live in mainland China care about the zodiacs and that they time both their marriages and the birth of their children accordingly.

[8] The data for Shanghai, Tianjin and Jiangxi area available starting in 1978.

V. Empirical Framework

To investigate the relationship between having been born in a Dragon year and educational achievement, and the potential mechanisms of such a relationship, we employ three different data sets and estimate the following three models below.

Using data from the Chinese General Social Survey (CGSS) we estimate

(1) $$College_i = \alpha_1 + \beta_1 Dragon_i + \delta_1 Sheep_i + \gamma_1 \Omega_i + \theta_k + \xi_i$$

where $College_i$ is a dummy variable indicating whether individual i has attained a college education or higher. $Dragon_i$ and $Sheep_i$ are two dummy variables, representing the the zodiac year of the individual. As explained in the Data Section below, the CGSS contains information on the exact date of birth of the respondents; thus their Zodiac year can be determined with precision. Ω_i stands for a vector of controls, including gender, age, parents' educational level as well as occupations and survey wave dummies; θ_k stands for city fixed effects, and ξ_i is the error term.

In the second set of regressions we utilize the Beijing College Students Survey (BCSS) data to investigate whether Dragon children perform better in the National College Entrance Examination in comparison to other children. Specifically, we estimate

(2) $$CollegeEntranceExamScore_j = \alpha_2 + \beta_2 Dragon_j + \delta_2 Sheep_j + \gamma_2 \Lambda_j + \rho_s + \upsilon_j$$

where $CollegeEntranceExamScore_j$ is college student $j's$ score in the National College Entrance Examination. $Dragon_j$ and $Sheep_j$ are dummy variables to indicate if student j was born in a Dragon year, or in a Sheep year, respectively. Λ_j stands for a set of controls including the student's gender, ethnicity, parents' educational level and family's economic condition. Other control variables include whether the student graduated from

an elite high school, whether the student took the National College Entrance Examination multiple times. Although the college entrance examination is a national exam in China, the questions differ between provinces and municipal cities in different years. To account for such differences, we include province fixed effects, ρ_s.

In the third set of analyses, we examine the relationship between having a Dragon zodiac and the test scores among middle school students by making use of the China Education Panel Study (CEPS) data. We estimate regressions of the form:

$$TestScore_{ks} = \alpha_3 + \beta_3 Dragon_k + \gamma_3 \Theta_k + \lambda_c + \mu_k \quad (3)$$

where $TestScore_{ks}$ is the mid-term test score of student k in subject s, where the subjects are Mathematics, Chinese and English. $Dragon_k$ is a dummy variable equal to one if student k was born in a Dragon year. Θ_k is the vector of control variables, including the attributes of the students such as age, gender, type of *hukou*,[9], ethnicity, whether they are the only child in their family, as well as the linear and quadratic terms of the Body Mass Index (BMI). BMI is included in the regressions because it can influence test scores through its impact on self-esteem (Mocan and Tekin 2011, Liu and Zuppann 2016). Importantly, the CEPS data set also provides information on students' cognitive ability.

Also included are parents' characteristics, ranging from parents' education to whether parents have white collar jobs, to the income level of the family, reported by parents. λ_c stands for a set of classroom fixed-effects, and μ_k is an error term. Standard errors are clustered at the classroom level.

[9] *Hukou* can be understood as a certificate of residency in China. It is correlated with people's choices and rights in terms of housing and schooling.

Using the same CESP data, we also run models depicted by Equation (3), but we employ as dependent variables those that gauge the extent of students' self-esteem and aspirations, reported by the students. These dependent variables include the following six separate indicators that measures if the student believes he/she is (i) articulate, (ii) fast thinker, (iii) quick learner, (iv) has faith in his/her future, (v) wants to go to college, and (vi) if s/he expects to be a leader or officer in national/government institutions, a scientist, an engineer or an executive in a company.

We also analyze the extent to which parents' expectations regarding their children's future are different between parents of Dragon-year children and other parents. These regressions follow the same format as Equation (3), but the dependent variables include such variables as whether the parent expects his/her child to obtain at least a college degree, whether the parent expects the child to get a job in the future as a leader or officer in national/government institutions, a scientist, an engineer or an executive in a company, and whether the parent has faith in the child's future.

Finally, we investigate parents' investment in their children. The questions we analyze include whether the child went to kindergarten[10], the amount of pocket money parents give to the child (in middle school), how many time parents talked to the teachers this semester, and whether the kids do any chores at home helping parents.

To determine the zodiac of the students, the exact date of birth needs to be known. The first data set analyzed, the Chinese General Social Survey (CGSS), contains this information. The other two data sets (BCSS and CEPS), however, include information only on the birth year and birth month of the student, but the day of the birth is not reported.

[10] In China children are not allowed to enter kindergarten before they are 3 years old.

Hence we are not able to determine the zodiacs for those students who were born in a particular month if a lunar Chinese new year started somewhere other than the beginning or the end of that month. For example, a Dragon year started on February 5, 2000, and February 4, 2001 was still the Rabbit year. If a student was born in February, 2000, it can't be determined determine whether s/he was born in the Dragon or the Rabbit zodiac without knowing the exact date of birth. We apply two procedures to deal with such cases in which the zodiac cannot be identified with precision. First we treat those students as having been born in a Dragon zodiac if at least half of the month in which they were born belongs to a Dragon year zodiac. Alternatively, we create adjusted-dummies for being born in Dragon (and Sheep) year. Specifically, if the student was born in a cutoff month between a Chinese Dragon year and a Rabbit or Snake year, we let the Dragon dummy be equal to the share of days belonging to the "Dragon" year in that month. For example, if a student was born in February 1988, the Dragon dummy will be equal to 12/28 (there were 28 days in February of 1988; the first 16 days belong to the Rabbit year, the rest 12 days belong to the Dragon year).

It is conceivable that the parents of Dragon children are systematically different from other parents. For example, they can be more educated, or they can have more income. In all data sets we used, we investigated whether Dragon parents differ from other parents in observable dimensions, ranging from parent education to occupation and family income. As explained later in the paper, there is no difference between the two groups of parents in terms of these attributes, and controlling for these attributes in regressions does not alter the results.

VI. Data

Chinese General Social Survey Data.

We construct separate datasets based on three newly released surveys from China. The data employed to analyze the educational level of the Dragon and Sheep cohorts are obtained from the Chinese General Social Survey (CGSS). CGSS is an annual social survey conducted in China. It covers all provinces, 134 cities, and both rural and urban areas in China. We use the 2010-2013 waves of CGSS because the exact birthdates of the respondents are provided in these four waves, which allows for the determination of their zodiacs accurately. We restrict our data to the survey respondents who were born in and after 1982, the year when the One Child Policy was written into the Chinese constitution, and to those who have already completed their education. Hence in our effective sample the age of the respondents ranges from 18 to 31. This age group includes all zodiacs and using this sample allows us to investigate whether those who are born in Dragon and Sheep zodiacs are different from others. In alternative specifications, we narrow the age window to those who are born between 1985 and 1991 and to those born between 1986 and 1990. Although the sample sizes get smaller, the inference does not change.

Table 2 presents the summary statistics of the CGSS dataset. The total number of observations is 5,181. The dataset covers one Dragon cohort (the Dragon year of 1988) and one Sheep cohort (the Sheep year of 1991).

Beijing College Students Survey Data

The second data set is the Beijing College Students Panel Survey (BCSS), which is employed to examine the relationship between having a Dragon zodiac and students' performance in the National College Entrance Examination in China (see Equation 2

above). Around 5,000 students from 15 universities in Beijing were randomly selected to answer the survey (Li, 2016)[11]. Students were asked to report when they took the National College Entrance Examinations and what their scores were.

The summary statistics of the BCSS dataset are presented in Table 3. Our effective sample contains 4,432 observations. Around 24 percent of the students were born in the Dragon year of 1988, and only 2 percent of the students have a zodiac of Sheep. In various specifications estimated in the paper we created sub-samples with narrower age bands. For example, we included to the sample those born in the Dragon year (1998), those born the year before (1987) and the year after (1989). Alternatively, we restricted the sample to those born in 1998-1989. Results did not change.

Some high schools, with better quality of education and reputation are known as elite or "key" high schools in China. Students were asked if they graduated from a "key" high school. Eighty-seven percent answered in the affirmative. While this is a high rate, it should be noted that the students surveyed are from top universities in Beijing; so it is not surprising that most of them are graduates of elite high schools. We also know the province in which the student took the exam. This allows us to control for between-province differences that can impact the test scores.[12]

Twelve percent of students belong to a minority group in China, and around 16 percent of them took the National College Entrance Examination more than once. The students were asked to rank the income status of their family in their local area, from 1 to 5 indicating from the best to the worst. We create a dummy variable to indicate that the

[11] Almost all the universities are top 50 schools in China. Only one of them has a rank of 52.
[12] Although the college entrance examination is a national event in China, the problems tested in the exams are quite different in different provinces and municipal cities.

economic status of the student's family is good. This variable takes the value of one if the respondent indicated that his/her family's economic condition is the best in the local area, or better than local average income. Table 3 shows that 13 percent of students indicated that their family income can be classified as such.

Middle School Students: China Education Panel Study Data

The third data set analyzed is the China Education Panel Study (CEPS). The CEPS sampling design is based on randomly selecting 438 classrooms from 112 schools in 28 districts, counties or cites, after the first-stage stratification by education level and intensity of population mobility.

We use the only publicly available wave of CEPS, which is conducted in 2013-2014. CEPS collects data on middle school students in grades of 7 or 9, who were born in 1996-2002. Consequently, we do not have a Sheep cohort in the sample, but we have the Dragon cohort of the year 2000. As shown in Table 4, of approximately 15,000 middle school students in our sample (23 percent) were born in the Dragon year of 2000. About half of the students are female.

The data set contains the mid-term test scores in the subjects of Math, English and Chinese. Raw test scores, as well as standardized scores (with mean 70 and standard deviation of 10) are included in the data, where the standardized scores are used in the analyses. The mid-term exam scores are provided by the head teacher of the class or the dean of studies in these middle schools.

Also included in the data set are the scores of a cognitive ability test, registered by the CEPS. Around half of the students are in grade 7 and the other half are in grade 9. Twenty multiple choice question for the 7^{th} grade students, and 22 questions for the 9^{th}

graders were administered to gauge dimensions of language, perceptions of figures and spaces, and calculations and logic.[13] Using the 3PL model to standardize the raw cognitive ability scores, the standardized scores range from -2.03 to 2.71, with a mean of zero. The data set also contains the height and weight, reported by the students which allow us to calculate the body mass index (BMI) of each student.

A unique aspect of this data set is the questions about self-esteem and expectations about the future. The students answered questions regarding their self-esteem and self-expectations about their future. Specifically, students are asked to evaluate statements about themselves by providing a rating to each statement, ranging from 1 "Completely disagree" to 4 "Completely agree". The dummy variable *Articulate* takes the value of 1 if the student "completely agrees" or "agrees" with the statement that "I can express my opinions clearly." *Fast Thinker* is another dummy variable that takes the value of 1 if the student completely agrees or agrees with the statement of "I respond quickly to things". *Quick Lerner* takes the value of one if the student believes that s/he can learn new knowledge quickly.

The students were also asked to evaluate the extent of their faith in their own future. Possible answers range from "I have no faith at all in my future" to "I have a lot of faith in my future." We build a dummy to indicate that a student has some faith or a lot of faith in his/her future. In addition, the survey asks the students what degree they would like to obtain and what kind of job they would like to have in the future. The variable *Wants College Degree or Higher* takes the value of one if the student wishes to obtain at least a college degree. We define *Strong Career Ambition* as a dummy variable indicating

[13] The basic structure of the test has been borrowed from the Taiwan Education Panel Survey (TEPS).

whether a student expects to have a job as a leader or officer in national/government institutions, a scientist, an engineer or an executive in a company.

The CEPS also asked parents about their expectations for their children. We create a dummy variable to indicate that parents expect their children to have at least a bachelor's degree based on the question: "what degree do you expect your children to achieve?" Parents are also asked the question "what occupation do you expect your children to have in the future?" We created a dummy variable to indicate whether parents have strong career ambition for their children, revealed by their expectation of their children becoming a leader or officer in national/government institutions, a scientist, an engineer or an executive in a company. Another dummy takes the value of one if parents are "confident" or "very confident" that their children are going to have a bright future. We also constructed a dummy variable to indicate whether parents expect of their child to perform better than class average.

We created a set of dummy variables that measure various aspects of parents' investment in their children. Specifically, we created a dummy variable to indicate whether parents contact the teachers of their kids frequently in the current semester. We also built a variable which measures the amount of pocket money given to the kids each week by their parents. The CEPS survey asks the students whether they usually help parents in housework and during the summer/winter holiday. A similar question asks the students how much time they spent helping parents in house chores during the past week. We created two separate dummy variables indicating whether the kids help parents around the house with chores during the holiday, and whether the child help with house chores during the past week. The survey also contains a question asking the students whether they ever

attended kindergarten after 3 years old. We treat the information on the kindergarten attendance as another aspect of parents' investment in children and we create a dummy variable which takes the value of one if the child attended kindergarten.

We observe in the data whether it was the mother or the father who answered the questions about parents' expectations, and we add this dichotomous indicator to the relevant regressions as a control. We drop an observation if someone other than the student's parents (e.g. uncle or grandfather) answered the survey questions.

We have indicators for both the mother and the father having at least a college degree. Similarly, *Father White Collar* and *Mother White Collar* are two dummy variables indicating whether the father and the mother have white collar and skilled jobs. The model also includes a dummy variable gauging the income status of the family. Parents were asked about their current economic conditions of their family. The alternatives were: very bad, bad, intermediate, rich and very rich. The dichotomous variable *Family Has High Income* takes the value of one if the parent indicated that they feel rich and very rich.

VII. Results

Dragons and College Education

Table 5 presents the results obtained by estimating Equation (1) using the CGSS data. The summary statistics of the sample are provided in Table 2. The dependent variable is an indicator to show whether or not the respondent has attained a bachelor's degree or higher. The average age in the sample is 25.1, with a narrow standard deviation of 3.4. Note that the CGSS survey is registered in different years. Thus, the respondents who are of the same age in the data may have different birth years. The regressions control for age,

thus the variation in zodiac years is obtained from the incomplete overlap between the lunar and Gregorian calendars. For example, of those who are 24 years of age, only 27 percent are born in Dragon years. Similarly, 15 percent of the 23 year olds are born in a Dragon year, and 26 percent of the 25 year olds are Dragons.

Column 1 of Table 5 shows that all else the same, those born in Dragon year have 11 percentage points higher probability to obtain a bachelor's degree or higher in comparison to individuals born in other zodiac years. When the individual's father or mother has a college degree or higher, his/her propensity to obtain a bachelor's degree is increased by around 27 and 21 percentage points, respectively. Adding an indicator for those who are born in a Sheep year in column (2) shows that the undesirability of having been born in a Sheep year has no impact on the propensity of obtaining a college degree or higher, but the inclusion of Sheep dummy does not influence other coefficients. Column (3) reports the model that contains dummies for labor market activity of both the mother and the father. These classifications include not only general categories such as full-time farming, casual worker, individual business, unemployed, retired, and housework, it also includes such categories as disabled and passed away.[14] The results remain intact after controlling for parents' occupational attributes.

The sample used in regressions reported in columns (1) to (3) of Table 5 includes individuals who are born between 1982 and 1995. There is one Dragon cohort in this group: those who are born in 1988. To create cohorts of individuals who are more similar in their

[14] All 17 categories are: 1. Employed by others (having a fixed employer); 2.full-time farmer; 3. Part-time farmer; 4. Contract employee/dispatched worker; 5. Casual worker (no fixed employer); 6. Working in family business, with salary; 7. Working in family business, no salary; 8. Freelance; 9. Individual business; 10. Owner or partner of a business; 11. Retired; 12. Unemployed; 13. Disabled; 14. In school without having a job; 15. Does housework; 16. Passed away; 17. Others;

birth years, we kept those who are born between 1985 and 1991. This group contains those who are born in the year of the Rabbit (the year before Dagon), the year of the Snake (the year after Dragon), Tiger (two years before Dagon), Horse (two years after Dragon), Ox (three years before Dragon) and Sheep (three years after Dragon). The results are reported in column (4) of Table 5. The sample size goes down to 2,562, and the estimated impact of the Dragon dummy gets smaller, but remains significant. Narrowing the window of birth year from 1986 to 1990 reduces the samples size further to 1,938 in column (5), and the sample size shrinks to 1,205 when we analyze the cohorts born in 1987—1989 in column (6). The magnitude of the Dragon dummy in column (6) of Table 5, indicates that a Dragon child is about 14 percent more likely to have at least bachelor's degree.

In summary, the results of Table 5 indicate that those who are born in a Dragon year are about 11 percentage points more likely to have a college education in comparison to those born in other zodiac years; and they are 5 to 6 percentage points more likely to have a college education in comparison to the cohorts that are one or two years older or younger.

Dragons and University Entrance Exam Scores

Table 6 presents the results obtained from estimating Equation (2). The outcome is students' test scores on the National College Entrance Examinations. The descriptive statistics of the data used in these regressions (BCSS) are provided in Table 3.

The results, reported in column (1) of Table 6 show that, all else the same, the National College Entrance Examination scores of those who are born in a Dragon zodiac are around 7.5 points higher (on a mean of 580 points). Although this is about 1.3 percent impact

relative to the average score, this difference can have a profound effect on student placement. This is because a large population of students takes the exam each year in China, and in the extremely competitive environment each additional point has an impact on whether or not, and to which university the student will qualify to attend.

Table 6 also shows that female students and minorities have lower scores. Those who have attended an elite high school receive substantially higher scores than students who graduate from other high schools[15]. Those who have taken this college entrance exam before have lower scores, possibly because taking the exam multiple times is a sign of previous low scores.

The timing of the Chinese Zodiacs are exogenously determined by the Chinese lunar calendar. However, we have presented evidence in Table 1 to indicate that parents, on the margin, prefer to have their babies born in a Dragon year. It could be that these parents are more educated or have more income, and that education and income might be responsible for the difference in the college entrance exam scores between Dragon children and other children. Thus, we include to the model a dummy variable to indicate if family income is higher than the local average income. We also include dummy variables to indicate whether the father has a college education or higher, and whether the mother has a college degree or higher.

Column (2) shows that students whose parents are better educated score higher on the University Entrance Exam. The same is true if family income is above average. However,

[15] The elite high schools are called key high schools or key-point (literal interpretation) high schools. There are some key high schools in China in different jurisdictions (province level, city level, county level). The government allocates much more resources to the key high schools, such that the key high schools have more funding, better teachers, etc. Every middle school has to take a high school entrance exam to apply to a high school, and the score a student gets in this exam is the only determinant of the acceptance. Key high schools have higher minimum required scores than ordinary high schools. Some details are discussed in Ye et al. (2015)

the coefficient of the Dragon dummy is not impacted by controlling for parent education and family income.

In column (3) we include dummy variable to indicate whether the student was born in a Sheep zodiac year. The estimated coefficient of the Sheep dummy is negative, and significant at 10% level. The model in Column (3) of Table 6 also includes age dummies for the students, where the left-out category consists of those who are aged 16 or younger. Older students receive lower scores, but controlling for the age of the students at the time of the exam does not alter the result that students who are born in a Dragon year score higher on the university entrance exam.

Column (4) restricts the sample to the cohorts born between 1987 and 1989; thus in this sample students differ in age by a maximum of three years. Of the 2,860 students in this sample, 976 (34.1%) are born in the year of the Dragon, 913 (32%) are born in the year of the Snake, and the rests are born the year of the Rabbit or Tiger. In this sample, being a Dragon child is associated with an increase in the College Entrance Exam score by about 6.2 points.

In column (5) we further restrict the sample to those who are born in either 1988 or 1989. Forty-eight percent of this sample are those who are born in the year of the Dragon, 45 percent are born in the year of the Snake, and the rest are born in the year of the Rabbit. Having been born in a Dragon year is associated with an around 8-point increase in the exam score.

Analysis of Middle School Students

The regressions reported in Table 7 analyze the impact of having been born in a Dagon year on test scores of middle school students. The descriptive statistics used in these regressions are provided in Table 4. The regressions use 13,309 middle school students who are in the 7th or 9th grade in 438 classrooms from 112 schools. There is no Sheep cohort in the sample, but many of those born in 2000 have the zodiac of the Dragon. Specifically, the Dragon year started on February 5, 2000 and ended on January 23, 2001. This means that a substantial portion of the 7th grade students (44 percent) and some of the 9th grade students (2 percent) are born in a Dragon year.[16]

The results in Table 7 display three regressions, where the dependent variables are students' standardized midterm test scores in Mathematics, Chinese and English. In addition to student characteristics ranging from BMI to cognitive ability, the regressions also control for parent attributes and classroom fixed effects. Standard errors are clustered at the classroom level.

The coefficients reported in Table 7 reveal that cognitive ability has a significant impact on test scores in all three subjects, and that the same is true of parents' education. Female students score higher, and age-for-grade has a negative impact on midterm scores.

Column (1) of Table 7 shows that the students born in a Dragon year score higher in math, although the estimated impact is not statistically different from zero. Columns (2) and (3) indicates that Dragon children score higher in both Chinese and English mid-term exams and these magnitudes are statistically different from zero. Reducing the sample to

[16] The survey does not contain data on 8th grade students. In China children born between September 1 of year t and August 31 of year t+1 are in the same school cohort. Thus, 40 percent of the 7th graders in our sample are born in 2000 and 51 percent are born 2001. Forty-nine percent of the 9th graders are born in 1999, and about 3 percent of them are born in 2000.

those who are born between 1998 and 2001 has no impact on the results, which are displayed in Table 1 in the Appendix.

Regressions in Table 7 control for parent education, parents' job type (white collar occupations) and an indicator for high family income. Therefore, the impact of the Dragon zodiac on test scores are not driven by parent education or income. It could, however, be the case that Dragon children have higher self-esteem than other kids, and higher self-esteem can have a positive impact on test scores. The detail of the data set allows us to test this hypothesis. Specifically, students were asked to evaluate their own attributes ranging from beliefs in their mental ability to their career ambitions.

Regressions reported in Table 8 explain students' self-evaluations on six dimensions. For example, the dependent variable in column (1) of Table 8 is a dummy variable to indicate if the student believes that she/he can articulate his/her thoughts clearly. The dependent variable of the model in column (2) is an indicator on whether the student believes that he/she is a fast thinker. Other self-evaluated attributes are whether the student believes that she/he is a quick thinker, whether she/he wants to go to college, whether she/she wants to be a leader or officer in national/government institutions, a scientist, an engineer or an executive in a company and whether he has faith in this/her own future. The descriptive statistics of these variables are provided in Table 4.

The results of Table 8 show that cognitive ability has a positive impact on each of these components of self-evaluation. The same is true, for some questions, for family income and parent education. But the coefficient of the Dragon dummy is small in each regression and never significantly different from zero. This indicates that having been born in a Dragon year has no impact on various aspects of self-esteem. As shown in Appendix

Table 2, narrowing the sample to whose born between 1998 and 2001 does not change the results. Thus, self-esteem cannot be the reason to explain the impact of the Dragon dummy on test scores, reported in Table 7.

As mentioned earlier in the paper, it can be argued that parents of Dragon children may be different from other parents. For example, they may be more educated or they may have more income. If such attributes of the parents make them more likely to time their birth and make it more likely for them to have Dragon child, and if these attributes also impact child outcomes, then it would be the influence of these factors that impact child's education and test scores. To eliminate such confounding in the regressions we control for all available parent attributes, including income, occupation and education. To formally investigate whether Dagon parents and other parents differ from each other in observable dimension, we run parent attributes on a dummy to indicate if their child was born in Dragon year. We do this in all data sets used in the paper. The results are reported in Table 9. Panel A displays the results from the CGSS sample, which shows that the probability of the father having at least a bachelor's degree is not different between the father of Dragon children and other fathers. The coefficient of the Dragon dummy is 0.008 and highly insignificant. The same is true about mothers' education. Mothers of Dragon children are no more likely to have a college education or higher. Panels B and C of Table 9 demonstrate the same picture in other data sets. In no case do we see a difference between the parents of Dragon children and other parents regarding their education, income or the probability of having a white collar occupation.

It is all about the Parents

The data set also includes questions about how parents perceive their kids' future and how they expect their children's future to look like. The questions that were asked of parents include whether parents believe their child will obtain at least a high school diploma, whether they believe that their child will obtain at least a bachelor's degree, whether they expect the child to become a leader or officer in national/government institutions, a scientist, an engineer or an executive in a company, and whether they have faith in their child's future.[17] Table 10 presents the results of these regressions. The models include attributes of the children, including gender, BMI, and cognitive ability, as well as parent characteristics including parent education and family income status. In all cases, the Dragon dummy is positive, and in four of the five models it is highly significant. This indicates that all else the same, parents have higher expectations of their child if their child is born in the year of the Dragon. When the narrow the age group of the kids to those born between 1998 and 2001 we obtain the same results (reported in Appendix Table 3).

Parents' high expectations of their child's future success and especially current success on study can translate into devoting resources to the child for his/her success. For example, parents may spend more time consulting teachers about their child, or they may be less likely to require their children to help with the chores around the house.

If parents' expectations about their child's future are related to the effort and the resources they spend on their child, parent expectations would be positively related to the child's test scores. To investigate this hypothesis, we included variables that gauge parent

[17] No parents expect their children to get a college diploma without getting a high school diploma. There 64 parents in the data who expect their children's education to stop before regular high school but still wish their children to find a job as a leader or employer in government or national institutions.

expectations to the midterm test scores regressions displayed in Table 7. Any change in the estimated value of the coefficient of the Dragon dummy in these regressions reveal information about the mechanism through which the Dragon dummy impact test scores. Specifically, given that parents of Dragon children have higher expectations of their children, to the extent that the Dragon dummy acts as a proxy for these expectations, including both the Dragon dummy and parent expectations as explanatory variables to the model to explain test scores should provide a coefficient of the dragon dummy that is smaller in magnitude and statistical significance in comparison to the models that excludes parent expectations.

Therefore, we add parents' expectations into the models reported in Table 7. The new results are reported in Table 11. Compared to those reported in Table 7, the coefficients of the Dragon dummy variable are about half as large, and they are not different from zero in any three columns. This indicates that after controlling for parents' expectations, the Dragon zodiac no longer explains higher test scores of the Dragon kids. On the other hand, all five variables measuring parent expectations have positive and significant coefficients. Narrowing the age group of the children to those born between 1998 and 2001 did not alter these results (reported in Appendix Table 4)

Table 12 presents the regression results that test whether parents of Dragon children invest more in their children in comparison to other parents. The results reported in column (1) of Table 12 suggest that parents of Dragon kids are 1.4 percentage points more likely to take the initiative to actively contact their child's teachers 5 or more times in the current semester in comparison to other parents. The results in columns (2) and (3) indicate that parents of Dragon kids have a higher propensity to enroll their children in kindergarten and

that they give more pocket money to their children. The dependent variables in columns (4) and (5) measure whether the child often spends time on house chores. The estimates suggest that Dragon kids are less likely to help parents on housework. As shown in Appendix Table 5, when the narrow the age group of the kids to those born between 1998 and 2001 we obtain the same results.

VIII. Conclusion

In Chinese culture those who are born in a Dragon year are believed to be destined for good fortune and greatness. Using province level panel data we show that the number of marriages goes up during the two years preceding a Dragon year and that births jump up in a Dragon year. Using three recently collected micro data sets from China we show that those born in Dragon year are more likely to have a college education, and that they obtain higher scores at the university entrance exam. Similarly, Chinese middle school students have higher test scores if they are born in Dragon year. We show that these results are not because of family background, student cognitive ability, self-esteem or student's expectations about their future. We find, however, that the "Dragon" effect on test scores is eliminated when we account for parents' expectations about their children's educational and professional success. We find that parents of Dragon children have higher expectations for their children in comparison to other parents, and that they invest more heavily in their children in terms of time and money. Even though neither the Dragon children nor their families are inherently different from other children and families, the belief in the prophecy of success and the ensuing investment become self-fulfilling.

Figure 1
The Order of Twelve Chinese Zodiacs

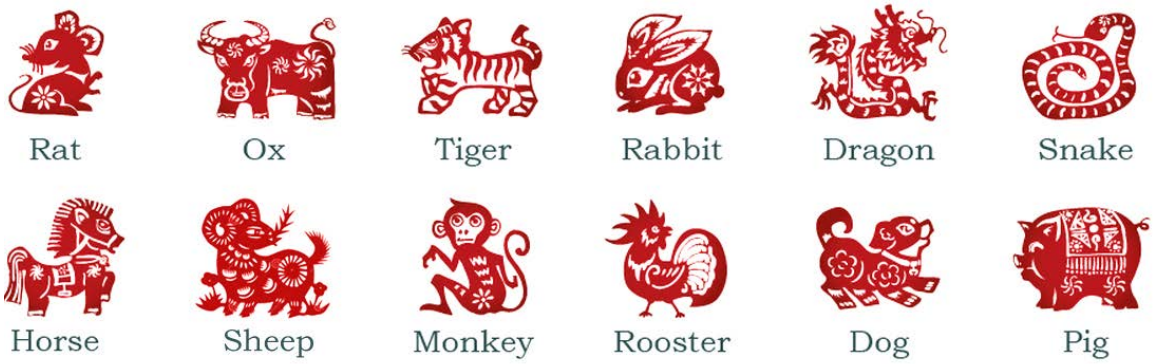
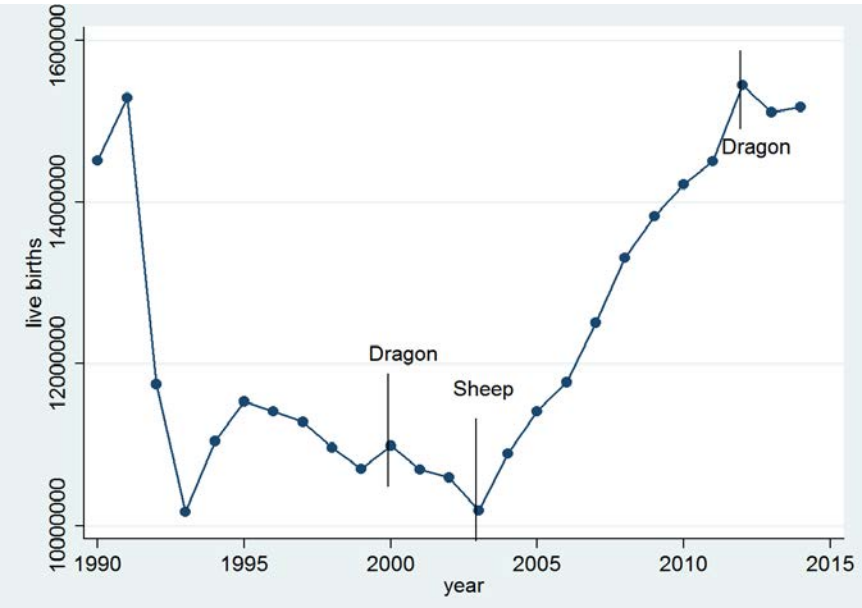


Figure 2
The Numbers of Live Births in China 1990-2014.



The data are from China Health Statistical Yearbook 2015.

Table 1
The Impact of and Chinese Zodiacs on Marriages and Live Births in Chinese Provinces

Panel A:	Marriages			
	(1)	(2)	(3)	(4)
Tiger year		1.883***		1.480***
		(0.541)		(0.531)
Rabbit year		2.188***		1.842***
		(0.459)		(0.429)
Dragon year	0.705	1.012*	0.368	0.644
	(0.510)	(0.568)	(0.483)	(0.543)
Sheep year			-3.896***	-3.533***
			(0.663)	(0.634)
GDP per capita	0.399***	0.389***	0.396***	0.388***
	(0.080)	(0.078)	(0.079)	(0.078)
Province-Specific Linear Trends	Y	Y	Y	Y
Province Fixed Effects	Y	Y	Y	Y
N	971	971	971	971
Panel B:	Log (Live Births)			
	(1)	(2)	(3)	(4)
Tiger year		-0.003		0.001
		(0.013)		(0.012)
Rabbit year		0.012		0.006
		(0.011)		(0.011)
Dragon year	0.042***	0.045***	0.041***	0.044***
	(0.011)	(0.012)	(0.010)	(0.011)
Sheep year			-0.065**	-0.064**
			(0.031)	(0.031)
Marriages	0.001	0.001	0.002*	0.002*
	(0.001)	(0.001)	(0.001)	(0.001)
GDP per capita	-0.011***	-0.012**	-0.007*	-0.007
	(0.004)	(0.004)	(0.004)	(0.004)
Province-Specific Linear Trends	Y	Y	Y	Y
Province Fixed Effects	Y	Y	Y	Y
N	319	319	319	319

Data in columns (1) and (2) span the years 1979 (For the majority of the provinces, the data started from 1979. Only for three provinces, the data started from 1978. The three provinces or municipal cities are Shanghai, Tianjin and Jiangxi) to 2013. The data used in regressions reported in columns (3) and (4) span the years 2003 to 2013. Standard errors are clustered at province level and reported in the parentheses. *significant at 10%, ** significant at 5%, *** significant at 1%.

Table 2
Descriptive Statistics
Chinese General Social Survey Data

Variables	Details	Mean	Std. Dev.
Bachelor Degree or Above	Dummy variable (=1) if the respondent has a bachelor's degree or higher.	0.32	0.47
Dragon	Dummy variable (=1) if the respondent's zodiac sign is Dragon.	0.09	0.28
Sheep	Dummy variable (=1) if the respondent's zodiac sign is Sheep.	0.04	0.20
Age	Age of the respondent measured as the survey year minus the respondent's birth year.	25.12	3.39
Female	Dummy variable (=1) if the respondent is female.	0.53	0.50
Father Bachelor Degree or Above	Dummy variable (=1) if the respondent's father has at least a bachelor's degree.	0.06	0.23
Mother Bachelor Degree or Above	Dummy variable (=1) if the respondent's mother has at least a bachelor's degree.	0.03	0.17
N		5,181	

The sample is restricted to adults who were born after 1982 and who have finished formal education. Data are from China General Social Survey wave 2010-2013. We controlled for parents' occupational characters in the estimations. There are totally 34 categories of occupational characters for parents (17 for father and 17 for mother). They are not reported here.

Table 3
Descriptive Statistics
Beijing College Students Survey Data

Variables	Details	Mean	Std. Dev.	Mean	Std. Dev
National College Entrance Exam Score	The student's score in the National College Entrance Exam in China.	580.35	75.12	580.44	75.30
Dragon	Dummy variable (=1) if the student's zodiac sign is Dragon.	0.24	0.43	0.24	0.43
Sheep	Dummy variable (=1) if the student's zodiac sign is Sheep.			0.02	0.14
Female	Dummy variable (=1) if the student is female.	0.48	0.50	0.48	0.50
Minority	Dummy variable (=1) if the student is from an ethnic minority in China.	0.12	0.32	0.11	0.32
Age	The age of the student when he/she took the exam	18.56	1.00	18.56	1.01
Graduate of Elite High School	Dummy variable (=1) if the student graduated from an elite high school.	0.87	0.33	0.88	0.33
Took Multiple Exams	Dummy variable (=1) if the student took the National College Entrance Exam multiple times.	0.16	0.37	0.16	0.37
Good Family Econ Status	Dummy variable (=1) if the student's family economic status is better or much better than local average.			0.13	0.34
Father Bachelor Degree or Above	Dummy variable (=1) if the student's father has at least a bachelor degree.			0.45	0.50
Mother Bachelor Degree or Above	Dummy variable (=1) if the student's mother has at least a bachelor degree.			0.36	0.48
N		4,432		4,104	

The sample only include students who were born between 1983-1993 and whose score is higher than 200. Data are from Beijing College Student Study wave 2009. The variables reported are a subset of the variables used in analysis. The descriptive statistics of the year dummies when the students took the exam and of the dummies that indicate whether the students are reporting raw scores or standardized scores are not reported here.

Table 4
Summary Statistics
China Education Panel Study Data (Middle School Students)

Variables	Details	Mean	Std. Dev.	N
Standardized Math Score	The student's standardized mid-term exam score in the subject of Math.	70.78	9.52	13,309
Standardized Chinese Score	The student's standardized mid-term exam score in the subject of Chinese.	70.86	9.38	13,309
Standardized English Score	The student's standardized mid-term exam score in the subject of English.	70.79	9.53	13,309
Student Characteristics				
Dragon	Dummy variable (=1) if the student's zodiac is Dragon.	0.23	0.42	14,954
BMI	The student's Body Mass Index	18.93	3.35	14,954
Cognitive Ability Score	The standardized score of the student in the cognitive ability test registered by the survey administrators.	0.07	0.84	14,954
Female	Dummy variable (=1) if the student is female.	0.50	0.50	14,954
Age	Age of the student measured as the survey year minus the student's birth year.	13.88	1.33	14,954
Single Child	Dummy variable (=1) if the student is the single child.	0.45	0.50	14,954
Students' Self-Esteem				
Articulate	Dummy variable (=1) if the student believes that he/she can present his/her opinions clearly.	0.80	0.40	14,541
Fast Thinker	Dummy variable (=1) if the student believes that he/she react to things rapidly.	0.77	0.42	14,537
Quick Learner	Dummy variable (=1) if the student believes that he/she learn new knowledge quickly.	0.76	0.43	14,428
Wants College Degree or Higher	Dummy variable (=1) if the student wants to get at least a bachelor degree in the future.	0.67	0.47	14,954
Strong Career Ambition	Dummy variable (=1) if the student wants to become a leader or officer in national/government institutions, a scientist, an engineer or an executive in a company in the future.	0.36	0.48	14,926
Has Faith in the Future	Dummy variable (=1) if the student has faith in his/her own future.	0.86	0.35	14,954
Parents' Attributes, Investments and Beliefs				
Parent Hopes Child to Get at Least a High School Diploma	Dummy variable (=1) if parents hope that their child should get at least a bachelor degree in the future.	0.93	0.25	13,764
Parent Hopes Child to Get Bachelor or Higher Degree	Dummy variable (=1) if parents hope that their child should get at least a bachelor degree in the future.	0.76	0.42	13,764
Parent has Strong Career Ambition for the Child	Dummy variable (=1) if parents hope that their child should get become a leader or officer in national/government institutions, a scientist, an engineer or an executive in a company in the future.	0.43	0.50	13,829
Parent Has Faith in Child's Future	Dummy variable (=1) if parents have faith in the child's future.	0.88	0.32	13,747
Parents Require Kids Have Grades at Least Higher than Class Average (reported by kids)	Dummy variable (=1) if parents require the kids' grades to be at least better than class average.	0.73	0.45	13,769

Table 4 (concluded)

Parents Contact Teachers Spontaneously More than 5 Times	Dummy variable (=1) if parents contact the teachers of their kids spontaneously more than 5 times in this semester.	0.14	0.34	13,739
Students Went to Kindergarten after 3 Years Old	Dummy variable (=1) if the student went to kindergarten after 3 years old; (=0) if the student did not go to kindergarten after 3 years old.	0.81	0.39	13,765
Log (Pocket Money Weekly)	Logarithm of the amount of pocket money the student receives from parents every week on average.	3.16	0.94	11,097
Students Helping Parents do housework in the Holiday	Dummy variable (=1) if the student often helps parents do housework during the summer and/or winter holiday.	0.55	0.50	13,760
Students Helping Parents do housework Last Week	Dummy variable (=1) if the student helps parents do housework (1-15 hours) during the last week every day.	0.38	0.48	13,506
Father Bachelor Degree or Above	Dummy variable (=1) if the student's father has at least a bachelor degree.	0.16	0.37	14,954
Mother Bachelor Degree or Above	Dummy variable (=1) if the student's mother has at least a bachelor degree.	0.13	0.34	14,954
Father White Collar	Dummy variable (=1) if the student's father has a white collar or better job.	0.19	0.39	14,954
Mother White Collar	Dummy variable (=1) if the student's mother has a white collar or better job.	0.14	0.35	14,954
Family Income Status				
Family Has High Income (Reported by Parents)	Dummy variable (=1) if the student's family income is above average (including average) now, reported by parents.	0.06	0.24	14,954
Mother Answers the Parent Survey	Dummy variable (=1) if the student's mother answers the survey questions for parents.	0.53	0.50	13,829

For the outcomes of parents' expectations, we only include parents who are biological parents of the students. Descriptive statistics of the students' type of *hukou* (certificate of residency) are not reported.

Table 5
The Impact of Zodiacs on the Propensity of Having at Least a Bachelors' Degree in China
CGSS Data

Variables	(1) Bachelor Degree or Above	(2) Bachelor Degree or Above	(3) Bachelor Degree or Above	(4) Bachelor Degree or Above (born 1985-1991)	(5) Bachelor Degree or Above (born 1986-1990)	(6) Bachelor Degree or Above (born 1987-1989)
Dragon	0.11***	0.10***	0.11***	0.07***	0.06**	0.05**
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)
Sheep		-0.02				
		(0.03)				
Age	0.02***	0.02***	0.02***	0.02***	0.02***	0.01
	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.02)
Female	0.01	0.01	0.01	0.02	0.02	0.04*
	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)
Father Bachelor Degree or Above	0.27***	0.27***	0.17***	0.19***	0.18***	0.16**
	(0.03)	(0.03)	(0.03)	(0.04)	(0.05)	(0.07)
Father Bachelor Degree or Above	0.21***	0.21***	0.11***	0.14***	0.15***	0.18***
	(0.04)	(0.04)	(0.04)	(0.04)	(0.05)	(0.06)
Parents' Occupation Attributes	N	N	Y	Y	Y	Y
City Fixed Effects	Y	Y	Y	Y	Y	Y
Mean of Dependent Variable	0.32	0.32	0.32	0.34	0.35	0.37
N	5,181	5,181	4,470	2,562	1,938	1,205

The sample includes all adults who completed their education and were born between 1982 and 1995. The age of the respondents range from 18 to 31 in column 1. CGSS wave 2011 is dropped when parents' occupation attributes are added into the model because of the inconsistency of survey questions in wave 2011 relative to other waves, regarding parents' occupations. Standard errors are clustered at city level and reported in the parentheses. *significant at 10%, ** significant at 5%, *** significant at 1%.

Table 6
The Impact of Zodiacs on the National College Entrance Exam Scores in China
BCSS Data

Variables	(1) National College Entrance Exam Score	(2) National College Entrance Exam Score	(3) National College Entrance Exam Score	(4) National College Entrance Exam Score (born 1987-1989)	(5) National College Entrance Exam Score (born 1988-1989)
Dragon	7.56***	7.48***	6.77**	6.12***	7.66***
	(2.27)	(2.33)	(2.68)	(1.89)	(2.39)
Sheep			-12.98*		
			(7.44)		
Female	-9.47***	-10.45***	-11.78***	-11.55***	-9.85***
	(1.87)	(2.17)	(2.04)	(2.44)	(2.15)
Minority	-12.69***	-11.88***	-11.60***	-8.23***	-9.42**
	(3.49)	(3.90)	(3.60)	(2.83)	(4.16)
Graduate from Elite High School	45.45***	42.08***	41.25***	42.52***	42.29***
	(6.51)	(5.52)	(5.86)	(4.99)	(4.95)
Took Multiple Exams	-14.35***	-11.76***	1.95	-11.75***	-16.79***
	(3.13)	(3.20)	(3.69)	(3.56)	(3.50)
Good Family Econ Status		8.77***	8.49***	10.58***	10.59***
		(1.81)	(1.98)	(1.79)	(2.81)
Father Bachelor Degree or Above		8.58***	6.58**	6.19**	7.63**
		(2.52)	(2.69)	(2.92)	(3.60)
Mother Bachelor Degree or Above		8.03***	7.31***	8.01**	7.96**
		(2.46)	(2.47)	(2.97)	(3.70)
Age=17 When the Student Took the National College Entrance Exam			4.77		
			(10.06)		
Age=18 When the Student Took the National College Entrance Exam			-7.78		
			(8.50)		
Age=19 When the Student Took the National College Entrance Exam			-15.48**		
			(7.56)		
Age=20 When the Student Took the National College Entrance Exam			-36.47***		
			(6.6)		
Age Is Between 21 and 23 When the Student Took the National College Entrance Exam			-54.81***		
			(8.63)		
Average Exam Score	580.37	580.43	580.43	581.30	582.06
Province Fixed Effects	Y	Y	Y	Y	Y
N	4,432	4,104	4,104	2,860	2,018

The sample only include students who were born between 1983-1993 and whose score is higher than 200. More than 98% of them were born between 1986-1991. The age when the student took the exam ranges from 12 to 23. The left out age group is all the students who took the exam between the ages 12-16. The type of score (raw or standardized score) is controlled for. Standard errors are clustered at city level and reported in the parentheses. *significant at 10%, ** significant at 5%, *** significant at 1%.

Table 7
The Impact of Dragon Zodiac on Mid-Term Test Scores in Middle School
CEPS Data

Variables	(1) Standardized Test Score in Math	(2) Standardized Test Score in Chinese	(3) Standardized Test Score in English
Dragon	0.177	0.550***	0.566***
	(0.209)	(0.202)	(0.212)
BMI	0.386**	0.326**	0.413***
	(0.157)	(0.151)	(0.148)
BMI Square/1000	-10.203***	-9.167**	-11.349***
	(3.686)	(3.703)	(3.515)
Cognitive Ability Score	5.351***	3.922***	4.084***
	(0.142)	(0.129)	(0.129)
Female	0.781***	5.535***	5.138***
	(0.180)	(0.168)	(0.181)
Age	-0.791***	-0.498***	-0.955***
	(0.139)	(0.138)	(0.142)
Single Child	0.296	0.015	0.511***
	(0.200)	(0.199)	(0.192)
Father Bachelor Degree or Above	1.208***	0.889***	1.169***
	(0.317)	(0.303)	(0.295)
Mother Bachelor Degree or Above	1.002***	0.697**	1.428***
	(0.301)	(0.296)	(0.274)
Father White Collar	0.205	0.386	0.205
	(0.230)	(0.236)	(0.235)
Mother White Collar	-0.248	0.195	0.102
	(0.263)	(0.270)	(0.258)
Family Has High Income Now	-0.788**	-0.292	-0.598*
	(0.366)	(0.323)	(0.320)
Mother Answers the Parents' Survey	0.208	-0.070	0.087
	(0.162)	(0.156)	(0.161)
Average Mid-Term Exam Scores	70.776	70.862	70.792
Class Fixed Effects	Y	Y	Y
N	13,309	13,309	13,309

Dependent variables are scores (standardized to have a mean of 70 points and standard deviation of 10 points in the raw dataset) in math, Chinese and English mid-term tests. The age of the students range from 11 to 18. Student's type of *hukou* (certificate of residency) are controlled for. Standard errors are clustered at class level and reported in the parentheses. *significant at 10%, ** significant at 5%, *** significant at 1%.

Table 8
The Impact of Dragon Zodiac on Middle School Students' Self-Esteem and Expectations about the Future
CEPS Sample

Variables	(1) Articulate	(2) Faster Thinker	(3) Quick Learner	(4) Wants Bachelor or Higher Degree	(5) Strong Career Ambition	(6) Have Faith for the Future
Dragon	0.007	0.015	0.006	0.012	0.014	0.004
	(0.010)	(0.010)	(0.011)	(0.010)	(0.011)	(0.008)
BMI	0.005	0.001	0.014*	0.005	0.020***	-0.004
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.005)
BMI Square/1000	-0.182	-0.144	-0.407**	-0.120	-0.464***	0.027
	(0.173)	(0.173)	(0.172)	(0.164)	(0.156)	(0.123)
Cognitive Ability Score	0.012**	0.037***	0.070***	0.110***	0.053***	0.030***
	(0.005)	(0.005)	(0.005)	(0.006)	(0.006)	(0.004)
Female	0.039***	-0.070***	-0.016**	0.106***	-0.227***	-0.020***
	(0.007)	(0.007)	(0.008)	(0.008)	(0.008)	(0.006)
Age	0.012**	-0.004	-0.003	-0.023***	-0.010	-0.018***
	(0.006)	(0.005)	(0.006)	(0.006)	(0.006)	(0.005)
Single child	0.001	0.004	0.004	0.017*	-0.005	-0.003
	(0.008)	(0.009)	(0.009)	(0.009)	(0.010)	(0.008)
Father Bachelor Degree or Above	0.020*	0.024*	0.022*	0.068***	-0.008	0.000
	(0.012)	(0.013)	(0.013)	(0.013)	(0.016)	(0.010)
Mother Bachelor Degree or Above	-0.008	0.013	0.013	0.056***	0.013	0.012
	(0.013)	(0.013)	(0.014)	(0.013)	(0.017)	(0.010)
Father White Collar	0.008	0.004	0.016	0.029***	0.070***	0.015*
	(0.010)	(0.011)	(0.010)	(0.011)	(0.013)	(0.009)
Mother White Collar	0.008	-0.009	-0.009	0.029**	0.045***	0.008
	(0.011)	(0.013)	(0.012)	(0.012)	(0.015)	(0.009)
Family Has High Income Now	0.047***	0.035***	0.034**	0.001	0.045**	0.034***
	(0.013)	(0.013)	(0.014)	(0.015)	(0.018)	(0.010)
Mean of Dependent Variables	0.796	0.774	0.761	0.667	0.356	0.862
Class Fixed Effects	Y	Y	Y	Y	Y	Y
N	14,541	14,537	14,428	14,954	14,926	14,954

The dependent variables through column 1 to column 3 are dummies which indicate that the student thinks him/herself as articulate, a faster thinker or a quick learner, respectively. The outcomes in column 4 through 6 are dummy variables show that the student wants to get college or higher level of education, has strong career ambition and have faith for the future, respectively. The age of the students range from 11 to 18. Student's type of *hukou* (certificate of residency) are controlled for. Standard errors are clustered at class level and reported in the parentheses. *significant at 10%, ** significant at 5%, *** significant at 1%.

Table 9
The Relationship between Child's Zodiac (born in a Dragon year) and Parents Attributes

Panel A: CGSS Sample

	(1) Father Has a Bachelor's Degree or Higher	(2) Mother has a Bachelor's Degree or Higher
Dragon	0.010	0.009
	(0.013)	(0.010)
N	5,181	5,181

Panel B: BCSS Sample

	(1) Father Has a Bachelor's Degree or Higher	(2) Mother has a Bachelor's Degree or Higher	(3) Good Family Economic Status
Dragon	0.007	-0.014	0.007
	(0.016)	(0.013)	(0.013)
N	4,104	4,014	4,014

Panel C: CEPS Sample

	(1) Father Has a Bachelor's Degree or Higher	(2) Mother has a Bachelor's Degree or Higher	(3) Father White Collar	(4) Mother White Collar	(5) Family Has Income High
Dragon	-0.012	-0.005	-0.001	-0.010	-0.003
	(0.014)	(0.013)	(0.013)	(0.012)	(0.005)
N	14,954	14,954	14,954	14,954	14,954

All standard errors are reported in the parentheses. *significant at 10%, ** significant at 5%, *** significant at 1%.

Table 10
Parents' Expectations about Their Children
CEPS Data

Variables	(1) Parents Hope Child to Get at Least a High School Diploma	(2) Parents Hope Child to Get at Least a Bachelor Degree	(3) Parents Have Strong Career Ambition for Their Child	(4) Parents Have Faith in Children for the Future	(6) Parents Require Kids Have Grades at Least Higher than Class Average
Parent of a Dragon Child	0.018***	0.027***	0.033***	0.008	0.029***
	(0.006)	(0.010)	(0.011)	(0.008)	(0.010)
BMI	0.008*	0.019***	0.014*	0.006	0.006
	(0.004)	(0.007)	(0.008)	(0.005)	(0.007)
BMI Square/1000	-0.191*	-0.472***	-0.326*	-0.149	-0.241
	(0.100)	(0.156)	(0.186)	(0.118)	(0.170)
Cognitive Ability Score	0.043***	0.091***	0.038***	0.039***	0.133***
	(0.004)	(0.006)	(0.006)	(0.004)	(0.006)
Female	0.020***	0.040***	-0.177***	0.025***	0.042***
	(0.004)	(0.007)	(0.009)	(0.006)	(0.008)
Age	-0.016***	-0.041***	-0.020***	-0.015***	-0.027***
	(0.004)	(0.007)	(0.007)	(0.005)	(0.007)
Single Child	0.010*	0.026***	-0.022*	-0.000	0.002
	(0.005)	(0.008)	(0.012)	(0.007)	(0.010)
Mother Answers the Parents' Survey	0.001	0.008	-0.034***	-0.004	-0.008
	(0.005)	(0.007)	(0.009)	(0.006)	(0.008)
Father Bachelor Degree or Above	0.014***	0.060***	-0.005	-0.008	0.047***
	(0.005)	(0.010)	(0.018)	(0.009)	(0.014)
Father Bachelor Degree or Above	-0.003	0.009	-0.051***	0.022**	0.001
	(0.005)	(0.009)	(0.018)	(0.009)	(0.017)
Father White Collar	0.000	0.013	0.066***	0.010	0.012
	(0.005)	(0.009)	(0.014)	(0.008)	(0.012)
Mother White Collar	0.007	0.032***	0.031*	0.003	0.017
	(0.005)	(0.009)	(0.017)	(0.009)	(0.013)
Family Has High Income Now	-0.009	-0.004	0.034*	0.048***	-0.025
	(0.008)	(0.013)	(0.020)	(0.009)	(0.016)
Mean of Dependent Variables	0.931	0.764	0.433	0.884	0.727
Class Fixed Effects	Y	Y	Y	Y	Y
N	13,764	13,764	13,829	13,747	13,769

The dependent variables are dummies indicating whether parents expect their children to get at least a high school diploma, at least a bachelor degree, whether parents have strong career ambition for their child, and whether parents have faith in their children for the future. The age of the students range from 11 to 18. The sample only includes biological parents of the students. Student's type of *hukou* (certificate of residency) are controlled for. Standard errors are clustered at class level and reported in the parentheses. *significant at 10%, ** significant at 5%, *** significant at 1%.

Table 11
The Impact of Dragon Zodiac on Mid-Term Test Scores in Middle School
Accounting for Parent Expectations -- CEPS Data

Variables	(1) Standardized Test Score in Math	(2) Standardized Test Score in Chinese	(3) Standardized Test Score in English
Dragon	-0.156	0.265	0.253
	(0.192)	(0.189)	(0.190)
BMI	0.266*	0.222	0.301**
	(0.141)	(0.141)	(0.130)
BMI Square/1000	-6.749**	-6.165*	-8.072***
	(3.307)	(3.464)	(3.098)
Cognitive Ability Score	4.119***	2.863***	2.874***
	(0.127)	(0.115)	(0.113)
Female	0.474***	5.236***	4.774***
	(0.165)	(0.163)	(0.172)
Age	-0.432***	-0.187	-0.607***
	(0.125)	(0.130)	(0.129)
Single Child	0.198	-0.080	0.411**
	(0.183)	(0.191)	(0.182)
Mother Answers the Parents' Survey	0.265*	-0.030	0.134
	(0.142)	(0.145)	(0.143)
Parents Hope Child to Get at Least a High School Diploma	2.684***	2.463***	2.083***
	(0.346)	(0.381)	(0.357)
Parents Hope Child to Get Bachelor or Higher Degree	2.688***	2.512***	2.725***
	(0.227)	(0.224)	(0.231)
Parents Have Strong Career Ambition for Their Child	0.661***	0.387***	0.310***
	(0.146)	(0.142)	(0.144)
Parents Have Faith in Children for the Future	2.479***	1.859***	2.507***
	(0.240)	(0.246)	(0.221)
Parents Require Kids at Least Have Grades Higher than Average	5.728***	4.876***	5.824***
	(0.198)	(0.193)	(0.200)
Father Bachelor Degree or Above	0.754***	0.483*	0.713***
	(0.288)	(0.275)	(0.272)
Mother Bachelor Degree or Above	0.987***	0.679**	1.394***
	(0.281)	(0.276)	(0.253)
Father White Collar	0.035	0.253	0.056
	(0.214)	(0.220)	(0.209)
Mother White Collar	-0.452*	0.019	-0.090
	(0.253)	(0.266)	(0.239)
Family Has High Income Now	-0.778**	-0.266	-0.582**
	(0.338)	(0.302)	(0.282)
Average Mid-Term Exam Scores	70.776	70.862	70.792
Class Fixed Effects	Y	Y	Y
N	13,309	13,309	13,309

In this table, we add parents' expectations and a dummy variable which indicates who (father or mother) answers the parents' survey questions of parents' expectations. Dependent variables are scores (standardized to have a mean of 70 points and standard deviation of 10 points in the raw dataset) in math, Chinese and English mid-term tests. The age of the students range from 11 to 18. Student's type of hukou (certificate of residency) are controlled for. Standard errors are clustered at class level and reported in the parentheses. *significant at 10%, ** significant at 5%, *** significant at 1%.

Table 12
Parents' Investment in their Children.
CEPS Sample.

Variables	(1) Parents Contact Teachers Spontaneously More than 5 Times This Semester	(2) Student Went to Kindergarten after 3 Years Old	(3) Log (Pocket Money Weekly)	(4) Student Helping Parents with housework during the Holidays	(5) Student Helping Parents with housework Last Week
Parent of a Dragon Child	0.014*	0.033***	0.049**	-0.025**	-0.029**
	(0.009)	(0.010)	(0.024)	(0.012)	(0.012)
BMI	0.007	0.001	0.011	-0.005	-0.004
	(0.006)	(0.006)	(0.017)	(0.007)	(0.008)
BMI Square/1000	-0.172	-0.044	-0.222	0.168	0.145
	(0.150)	(0.150)	(0.406)	(0.176)	(0.178)
Cognitive Ability Score	0.012***	0.023***	-0.036***	0.002	-0.066***
	(0.004)	(0.004)	(0.012)	(0.006)	(0.006)
Female	-0.051***	0.010	0.010	0.100***	0.025***
	(0.006)	(0.006)	(0.017)	(0.009)	(0.009)
Age	-0.010*	-0.047***	0.016	0.006	0.028***
	(0.005)	(0.006)	(0.013)	(0.007)	(0.007)
Single Child	-0.002	0.025***	-0.044**	-0.058***	-0.037***
	(0.008)	(0.008)	(0.020)	(0.012)	(0.011)
Mother Answers the Parents' Survey	-0.001	0.014**	-0.078***	-0.008	-0.015*
	(0.006)	(0.006)	(0.019)	(0.009)	(0.008)
Father Bachelor Degree or Above	0.023*	-0.012	-0.100***	0.003	-0.018
	(0.012)	(0.010)	(0.033)	(0.016)	(0.014)
Father Bachelor Degree or Above	0.033**	0.006	0.025	-0.002	0.006
	(0.013)	(0.011)	(0.036)	(0.017)	(0.015)
Father White Collar	0.019*	0.006	0.042	-0.015	-0.000
	(0.010)	(0.010)	(0.029)	(0.014)	(0.013)
Mother White Collar	0.028***	0.008	-0.006	-0.017	0.000
	(0.011)	(0.010)	(0.033)	(0.015)	(0.016)
Family Has High Income Now	0.024*	0.012	0.430***	-0.016	0.018
	(0.013)	(0.012)	(0.039)	(0.018)	(0.017)
Mean of Dependent Variables	0.136	0.813	3.164	0.545	0.378
Class Fixed Effects	Y	Y	Y	Y	Y
N	13,739	13,765	11,097	13,760	13,506

The sample only includes biological parents of the students. The age of the students range from 11 to 18. Student's type of *hukou* (certificate of residency) are controlled for. Standard errors are clustered at class level and reported in the parentheses. *significant at 10%, ** significant at 5%, *** significant at 1%.

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Appendix Table 1
The Impact of Dragon Zodiac on Mid-Term Test Scores in Middle School
CEPS Data
(Students Born between 1998-2001)

Variables	(1) Standardized Test Score in Math	(2) Standardized Test Score in Chinese	(3) Standardized Test Score in English
Dragon	0.229	0.506**	0.621***
	(0.213)	(0.207)	(0.218)
BMI	0.363**	0.327**	0.456***
	(0.159)	(0.154)	(0.153)
BMI Square/1000	-9.553**	-9.055**	-12.237***
	(3.725)	(3.797)	(3.624)
Cognitive Ability Score	5.362***	3.912***	4.108***
	(0.148)	(0.133)	(0.132)
Female	0.768***	5.496***	5.107***
	(0.182)	(0.170)	(0.184)
Age	-0.778***	-0.399**	-0.997***
	(0.158)	(0.160)	(0.169)
Single Child	0.351*	0.125	0.576***
	(0.203)	(0.203)	(0.195)
Father Bachelor Degree or Above	1.257***	0.842***	1.183***
	(0.320)	(0.307)	(0.299)
Mother Bachelor Degree or Above	0.931***	0.657**	1.378***
	(0.306)	(0.298)	(0.277)
Father White Collar	0.219	0.395*	0.241
	(0.234)	(0.238)	(0.237)
Mother White Collar	-0.272	0.221	0.091
	(0.264)	(0.269)	(0.258)
Family Has High Income Now	-0.827**	-0.326	-0.602*
	(0.370)	(0.328)	(0.325)
Mother Answers the Parents' Survey	0.255	-0.109	0.111
	(0.167)	(0.159)	(0.162)
Average Mid-Term Exam Scores	70.803	70.909	70.848
Class Fixed Effects	Y	Y	Y
N	12,610	12,610	12,610

Dependent variables are scores (standardized to have a mean of 70 points and standard deviation of 10 points in the raw dataset) in math, Chinese and English mid-term tests. The sample is restricted to students who were born between 1998 and 2001. The age of the students range from 12 to 16. Student's type of *hukou* (certificate of residency) are controlled for. Standard errors are clustered at class level and reported in the parentheses. *significant at 10%, ** significant at 5%, *** significant at 1%.

Appendix Table 2
The Impact of Dragon Zodiac on Middle School Students' Self-Esteem and Expectations about the Future
CEPS Sample
(Students Born between 1998-2001)

VARIABLES	(1) Articulate	(2) Faster Thinker	(3) Quick Learner	(4) Wants Bachelor or Higher Degree	(5) Strong Career Ambition	(6) Have Faith for the Future
Dragon	0.007	0.015	0.005	0.013	0.014	0.004
	(0.010)	(0.011)	(0.011)	(0.010)	(0.012)	(0.008)
BMI	0.003	0.002	0.013*	0.004	0.019***	-0.007
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.005)
BMI Square/1000	-0.141	-0.152	-0.380**	-0.088	-0.430***	0.092
	(0.178)	(0.177)	(0.176)	(0.164)	(0.156)	(0.118)
Cognitive Ability Score	0.013**	0.035***	0.069***	0.107***	0.051***	0.029***
	(0.005)	(0.005)	(0.005)	(0.006)	(0.006)	(0.004)
Female	0.043***	-0.067***	-0.013	0.107***	-0.227***	-0.016***
	(0.007)	(0.007)	(0.008)	(0.008)	(0.009)	(0.006)
Age	0.016**	-0.001	0.002	-0.026***	-0.010	-0.018***
	(0.006)	(0.007)	(0.007)	(0.007)	(0.007)	(0.006)
Single child	0.000	0.003	0.003	0.019**	-0.002	0.000
	(0.009)	(0.009)	(0.009)	(0.009)	(0.011)	(0.007)
Father Bachelor Degree or Above	0.024**	0.027**	0.025*	0.072***	-0.004	0.001
	(0.012)	(0.013)	(0.013)	(0.013)	(0.016)	(0.010)
Mother Bachelor Degree or Above	-0.009	0.011	0.010	0.054***	0.012	0.012
	(0.013)	(0.013)	(0.014)	(0.013)	(0.017)	(0.010)
Father White Collar	0.007	0.007	0.016	0.030***	0.070***	0.016*
	(0.010)	(0.011)	(0.010)	(0.011)	(0.013)	(0.009)
Mother White Collar	0.009	-0.010	-0.011	0.027**	0.045***	0.005
	(0.011)	(0.013)	(0.013)	(0.013)	(0.015)	(0.009)
Family Has High Income Now	0.049***	0.036***	0.035***	-0.002	0.045**	0.033***
	(0.013)	(0.013)	(0.014)	(0.015)	(0.019)	(0.010)
Mean of Dependent Variables	0.797	0.778	0.765	0.672	0.356	0.866
Class Fixed Effects	Y	Y	Y	Y	Y	Y
N	13,710	13,709	13,609	14,106	14,080	14,107

The dependent variables through column 1 to column 3 are dummies which indicate that the student thinks him/herself as articulate, a faster thinker or a quick learner, respectively. The outcomes in column 4 through 6 are dummy variables show that the student wants to get college or higher level of education, has strong career ambition and have faith for the future, respectively. The sample is restricted to students born between 1998 and 2001. The age of the students range from 12 to 16. Student's type of *hukou* (certificate of residency) are controlled for. Standard errors are clustered at class level and reported in the parentheses. *significant at 10%, ** significant at 5%, *** significant at 1%.

Appendix Table 3
Parents' Expectations about their Children.
CEPS Data
(Students born between 1998-2001)

Variables	(1) Parents Hope Child to Get at Least a High School Diploma	(2) Parents Hope Child to Get at Least a Bachelor Degree	(3) Parents Have Strong Career Ambition for Their Child	(4) Parents Have Faith in Children for the Future	(6) Parents Require Kids Have Grades at Least Higher than Class Average
Dragon	0.017***	0.030***	0.031***	0.009	0.031***
	(0.006)	(0.010)	(0.011)	(0.008)	(0.011)
BMI	0.008*	0.017**	0.014*	0.006	0.004
	(0.004)	(0.007)	(0.008)	(0.005)	(0.007)
BMI Square/1000	-0.176*	-0.409***	-0.330*	-0.147	-0.192
	(0.101)	(0.156)	(0.193)	(0.116)	(0.172)
Cognitive Ability Score	0.041***	0.091***	0.036***	0.038***	0.134***
	(0.004)	(0.006)	(0.006)	(0.004)	(0.006)
Female	0.019***	0.041***	-0.179***	0.025***	0.043***
	(0.005)	(0.007)	(0.009)	(0.006)	(0.008)
Age	-0.014***	-0.047***	-0.013*	-0.018***	-0.029***
	(0.005)	(0.008)	(0.008)	(0.006)	(0.008)
Single Child	0.009*	0.026***	-0.019	0.001	0.005
	(0.005)	(0.008)	(0.012)	(0.007)	(0.010)
Mother Answers the Parents' Survey	0.002	0.007	-0.033***	-0.003	-0.008
	(0.005)	(0.008)	(0.009)	(0.006)	(0.008)
Father Bachelor Degree or Above	0.014***	0.061***	-0.004	-0.007	0.048***
	(0.004)	(0.010)	(0.018)	(0.009)	(0.014)
Father Bachelor Degree or Above	-0.004	0.009	-0.051***	0.021**	-0.001
	(0.005)	(0.010)	(0.018)	(0.009)	(0.017)
Father White Collar	0.000	0.013	0.066***	0.011	0.013
	(0.006)	(0.009)	(0.014)	(0.008)	(0.012)
Mother White Collar	0.008*	0.030***	0.030*	0.002	0.015
	(0.005)	(0.010)	(0.017)	(0.010)	(0.013)
Family Has High Income Now	-0.010	-0.007	0.032	0.048***	-0.028*
	(0.008)	(0.014)	(0.020)	(0.009)	(0.016)
Mean of Dependent Variables	0.934	0.771	0.433	0.887	0.729
Class Fixed Effects	Y	Y	Y	Y	Y
N	13,035	13,035	13,099	13,021	13,040

The dependent variables are dummies indicating whether parents expect their children to get at least a high school diploma, at least a bachelor degree, whether parents have strong career ambition for their child, and whether parents have faith in their children for the future. The sample has been restricted to students born between 1998 and 2001. The age of the students range from 12 to 16. The sample only includes biological parents of the students. Student's type of *hukou* (certificate of residency) are controlled for. Standard errors are clustered at class level and reported in the parentheses. *significant at 10%, ** significant at 5%, *** significant at 1%.

Appendix Table 4
The Impact of Dragon Zodiac on Mid-Term Test Scores in Middle School
Accounting for Parent Expectations -- CEPS Data
Narrowed Sample (students born between 1998-2001)

Variables	(1) Standardized Test Score in Math	(2) Standardized Test Score in Chinese	(3) Standardized Test Score in English
Dragon	-0.127	0.200	0.281
	(0.197)	(0.192)	(0.196)
BMI	0.251*	0.230	0.353***
	(0.142)	(0.144)	(0.134)
BMI Square/1000	-6.368*	-6.288*	-9.241***
	(3.328)	(3.537)	(3.182)
Cognitive Ability Score	4.122***	2.841***	2.877***
	(0.131)	(0.119)	(0.115)
Female	0.446***	5.180***	4.728***
	(0.167)	(0.162)	(0.173)
Age	-0.383***	-0.055	-0.609***
	(0.144)	(0.148)	(0.155)
Single Child	0.231	0.013	0.456**
	(0.185)	(0.193)	(0.183)
Mother Answers the Parents' Survey	0.306**	-0.072	0.155
	(0.147)	(0.148)	(0.145)
Parents Hope Child to Get at Least a High School Diploma	2.722***	2.578***	2.163***
	(0.361)	(0.397)	(0.380)
Parents Hope Child to Get Bachelor or Higher Degree	2.698***	2.444***	2.664***
	(0.233)	(0.237)	(0.245)
Parents Have Strong Career Ambition for Their Child	0.638***	0.362**	0.310**
	(0.149)	(0.144)	(0.147)
Parents Have Faith in Children for the Future	2.523***	2.129***	2.544***
	(0.250)	(0.251)	(0.233)
Parents Require Kids at Least Have Grades Higher than Average	5.764***	4.908***	5.977***
	(0.205)	(0.195)	(0.203)
Father Bachelor Degree or Above	0.800***	0.439	0.722***
	(0.290)	(0.279)	(0.275)
Mother Bachelor Degree or Above	0.917***	0.636**	1.347***
	(0.285)	(0.277)	(0.255)
Father White Collar	0.042	0.254	0.082
	(0.218)	(0.223)	(0.211)
Mother White Collar	-0.468*	0.053	-0.094
	(0.255)	(0.267)	(0.240)
Family Has High Income Now	-0.791**	-0.287	-0.558*
	(0.340)	(0.304)	(0.284)
Average Mid-Term Exam Scores	70.803	70.909	70.848
Class Fixed Effects	Y	Y	Y
N	12,610	12,610	12,610

Dependent variables are scores in math, Chinese and English mid-term tests. The sample has is restricted to students born between 1998 and 2001. The age of the students range from 12 to 16. Student's type of *hukou* (certificate of residency) are controlled for. Standard errors are clustered at class level and reported in the parentheses. *significant at 10%, ** significant at 5%, *** significant at 1%.

Appendix Table 5
Parents' Investment in their Children. CEPS Sample.
(Students born between 1998-2001)

Variables	(1) Parents Contact Teachers Spontaneously More than 5 Times This Semester	(2) Students Went to Kindergarten after 3 Years Old	(3) Log (Pocket Money Weekly)	(4) Students Helping Parents do housework in the Holiday	(5) Students Helping Parents do housework Last Week
Parent of a Dragon child	0.016*	0.027***	0.052**	-0.023**	-0.031***
	(0.009)	(0.010)	(0.024)	(0.012)	(0.012)
BMI	0.007	0.001	0.009	-0.005	-0.005
	(0.006)	(0.006)	(0.017)	(0.008)	(0.008)
BMI Square/1000	-0.166	-0.040	-0.144	0.165	0.180
	(0.152)	(0.152)	(0.422)	(0.181)	(0.184)
Cognitive Ability Score	0.011***	0.022***	-0.032***	0.004	-0.066***
	(0.004)	(0.004)	(0.012)	(0.006)	(0.006)
Female	-0.052***	0.007	0.014	0.099***	0.022**
	(0.006)	(0.006)	(0.018)	(0.010)	(0.009)
Age	-0.010	-0.040***	0.013	0.001	0.027***
	(0.006)	(0.007)	(0.016)	(0.008)	(0.008)
Single Child	-0.003	0.023***	-0.053**	-0.056***	-0.037***
	(0.008)	(0.008)	(0.020)	(0.012)	(0.011)
Mother Answers the Parents' Survey	0.000	0.011*	-0.080***	-0.005	-0.014
	(0.006)	(0.007)	(0.019)	(0.009)	(0.009)
Father Bachelor Degree or Above	0.022*	-0.013	-0.103***	0.005	-0.013
	(0.012)	(0.010)	(0.033)	(0.016)	(0.014)
Father Bachelor Degree or Above	0.030**	0.005	0.028	-0.002	0.005
	(0.012)	(0.011)	(0.037)	(0.017)	(0.015)
Father White Collar	0.018*	0.005	0.037	-0.015	0.001
	(0.010)	(0.010)	(0.028)	(0.014)	(0.014)
Mother White Collar	0.030***	0.013	-0.000	-0.019	-0.001
	(0.011)	(0.010)	(0.033)	(0.015)	(0.016)
Family Has High Income Now	0.026*	0.012	0.430***	-0.017	0.018
	(0.014)	(0.012)	(0.040)	(0.018)	(0.017)
Mean of Dependent Variables	0.134	0.825	3.161	0.539	0.373
Class Fixed Effects	Y	Y	Y	Y	Y
N	13,016	13,039	10,486	13,034	12,790

The sample is restricted to students born between 1998 and 2001. The sample only includes biological parents of the students. The age of the students range from 12 to 16. Student's type of *hukou* (certificate of residency) are controlled for. Standard errors are clustered at class level and reported in the parentheses. *significant at 10%, ** significant at 5%, *** significant at 1%.