The Myth of Hard Work: Reciprocal Effects of Parental Meritocratic Beliefs and Educational Performance in China

Francisco Olivos*
The Chinese University of Hong Kong
Orcid 0000-0001-6395-6593

Acknowledgment

The author acknowledges the support of the Hong Kong PhD Fellowship Scheme.

*Corresponding author. Email: fjolivos@link.cuhk.edu.hk. Tel: (852) 39436625. The corresponding author will share all data and codes for replication purpose upon request. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

The Myth of Hard Work: Reciprocal Effects of Parental Meritocratic Beliefs and Educational Performance in China

Abstract

Different research traditions have long stated that parental meritocratic beliefs motivate children's educational achievement. However, sociologists often argue that meritocratic narratives legitimize and make sense of societal inequalities as justly deserved. Using the case of China, I tested simultaneously these two competing hypotheses of the relationship between parental meritocratic beliefs and children's educational achievement. In particular, I distinguished parental beliefs about hard work and skills as predictors of higher grades. I analyzed data from the first and second waves of the China Educational Panel Survey (CEPS). Autoregressive cross-lagged structural models indicated that parental meritocratic beliefs do not affect the educational performance of children. Instead, meritocratic beliefs are affected by academic results suggesting a justificatory role of them. This pattern is much sharper in rural China, where traditional Chinese culture is preserved. The implications of meritocratic beliefs for a broader discussion of citizens' beliefs about social inequalities and stratification were discussed.

Key words: meritocratic beliefs, China, educational achievement, legitimation.

Introduction

Meritocratic narratives, such as the American Dream, are becoming less effective as collective myths (Lamont 2019). In modern societies, meritocracy is a principle that provides the basis for reward allocation based on achievement rather than ascription (Mijs 2016b; Tsay et al. 2003; Young 1958). Defenders of meritocratic ideals (Herrnstein and Murray 1996; Saunders 1995) indicate that it serves two purposes: first, it enables to allocate efficiently scarce resources and, second, incentivizes effort. However, unequal and underserved starting positions lead to the understanding that meritocracy violates its own merit principle. It legitimizes societal inequalities as justly deserved, and misfortune becomes a personal failure (Mijs 2016b). However, the cross-national and comparative efforts of legitimization researchers have not come along with longitudinal evidence to rule out bidirectional effects (Mijs 2016a, 2019). Either way, those competing perspectives could apply to different experiences of social mobility, professional career, educational achievement or any sort of success. In this context, this study is aimed to test these two perspectives simultaneously in the case of the Chinese educational system: *How do parents' meritocratic beliefs and children's educational performance are affected by each other?* By understanding the role of parental meritocratic beliefs in the educational system we closely examine how meritocratic beliefs shape and are shaped by success in society. It is not an attempt to set aside the relevance of meritocratic beliefs in China but to better understand their relationships

with Children educational performance. In addition, I examine how this dynamic varies between rural and urban China as an important cultural cleavage.

This question arises from classical discussions in the sociology of culture regarding the relationship between culture and action (Frye 2012; Lizardo et al. 2016; Schwarz 2018; Vaisey 2009). However, as Vaisey and Valentino (2018) diagnose, beliefs are usually sidelined by cultural sociologists. Indeed, meritocratic beliefs could be understood as narratives if we applied the operationalization of culture provided by Small, Harding, and Lamont (2010). Narratives are “*causally linked sequence of events in people’s minds*” (Small et al. 2010:16) and the classical definition of meritocracy is where success is predicted by non-ascriptive characteristics such as effort, intelligence, and non-cognitive skills. Therefore, parental beliefs about meritocracy are narratives of how rewards are allocated in the educational system. Hence, by discussing the reciprocal effects of parental beliefs and educational outcomes we engage in a broader discussion about culture and action literature. Moreover, parental meritocratic beliefs could be considered as cultural orientations of their parenting (Weininger, Lareau, and Conley 2015), being consequential for inequality and social reproduction.

This article makes several contributions to the literature. First, we test simultaneously two competing hypotheses about the role of parental meritocratic beliefs in the educational system. It is enabled by a theoretical rationale and rich longitudinal data. Understanding meritocratic beliefs as narratives, a dual-process model of culture (Vaisey 2009; Vaisey and Lizardo 2010) is applied to derive reciprocal effects hypotheses. Sociologists usually state that meritocratic narratives legitimize inequalities (e.g. Lamont 2019; Mijs 2019), taking distance from motivational arguments. However, it has not been accurately tested. Thus, the two waves of the China Educational Panel Survey allow using autoregressive cross-lagged structural models for disentangling the theorized reciprocal effects.

Second, the Chinese case is a unique setting for studying meritocratic beliefs. Paradoxically, there is no equivalent word to meritocracy in Chinese. It is often translated as elitism (英才教育), which ignore its antecedents. However, Chinese culture has longstanding meritocratic principles, grounded on mainstream Chinese philosophies, mainly the Confucian tradition. It bonds educational institutions and examination to qualifications for highly-valued civil service jobs (Hannum et al. 2019). The selection of public servants based on both the moral character and talent has been attributed to the earliest period of Chinese history (Xiao and Li 2013). Folk tales of hard work, such as Kuang Heng’s story, illustrate how meritocratic beliefs have permeated Chinese society. Heng was a poor kid who lived during the Han dynasty. His family could not afford candles for studying at night. Because of his commitment to become a civil servant, he used light coming from his neighbors’ houses. Thus, through hard work, he reached the position of emperor’s hand. In addition, a recent study has shown (Mijs 2019) that Western countries with higher inequality tend to explain success in meritocratic terms. A similar conclusion has been drawn for Latin

American countries (Bucca 2016). In the case of China, a high level of inequality (Xie and Zhou 2014) and social fluidity (Zhou and Xie 2019) by international standards bring the justificatory role of meritocratic narratives, alongside his hypothesized motivational effect, into sharper relief. We incorporate the Chinese case in the literature of meritocratic beliefs by focusing on the educational system.

Finally, this study specifies differences between attributional beliefs regarding skills and hard work. Critics of the role of meritocracy argue that meritocratic beliefs contradict themselves. People have different starting points, and through meritocratic principles, they are signified as deserved (Mijs 2016b). A large body of evidence using twins' studies has shown that family and genetic endowments affect cognitive and non-cognitive skills (Daw, Guo, and Harris 2015; Felson 2014; Nielsen 2006; Pokropek and Sikora 2015; Teachman 1997). Taken together, this literature suggests that family nurtures the development of skills. Nevertheless, nobody chooses the family where one is born into. Most of these studies are built upon the strong assumption that there is no assortative mating, which ultimately may affect genetic endowments. Henceforth, we could critically examine meritocratic beliefs independently. Thus, this study seeks to explore the consistency of both components of meritocracy -skills and hard work- and their potential heterogeneous relationships with academic performance.

This article is structured as follows. First, we discussed the theories and evidence supporting the role of parental beliefs as motivators of better educational performance. Second, the literature critical on that motivational hypothesis is developed. Third, the dual-process of culture model is introduced in order to integrate both perspectives theoretically and derive hypotheses. Fourth, based on the theoretical reasoning the analytic strategy is presented. Fifth, data and methods are introduced. Sixth, the results are reported. Finally, the conclusion discusses these results in relation to the theoretical reasoning of the first sections and the implications of meritocratic beliefs for a broader discussion of citizens' beliefs about social inequalities and stratification.

Meritocratic beliefs as motivation

Parental beliefs exert a large influence on children's beliefs, attitudes, and behaviors. As Frye argues: "*familiar slogan can enter into cultural models and shape individual cognition*" (Frye 2012:1592). Theories in sociology and social psychology enable to state that parents' beliefs about meritocratic assessments and reward could promote motivation and effort. As we will show in this section, several studies have suggested that meritocratic beliefs drive schooling behaviors and outcomes.

Studies in stratification and the sociology of education have incorporated culture into the explanation of inequalities in educational outcomes. Scholars use a motivational argument to explain the superiority of Asian Americans and the lower performance of black students in comparison to white youth in the United States. Asian Americans perform better

because of cultural beliefs that promote a strong connection between hard work and achievement (Chen and Stevenson 1995; Hsin and Xie 2014; Liu and Xie 2016). Meritocratic beliefs are understood in this framework as cultural orientations that explain the Asian-white gap. Parental beliefs of this sort set high educational expectations for their children and enhance educational achievement. Similarly, Oppositional Culture Theory (Ogbu 2003) explains the underperformance of Black Americans as a strategy to avoid being labeled as “acting white”. Through this adaptative cultural response, black youth alienate themselves from dominant institutions and decrease their educational performance. Harris (2008) proposed that these beliefs link structural conditions to individuals’ schooling behavior. Beliefs operate as antecedents of students’ actions. Indeed, one of the four items measuring perceived value of schooling is a straightforward measure of meritocratic beliefs: “*achievement and effort in school lead to job success later on*” (Harris 2008:616). His findings indicate that the value of schooling, which includes meritocratic beliefs, predicts achievement and college enrollment of students. Thus, beliefs in the value of schooling are mechanisms through which structural opportunities influence students’ behaviors.

Different theories in social psychology support the effect of meritocratic beliefs on educational outcomes. Bandura’s Self-Efficacy Theory (Bandura 1997) proposes that efficacy beliefs influence the level of effort, persistence, and choice of activities. Even though they are not narratives, they are frames about students themselves and it posits meritocratic principles in direct relation with their own potential. Among resources of influence on self-efficacy beliefs, parents are prominent. First, through social model they provide vicarious experiences. Parents’ success fosters one’s own beliefs about capabilities to succeed. Second, social persuasion affects self-efficacy beliefs through reaffirmation of capabilities for mastering given activities. Children verbally persuaded mobilize greater effort and sustain it. Therefore, it is plausible to think that parental meritocratic beliefs could influence children’s educational outcomes.

Meritocratic beliefs are causal attributions without a specific subject. They refer to how society allocation rewards. Thus, meritocratic beliefs as the motivation of achievement are related to the classic Weiner’s (1989) attributional model of achievement motivation, one of the most influential theories of achievement-related behavior (Glasgow et al. 1997). In this model, causal attributions generate affective reactions and expectations for future scholastic success which guide academic behaviors and tasks. Indeed, causal beliefs about effort and ability are considered producing the most optimal responses. Both beliefs are internal to the students (locus) and, in the case of effort, it is volitional (controllability) and could change over time (instability). Internal, controllable and changeable causes have been found affecting educational performance (Van Overwalle and De Metsenaere 1990; Perry et al. 2010). Overall, theories in social psychology and the role of culture on ethnoracial disparities suggest that parental meritocratic beliefs may enhance children’s educational performance.

Meritocratic beliefs as justification

Researches in sociology often put the motivational hypothesis upside down. They argue that individual status predicts positively the endorsement of meritocratic beliefs because of the legitimization of their superiority through a narrative of success (see Bucca 2016). Moreover, high-status individuals (high-income and those who enjoy a high subjective status) will refuse beliefs that challenge their social position (Kreidl 2000). Thus, instead of endorsing structural explanations of the social stratification, they will endorse individual explanations, such as effort and abilities. Since parents with high-performer children could be understood as winners of the educational systems, we can apply the prediction of the social status literature to educational performance.

In the legitimization hypothesis, the study of elites has discussed the role of meritocratic beliefs in justifying educational choices. Khan (2011) provides a detailed account of how meritocratic beliefs work on obscuring social advantages. Through an ethnography at St. Paul's School, one of the most prestigious boarding elite high schools in the United States, the author shows how beliefs about hard work and belonging to the institutions are used by parents, students, faculty members, and staff to justify the privilege.

The case of Stan in Khan's (2011) ethnography perfectly illustrates how meritocratic beliefs frame success as deserved. Stan is a student who considered he worked hard to study at St. Paul's. He explains his ascension in the chapel through hard work. At the schools' chapel, every seat is defined by hierarchical rules where seniors seat closer to the altar. He interprets his ascension through ideas of merit and work, and not as the natural flow of every student at St. Paul's School. However, as Khan (2011) acknowledges, every student does it, and just a few of them do not complete their schooling or drop out. In sum, this draws an important conclusion to the study of inequality. It is seen as "fair" because the privilege or certain structural position is believed to be products of effort or capabilities. Therefore, inequalities are justified, maintained and obscured. In this case, meritocratic beliefs are post hoc rationalizations of action and objective conditions.

Beyond the particularism of ethnographic approaches in the sociology of elites and the exceptional case of St. Paul's School, it suggests the plausibility of legitimization of action and educational outcomes by meritocratic beliefs. Moreover, an important effort has been done in sociology to generalize the role of meritocratic beliefs as legitimizing inequalities. Based on the theory on the heterogeneity and homogeneity of social structure, and by using data from the Programme for International Student Assessment (PISA), Mijs (2016a) showed that ability-tracking shapes attributions of failure. Students in more homogeneous groups (mixed-ability class) are more likely to attribute their failure to meritocratic factors. Namely, (lack of) hard work and academic (in)ability. Thus, stratification provides a context for cognitive processes that legitimizes educational inequality. Students make sense of their scholastic failure based on their position in the educational stratification. The same role has

been suggested for meritocratic beliefs legitimizing inequality at the country-level (Bucca 2016; Mijs 2019).

Taken together, the research indicates that meritocratic narratives are justifiers of success and social inequalities. Thus, this literature enables us to suggest that parental meritocratic beliefs could justify students' academic performance.

Integration of reciprocal effects

The culture-as-rationalization approach criticizes the traditional understanding of culture as guiding action by ends and values (Swidler 1986). Instead, this approach conceives culture as providing a repertoire of justifications that limits and make-sense of the available possible strategies of action (Swidler 1986, 2001). This fashionable upside-down of the sociological tradition was sustained by the observation that people seldom give consistent explanations of their behavior (Swidler 2001). Therefore, culture could not motivate action.

However, advances in cognitive science have echoed in sociology (Lizardo et al. 2016; Vaisey 2009) to revendicate the motivational role of culture in his dual-process model, which is compatible with the practice theory in sociology (Bourdieu 1986; Ortner 2006). In cognitive science, there is a great interest in the analytical division between two systems underlying human reasoning, which has led to propose that humans have two minds (Evans 2003): a system that is automatic and unconscious (Type I), and another that is conscious and controlled (Type II). With the former, people automatically respond to stimuli by using internalized inputs at hand (Vaisey 2009). Thus, culture can shape institutions and action through the unconscious mind as well as providing useful repertoires of strategies.

Hence, the dual-process model of culture proposes that individuals are both influenced by internalized cultural schemas and capable of rationalizing when it is required by social interaction (Vaisey 2009; Vaisey and Lizardo 2010). This model enables an investigation of how parental meritocratic narratives shape children's educational performance, as well as how parents simultaneously rationalize academic success as meritocratic. Parental beliefs about meritocracy are semantic knowledge as impersonal propositions about the world. They are part of the declarative culture of parents (Lizardo 2017). In a dual-process model, children may store these beliefs in their non-declarative semantic memory. Parental beliefs may be adopted as part of children's cognitive schemas. It is highly possible since parents are significant others in the process of socialization and their attributional beliefs about children's success are highly consequential for their educational achievement (Murphey 1992; Töeväli and Kikas 2017). At the same time, they could make sense and rationalize children's academic achievement through meritocratic beliefs. Henceforth, reciprocal effects of performance and meritocratic beliefs are theoretically plausible:

H1a: Students with parents holding beliefs about hard work as a predictor of academic achievement will have better educational performance.

H1a: Students with parents holding beliefs about skills as a predictor of academic achievement will have better educational performance.

H2a: Parents of students with better educational performance are more likely to hold beliefs about hard work as a predictor of academic achievement.

H2b: Parents of students with better educational performance are more likely to hold beliefs about skills as a predictor of academic achievement.

The relevance of this theoretical reasoning and the analytical strategy proposed in the following section could be illustrated with the recent evidence presented by Mijs (2019). His study aims to explain the paradox where citizens of the most unequal countries believe that their society is the paragon of meritocracy. By using data from 25 years of the International Social Survey Program, he shows that inequality is legitimated by meritocratic narratives. However, “*it could be that the relationship between beliefs and inequality goes in the other direction*” (Mijs 2019:16) or both in a dual-process. Insofar declarative meritocratic beliefs could become internalized dispositions, they could explain positions in the social structure, which is manifested in different levels of inequality. The same problem is encountered when examining the relationship between academic success and parental meritocratic narratives, which is a criticism of cultural explanations of ethnoracial gaps (Lizardo 2017). Parental beliefs may be encultured by children to affect their actions. Therefore, if parental meritocratic beliefs are coupled with children dispositions that foster scholastic achievement, we expect a stronger effect of meritocratic beliefs when parent-child relationships provide the conditions for that acquisition of culture. Therefore, we hypothesize the following difference between groups:

H3: the effect of parental meritocratic beliefs on educational performance will be stronger for children with a close relationship with their parents.

Moreover, due to the rapid economic growth and urbanization in China, one of the most important cultural cleavages is the rural-urban divide. About 40 percent of the total population in China resides in rural areas (World Bank 2018), and they live basically an agricultural life. Hence, unlike global Chinese cities such as Beijing and Shanghai, rural areas preserve traditional values (Chen and Chiu 2010; Fuligni and Zhang 2004; Wu 2017). Filial piety, loyalty and self-sacrifice and a general Confucian mode of consciousness (Yang et al. 2006) still explain individual beliefs, attitudes and behaviors in rural areas. In addition, besides promoting thrift and respect for authority, Confucian values also advocate for educational achievement and hard work (Lim 2003; Stankov 2010). Lee (1999) pointed out that in the Confucian tradition the emphasis on the effort is explained by a strong belief in achievement for all people, and the attribution of failure to lack of willpower. Internally, education is important for personal development. Externally, education is a driver of social mobility in an egalitarian sense: “*you can achieve if you want*” (Lee 1999:36). In addition, this faith in the effort is coupled with the belief that educational success is not only seen as

an individual achievement but is also associated with family honor (Peng 2019). Thus, in rural areas, parental meritocratic beliefs may have stronger efficacy and are salient cultural repertoires for making sense of achievement. Consequently, this literature leads to hypothesize:

H4a: Reciprocal effects of meritocratic beliefs and educational performance are stronger in rural areas than urban areas.

However, modernization theories state that ascribed characteristics weaken their effects on status attainment, increasing the effectiveness of individual achievement in this process (Treiman 1970). In this context, the modernization of China could also cultivate norms, values, and beliefs consistent with this meritocratic understanding of the development. Past studies have shown that the level of meritocracy in certain countries predicts the support toward meritocratic principles, as well as a more advantaged individual social position (Bucca 2016; Duru-Bellat and Tenret 2012; Kunovich and Slomczynski 2007). Individuals realize and internalize the idea that meritocracy explains rewards in rationalized and modern societies. Therefore, modernization makes meritocratic beliefs available to make sense of success in urban areas and motivation action that promote better performance. A competing hypothesis is derived:

H4b: Reciprocal effects of meritocratic beliefs and educational performance are stronger in urban areas than in rural areas.

Analytic strategy

From the theoretical reasoning presented in the previous sections, we encounter the challenge of testing reciprocal effects. Autoregressive cross-lagged panel models (ACLPM) are a specific type of structural equation model (SEM) that can be used if two or more variables have been measured longitudinally, and the interest is on their reciprocal effects. It has been used to disentangle theorized reciprocal effects in different settings and fields, such as informal social control and crime (Wickes and Hipp 2018), human capital accumulation and physical health (Kane et al. 2018), academic failure and adolescent drinking (Crosnoe 2006), just to mention a few. Like any SEM, ACLPM allows us to include both latent and observed variables. Moreover, the standardization of coefficients enables to compare effects between paths.

As Huijsmans and colleagues explain (2019), two kinds of effects could be estimated by means of ACLPM. First, autoregressive effects examining the average stability of a variable from one period to the next within students. For instance, the autoregressive path from beliefs about skills in time 1 to beliefs about skills in time 2 shows how stable this belief is between these two waves of the panel. These effects are represented by the continuous lines in Figure 1.

Second, cross-lagged effects indicate the effect of a variable on another variable that was measured on the next occasion. These effects represent the theoretical hypotheses of motivational and justificatory effects of meritocratic beliefs. They are represented by dotted-lines and dashed-lines in Figure 1, respectively. For example, the effect of educational performance on parental beliefs about hard work refers to the justification path for that belief. Due to the inclusion of the autoregressive effects, this path is independent of the belief in time 1. This makes possible to rule out that the effect of academic achievement on beliefs is simply because these variables are correlated in the first measurement occasions. Henceforth, controlling cross-lagged effects by autoregressive paths enables to test the direction of the potential causality. In addition, dash-dotted lines represent reciprocal effects between meritocratic narratives, which are aimed to test the consistency of these beliefs in our context. Lastly, covariances are included for all the variables in the same period.

For the sake of simplicity, control variables at time 1 were omitted from the figure and are specified in the next section. Following a standard procedure in ACLPM (Allison 2002; Hawkins, Amato, and King 2007; Huijsmans et al. 2019), we relied on full information maximum likelihood estimation (FIML) rather than a listwise deletion of cases as in a traditional regression approach. This method provides better estimates of the parameters in comparison to listwise deletion where missing data are assumed to be at random. Dummy variables (hukou, migrant status, male, urban, close relationship) are specified as exogenous variables, which means that cases with missing values on these measurements are excluded. We use a weighted least square parameter (WLSM) estimator for binary outcomes¹. This estimator has been suggested (Muthén and Muthén 2010) for models where there is at least one binary outcome (non-normally distributed).

Data & Methods

We analyze data from the first and second waves of the China Educational Panel Survey (CEPS). The sample is comprised of 10,279 seventh graders surveyed in 2013-2014 with a follow-up in eighth grade. This survey is a longitudinal, large-scale probabilistic and representative sample of seventh and ninth graders from 438 classes of 112 schools in 28 counties in mainland China. Out of the 10,279 seventh graders in the baseline, a total of 9,440 students were surveyed in the follow-up in eighth grade. The total attrition is about 8.16 percent of the original sample. Our analyses only consider parents' questionnaire answered either by the biological father or by the biological mother. Therefore, our final analytic sample are 9,163 observations.

Main variables

ACLPM uses variables that are both predictors and outcomes at different time points. First, parents were asked, among a list of factors, whether “the extent of hardworking” and “talent

¹ Models are estimated using WLSMV estimator, which is also suggested for binary outcomes. Although both produce similar results, WLSM yielded a better fit than WLSMV.

and capability” have effects on students’ grades, where 1 signifies yes and 0 no. These are parents’ narratives about hard work and skills, respectively.

Second, educational performance is measured as a latent variable based on the class rank in Math, Chinese and English mid-term exams for each year. We compute students’ ordinal rank -the higher the rank, the higher the grades- as their decile in each exam distribution of the classmates. Since the absolute rank measure does not account for different sizes of the class, the decile rank (Ω) is standardized to class size:

$$\Omega_{icst} = \frac{\alpha_{icst} - 1}{N_{icst}} \times 10 \quad (1)$$

where, α is the absolute rank of the student i within class c and school s for wave t . Therefore, each subject class rank varies in a range from 0 to 10, where 0 refers to the student on the bottom of the distribution and 10 to the students on the top. Thus, each unit of increase or decrease means a change of 10 percentiles. Factor loadings indicate a positive and strong relationship between the latent variable performance and our three observed measures in each wave.

Control variables

As we mentioned, several control variables were included from the survey baseline as exogenous and endogenous variables. First, three binary indicators are included as exogenous in the models. A dummy variable indicating whether the student is male (1 = yes, 0 = no), because there is evidence which suggests gender differences in the effect of parental beliefs about success on children skills (Mägi et al. 2011). In addition, binary indicators denoting whether the student holds agricultural *hukou* (1 = yes, 0 = no), geographic area of schools (1 = urban, 0 = rural), and migration status (1 = yes, 0 = no). These variables have been suggested as important resources of educational disadvantages in China (Hannum et al. 2019; Tam and Jiang 2015). Finally, I use a dichotomous indicator of the parent-child relationship where 1 denotes those children declaring a “very close” relationship with the parent who responded to the questionnaire. Thus, 0 grouped children with a “not close” or “not too close nor too far” relationship.

An additional block of five endogenous control variables was included in the model. First, two predictors aimed to control by objective conditions of skills and hard work beliefs are included: cognitive ability and average hours spent on homework. The cognitive ability is measured by a raw cognitive ability test score estimated based on an item response theory model. It assesses students’ aptitudes through a 22-items test on reasoning and problem-solving, which must be answered in up to 15 minutes (Zhao et al. 2017). Besides the logic effect on academic performance, previous studies have shown a consistent relationship between children’s cognitive performance and parental beliefs (Sigel and McGillicuddy-De

Lisi 2002). Regarding homework, students answer “How much time did you spend on homework assigned by your teachers at school last week? The hours spent from Monday to Friday are added to the hours spent on weekends. We do not consider minutes because of the unreliability of this measure. A logarithmic transformation of this variable is used. Second, the age of the student which is aimed to address children’s development. Third, the educational level of the father and mother assumed as continuous in a range from 1 to 9, where the former signifies “none” and the latter “master’s degree or higher”. Both mother and father’s educational level are suggested as varying the path from parental beliefs to children outcomes (Sigel and McGillicuddy-De Lisi 2002). Fourth, the number of siblings (counting the respondents) addressed the effect of sibship size on educational outcomes supported for the Chinese case (Lu and Treiman 2008).

Results

Before reporting the hypotheses testing, Table 1 shows the descriptive statistics involve in the analyses. As expected, the mean value of class rank in every middle term for waves 1 and 2 is around the percentile 50th. Regarding meritocratic beliefs, there is an important descriptive result to be highlighted. For each wave, parents agree in a large proportion that hard work is a predictor of better academic achievement. Eight of each 10 parents believe that students who invest higher effort will obtain higher grades. In contrast, the proportion of parents who considers that skills lead to better performance is smaller. Three of each 10 parents believe that talent and capabilities are predictors of better academic achievement. It suggests that beliefs about hard work and skills do not go hand-in-hand in the Chinese context. It is confirmed by low unweighted tetrachoric correlations when students were 7th grade ($r = 0.16$) and 8th grade ($r = 0.23$). Table 1 also reports the proportion of parents who changed their belief between wave 1 and wave 2. About 22 percent of the parents changed their endorsement of hard work as a predictor of success, while 36 percent change their belief about skills. Both are substantive proportions of change. Descriptive statistics of control variables are reported in Table 1A of the appendix.

[Table 1]

Table 2 reports the results of the cross-lagged model testing the hypotheses of the dual-process of parental meritocratic beliefs. In addition, this model includes stability paths and the relationships between meritocratic beliefs (consistency path). Overall, the goodness of fit indexes indicates that our model fits the observations accurately (RMSEA= 0.033, CFI=0.958, TLI=0.914)². Standardized and unstandardized coefficients are reported. Binary

² The weighted root mean square residual (WRMR) index is considerably above the cut-off point of 1 (WRMR=1.516). Although this could suggest problems of fit, several studies consider WRMR as an experimental fit and recent evidence shows that it is highly sensitive to sample size (DiStefano et al. 2018). To assess its sensitivity to the sample sizes, we draw eight random subsamples from the original sample with different sample sizes ranging from 9000 to 2000 cases. For samples below 4000 cases, WRMR goodness of fit is below 1 and the substantive results regarding our theoretical hypotheses are supported across samples. A

outcomes are reported in log-odds. The standardization of variables predicting binary outcomes also addresses the limitations of logistic regressions pointed out by Mood (2010). Sociologists usually ignore that logistic regressions are biased by omitted variables that are unrelated to independent variables, unlike linear regressions. Therefore, coefficients across models in the same sample are incomparable. Doing so requires a y-standardization (Winship and Mare 1984), which divides the coefficients by the standard deviation of the latent variable for each equation of the structural model (sdY^*). These standardized coefficients are reported in Table 2 for binary outcomes. First, stability paths show divergent results for educational performance and meritocratic beliefs. Every variable in wave 2 is significant and positively related to its value in wave 1. However, while educational performance is highly stable ($\beta = 0.687$, $p < 0.001$), lagged effects of beliefs about hard work ($\beta = 0.345$, $p < 0.001$) and skills ($\beta = 0.328$, $p < 0.001$) are smaller. It suggests a substantive degree of variability between waves.

Table 2 also reports the relationship between meritocratic beliefs. If the classic conceptualization of merit as a function of effort and skills is accurate, a high association between meritocratic narratives is expected. Although they have a positive and significant relationship, the effect size is smaller in comparison to other paths. Parents who believe that hard work leads to better educational performance are 1.16 ($OR = \exp(0.150)$) times more prone to hold beliefs about skills. In a similar fashion, parents who believe in skills as a predictor of academic success are 1.10 ($OR = \exp(0.098)$) times more likely to be hard work believers. As well as descriptive statistics, it indicates that beliefs about hard work and skills as predictors of students' success work differently in the Chinese context.

Finally, Table 2 reports the results for the hypotheses testing of the dual-process of meritocratic beliefs. The last column indicates that neither parental beliefs about hard work nor about skills are significantly related to educational performance in wave 2. Parental meritocratic beliefs do not influence children's educational performance. Henceforth, these results do not support motivation hypotheses (H1a and H1b). Conversely, educational performance in wave 1 is a significant predictor of narratives about both hard work ($\beta = 0.105$, $p < 0.001$) and skills narratives ($\beta = 0.028$, $p < 0.01$). These coefficients could be expressed in terms of odds ratios as a magnitude of their effect size. They indicate that an increase of 1 standard deviation in the class rank of educational performance leads to an increase of the likelihood of holding hard work beliefs in 1.12 times, while for beliefs about skills it is 1.03 times. The difference in magnitude between these two coefficients is a straightforward indicator of a substantive effect on hard work beliefs, but not on attributional beliefs about skills. The Wald test for the difference between these two justificatory effects supports that claim ($p < 0.001$).

[Table 2]

more robust test of this would be the estimation of a large number of random samples for each sample size. However, this option is not current available in Mplus 7.

Nevertheless, although the justificatory paths are significant, the formal test of the difference between the motivational and justificatory effects is not significant. Thus, we cannot conclude strongly that for the China case, meritocratic beliefs have a more justificatory role than motivational. Table 3 reports a formal test of the difference between motivation and justification path in Panel A. The justification role of attributional beliefs about hard work (educational performance $\rightarrow$ hard work belief) is not significantly different ($p>0.05$) from its motivational path (hard work belief $\rightarrow$ educational performance) as suggest by Wald chi-square test. Similarly, the justification path for beliefs about skills (educational performance $\rightarrow$ skills belief) is not statistically different ($p>0.05$) from its motivational path either (skills belief $\rightarrow$ educational performance). Finally, Panel B shows that the effect of educational performance on narratives about hard work and skills are heterogeneous. The justificatory effect of educational performance on the belief about hard work is stronger than the effect on the belief about skills for the Chinese context. Therefore, hard work and skills narratives do not go hand-in-hand in this dual-process of parental meritocratic beliefs.

In addition, an additional model is estimated where motivational paths are constrained to zero (skills belief $\rightarrow$ educational performance; hard work belief $\rightarrow$ educational performance). The goodness of fit indexes for this model improved slightly in comparison with the previous model (RMSEA=0.030; CFI=0.958; TLI=0.927). This is another argument for disregarding the motivational effects of parental beliefs on performance.

Overall, the findings indicate that parents' meritocratic beliefs do not have a significant effect on children's educational performance. However, educational performance has significant effects on both beliefs about hard work and skills as predictors of children's achievement. Therefore, parents' meritocratic narratives justify educational performance.

[Table 3]

We tested the robustness of our results against different specifications of the educational performance. First, since the tracking process at the secondary level has relevant consequences for students' educational attainment in China (Anderson et al. 2016; Ye 2015) and comparative evidence has supported its effects on student's causal attributions (Mijis 2016a), we used grade rank instead of class rank. Through this measure, we avoid the possibility of class sorting. As shown in Table 2A in the appendix, the main effects are confirmed and in a similar magnitude. Second, we used the parental subjective assessment of children's performance. Parents were asked: "*How does this child's academic record rank in his/her class at present?*". Their answers could rank from 1 to 5, where 1 signifies "Near the bottom" and 5 "Around the top". Once again, Table 3A in the appendix confirms our results. In this case, the belief about hard work increases the subjective assessment of children's performance ($B=0.087$, $p<0.000$) like the objective assessment. However, the Wald test indicates that the justificatory path of hard work belief is stronger than its motivational path ($p<0.05$, $X^2=5.868$).

In addition, following Hu (2018), we take advantage of unusual information provided by CEPS, which allows us to restrict the sample to schools where their principals confirm the random allocation of students across classes at their seventh grade, and no reallocation either at eight nor ninth grades based on their achievement. Moreover, the third restriction is established whether the homeroom teachers indicate no student tracking according to academic achievement. Table 4A in the appendix suggests similar findings that the obtained using the full sample. Therefore, we can conclude that our estimation is robust against measurements of academic achievement and the effects of ability tracking.

Two additional analyses are conducted to understand the effect of the role of meritocratic beliefs in the Chinese educational system (Table 4). First, the justificatory effect of performance on beliefs about hard work is significant for parents with close ($B=0.117$, $p<0.001$) and non-close relationships ($B=0.067$, $p<0.05$). For skills, it is only significant in the case of close relationships ($B=0.035$, $p<0.01$). Although the magnitude of the effect is larger for close parent-child relations, the difference is not significant. However, what is important in this case is that the quality of the parent-child relationship does not influence the potential motivational effect of meritocratic beliefs as stated in hypothesis 3. As a propitious condition for the internalization of declarative culture, a close parent-child relationship does not increase the motivational effect of parental meritocratic beliefs on children's educational performance.

Finally, the results regarding the competing hypotheses of Confucian tradition and modernization theories are also reported in Table 4. Parental meritocratic beliefs motivate action neither in schools of rural areas nor urban areas. Moreover, in both cases, higher educational performance predicts the endorsement of the belief about hard work. A Wald test of the difference between these two coefficients indicates that the effect is stronger in schools located in rural areas ($p<0.05$, $X^2=5.648$). In addition, the justificatory effect of belief about hard work as a predictor of success is stronger than its motivational effect ($p<0.05$, $X^2=4.062$) in rural schools. This supports the Confucian tradition hypothesis (H4a) but specified only to its justificatory effect.

The comparison of logistic regression is not only difficult between models as mentioned before, but also across samples (Allison 1999; Williams 2009). The robustness of the multigroup analysis requires to address the potential bias of unobserved heterogeneity across samples. To assume that all the variables predict the outcome equally well across groups (e.g. close/non-close, urban/rural) is unrealistic and difficult to support theoretically. I use linear probability models (LPM) for each multigroup analysis as proposed by Mood (2010). His simulations show that LPM coefficients are unbiased and consistent estimates of a variable's average marginal effect on $P(y=1)$, which is not affected by unobserved heterogeneity like logistic regressions. With these models, my conclusions are not substantively altered.

[Table 4]

Conclusion and discussion

This study was aimed to understand the reciprocal effects of parental meritocratic beliefs and children's educational performance in China. The findings indicate that parental meritocratic beliefs, defined as narratives of success, do not have an effect on the educational performance of children. Instead, meritocratic beliefs are affected by academic results suggesting a justificatory role of them. This pattern is much clear in rural China, where traditional Chinese culture is preserved. In addition, this study sought to explore the consistency of two narratives of meritocratic principles: hard work and skills. Our results indicate that in the Chinese case they are slightly related, and only beliefs about hard work as a cause of success are strongly used to make sense of better children's educational performance. It is consistent with the idea that Confucian tradition promotes willpower as a mean of success (Lee 1999), and that abilities could be compensated with effort. For Confucius, any man might become a "gentleman", and in education should not be class distinctions (Creel 1953). The meritocratic narrative in China is consistent with the so-called meritocratic component of meritocracy in Western societies (Bucca 2016; Mijs 2019).

Another interpretation of the difference between beliefs about hard work and skills is the difference established by the attributional theory (Weiner 1989) used to predict the effect of beliefs on children's achievement. Following the attributional argument, hard work should have a stronger effect on achievement than skills, because in addition to be internal, it is more controllable and changeable than skills. Therefore, it affects emotions and behaviors to a larger extent. In the case of this study, the justificatory effect of hard work is stronger than skills. Therefore, using hard work as a narrative of success enhance even more the deservedness of the individual because it is much volitional than skills.

The findings have important implications on the growing research on citizens' inequality beliefs (Castillo 2011; Hunt 2007; McCall 2013; Mijs 2019). We have shown that the relationship between academic success and meritocratic beliefs is not bidirectional as theorized, but rather are justifications of it. We have provided a longitudinal test of the legitimization hypothesis suggested by this tradition. In a dual-process model of parental beliefs, only culture-as-rationalization (Swidler 1986, 2001; Vaisey 2009) is supported. The lack of effect of parental beliefs on children's educational performance should not be interpreted as the impossibility of motivating students. Instead, these findings suggest a decoupling between parents' declarative culture and dispositions of children which could enhance educational performance. As Lizardo (2017) argues, a superficial understanding of these cultural processes have lead motivational studies to a declarative culture bias (e.g. Hsin and Xie 2014; Liu and Xie 2016). Further studies may address if parental beliefs fail to motivate educational performance or it is a decoupling between declarative and non-declarative forms of culture. Moreover, this research could be extended to take into account other resources of meritocratic beliefs such as peers and teachers or success in the labor

market. It is particularly relevant because Confucian tradition is explicit about the internal and external value of education, but not about wealth (Lim 2003). Thus, meritocratic beliefs could have a different configuration when operationalizing success in a different fashion.

This study has also demonstrated the role of parental meritocratic narratives in an East Asian country. To the best of our knowledge, it is the first study considering simultaneously meritocratic beliefs and educational performance in this region. I do not challenge the relevance of meritocratic beliefs in the Chinese belief system. Conversely, it is supported as a dominant principle. Meritocratic selection of civil servants is widespread across countries such as Korea, Japan, and China- provides the building block of an exam-oriented educational culture (Hannum et al. 2019). In these countries, Confucian philosophy led to long-lasting competitive pressures to families, schools, teachers, and students. In the case of China, it has been responded by supplementary education (Liu and Bray 2017; Zhang and Xie 2016), international opt-out (Liu 2018; Young 2018) and curricular reforms (Sargent 2009). However, the descriptive relevance of meritocratic beliefs in the belief system says nothing about their relations with action. Meritocracy is a dominant principle, and parental meritocratic narratives justify success in the Chinese exam-oriented system. Once upon a time, Weber stated that “*every highly privileged group develops the myth of its natural superiority*” (1978:953), and in China seems to be the myth of hard work.

References

- Allison, Paul. 1999. “Comparing Logit and Probit Coefficients Across Groups.” *Sociological Methods & Research* 28(2):186–208.
- Allison, Paul David. 2002. *Missing Data*. housand Oaks, CA: Sage Publications.
- Anderson, Kathryn, Xue Gong, Kai Hong, and Xi Zhang. 2016. “Do Selective High Schools Improve Student Achievement? Effects of Exam Schools in China.” *China Economic Review* 40:121–34.
- Bandura, Albert. 1997. *Self-Efficacy in Changing Societies*. Cambridge, UK: Cambridge University Press.
- Bourdieu, Pierre. 1986. *Distinction : A Social Critique of the Judgement of Taste*. Oxon, UK: Routledge.
- Bucca, Mauricio. 2016. “Merit and Blame in Unequal Societies: Explaining Latin Americans’ Beliefs about Wealth and Poverty.” *Research in Social Stratification and Mobility* 44:98–112.
- Castillo, Juan Carlos. 2011. “Legitimacy of Inequality in a Highly Unequal Context: Evidence from the Chilean Case.” *Social Justice Research* 24(4):314–40.
- Chen, Chuansheng and Harold W. Stevenson. 1995. “Motivation and Mathematics Achievement: A Comparative Study of Asian-American, Caucasian-American, and East Asian High School Students.” *Child Development* 66(4):1215–34.

- Chen, Xia and Chi Yue Chiu. 2010. "Rural-Urban Differences in Generation of Chinese and Western Exemplary Persons: The Case of China." *Asian Journal of Social Psychology* 13(1):9–18.
- Creel, Herrlee Glessner. 1953. *Chinese Thought, from Confucius to Mao Tsê-Tung*. Chicago: University of Chicago Press.
- Crosnoe, Robert. 2006. "The Connection Between Academic Failure and Adolescent Drinking in Secondary School." *Sociology of Education* 79(1):44–60.
- Daw, Jonathan, Guang Guo, and Kathie Mullan Harris. 2015. "Nurture Net of Nature: Re-Evaluating the Role of Shared Environments in Academic Achievement and Verbal Intelligence." *Social Science Research* 52:422–39.
- DiStefano, Christine, Jin Liu, Ning Jiang, and Dexin Shi. 2018. "Examination of the Weighted Root Mean Square Residual: Evidence for Trustworthiness?" *Structural Equation Modeling: A Multidisciplinary Journal* 25(3):453–66.
- Duru-Bellat, Marie and Elise Tenret. 2012. "Who's for Meritocracy? Individual and Contextual Variations in the Faith." *Comparative Education Review* 56(2):223–47.
- Evans, Jonathan St. B. T. 2003. "In Two Minds: Dual-Process Accounts of Reasoning." *Trends in Cognitive Sciences* 7(10):454–59.
- Felson, Jacob. 2014. "What Can We Learn from Twin Studies? A Comprehensive Evaluation of the Equal Environments Assumption." *Social Science Research* 43:184–99.
- Frye, Margaret. 2012. "Bright Futures in Malawi's New Dawn: Educational Aspirations as Assertions of Identity." *American Journal of Sociology* 117(6):1565–1624.
- Fuligni, Andrew J. and Wenxin Zhang. 2004. "Attitudes Toward Family Obligation Among Adolescents in Contemporary Urban and Rural China." *Child Development* 75(1):180–92.
- Glasgow, Kristan L., Sanford M. Dornbusch, Lisa Troyer, Laurence Steinberg, and Philip L. Ritter. 1997. "Parenting Styles, Adolescents' Attributions, and Educational Outcomes in Nine Heterogeneous High Schools." *Child Development* 68(3):507–29.
- Hannum, Emily, Hiroshi Ishida, Hyunjoon Park, and Tony Tam. 2019. "Education in East Asian Societies: Postwar Expansion and the Evolution of Inequality." *Annual Review of Sociology* 45(1):annurev-soc-073018-022507.
- Harris, Angel L. 2008. "Optimism in the Face of Despair: Black-White Differences in Beliefs About School as a Means for Upward Social Mobility ." *Social Science Quarterly* 89(3):608–30.
- Hawkins, Daniel N., Paul R. Amato, and Valarie King. 2007. "Nonresident Father Involvement and Adolescent Well-Being: Father Effects or Child Effects?" *American Sociological Review* 72(6):990–1010.
- Herrnstein, Richard J. and Charles A. Murray. 1996. *The Bell Curve : Intelligence and Class Structure in American Life*. New York: Simon & Schuster.

- Hsieh, F. Y. 1989. "Sample Size Tables for Logistic Regression." *Statistics in Medicine* 8(7):795–802.
- Hsin, Amy and Yu Xie. 2014. "Explaining Asian Americans' Academic Advantage over Whites." *Proceedings of the National Academy of Sciences of the United States of America* 111(23):8416–21.
- Hu, Feng. 2018. "Migrant Peers in the Classroom: Is the Academic Performance of Local Students Negatively Affected?" *Journal of Comparative Economics* 46(2):582–97.
- Huijsmans, Twan, Amy E. Nivette, Manuel Eisner, and Denis Ribeaud. 2019. "Social Influences, Peer Delinquency, and Low Self-Control: An Examination of Time-Varying and Reciprocal Effects on Delinquency over Adolescence." *European Journal of Criminology* 147737081983872.
- Hunt, Matthew O. 2007. "African American, Hispanic, and White Beliefs about Black/White Inequality, 1977-2004." *American Sociological Review* 72(3):390–415.
- Kane, Jennifer B., Kathleen Mullan Harris, S. Philip Morgan, and David K. Guilkey. 2018. "Pathways of Health and Human Capital from Adolescence into Young Adulthood." *Social Forces* 96(3):949–76.
- Khan, Shamus Rahman. 2011. *Privilege : The Making of an Adolescent Elite at St. Paul's School*. Princeton, NJ: Princeton University Press.
- Kreidl, Martin. 2000. "Perceptions of Poverty and Wealth in Western and Post-Communist Countries." *Social Justice Research* 13(2):151–76.
- Kunovich, Sheri and Kazimierz M. Slomczynski. 2007. "Systems of Distribution and a Sense of Equity: A Multilevel Analysis of Meritocratic Attitudes in Post-Industrial Societies." *European Sociological Review* 23(5):649–63.
- Lamont, Michèle. 2019. "From 'Having' to 'Being': Self-worth and the Current Crisis of American Society." *The British Journal of Sociology* 70(3):660–707.
- Lee, Wing. 1999. "The Cultural Context for Chinese Learners: Conceptions of Learning in the Confucian Tradition." Pp. 25–41 in, edited by D. Watkins and J. Biggs. Hong Kong and Melbourne: Comparative Education Research Centre and Australian Council for Educational Research.
- Lim, Vivien K. .. 2003. "Money Matters: An Empirical Investigation of Money, Face and Confucian Work Ethic." *Personality and Individual Differences* 35(4):953–70.
- Liu, Airan and Yu Xie. 2016. "Why Do Asian Americans Academically Outperform Whites? - The Cultural Explanation Revisited." *Social Science Research* 58:210–26.
- Liu, Junyan and Mark Bray. 2017. "Determinants of Demand for Private Supplementary Tutoring in China: Findings from a National Survey." *Education Economics* 25(2):205–18.
- Liu, Shuning. 2018. "Neoliberal Global Assemblages: The Emergence of 'Public' International High-School Curriculum Programs in China." *Curriculum Inquiry* 48(2):203–19.

- Lizardo, Omar. 2017. "Improving Cultural Analysis: Considering Personal Culture in Its Declarative and Nondeclarative Modes." *American Sociological Review* 82(1):88–115.
- Lizardo, Omar, Robert Mowry, Brandon Sepulvado, Dustin S. Stoltz, Marshall A. Taylor, Justin Van Ness, and Michael Wood. 2016. "What Are Dual Process Models? Implications for Cultural Analysis in Sociology." *Sociological Theory* 34(4):287–310.
- Lu, Yao and Donald J. Treiman. 2008. "The Effect of Sibship Size on Educational Attainment in China: Period Variations." *American Sociological Review* 73(5):813–34.
- Mägi, Katrin, Marja-Kristiina Lerkkanen, Anna-Maija Poikkeus, Helena Rasku-Puttonen, and Jari-Erik Nurmi. 2011. "The Cross-Lagged Relations between Children's Academic Skill Development, Task-Avoidance, and Parental Beliefs about Success." *Learning and Instruction* 21(5):664–75.
- McCall, Leslie. 2013. *The Undeserving Rich : American Beliefs about Inequality, Opportunity, and Redistribution*. New York.
- Mijs, Jonathan J. B. 2016a. "Stratified Failure: Educational Stratification and Students' Attributions of Their Mathematics Performance in 24 Countries." *Sociology of Education* 89(2):137–53.
- Mijs, Jonathan J. B. 2016b. "The Unfulfillable Promise of Meritocracy: Three Lessons and Their Implications for Justice in Education." *Social Justice Research* 29(1):14–34.
- Mijs, Jonathan J. B. 2019. "The Paradox of Inequality: Income Inequality and Belief in Meritocracy Go Hand in Hand." *Socio-Economic Review*.
- Mood, C. 2010. "Logistic Regression: Why We Cannot Do What We Think We Can Do, and What We Can Do About It." *European Sociological Review* 26(1):67–82.
- Murphey, David A. 1992. "Constructing the Child: Relations between Parents' Beliefs and Child Outcomes." *Developmental Review* 12(2):199–232.
- Muthén, Linda K. and Bengt O. Muthén. 2010. *Mplus User's Guide*. Sixth Edit. Los Angeles, CA: Muthén & Muthén .
- Nielsen, F. 2006. "Achievement and Ascription in Educational Attainment: Genetic and Environmental Influences on Adolescent Schooling." *Social Forces* 85(1):193–216.
- Ogbu, John U. 2003. *Black American Students in an Affluent Suburb: A Study of Academic Disengagement*. New York: Routledge.
- Ortner, Sherry. 2006. *Anthropology and Social Theory: Culture, Power, and the Acting Subject (a John Hope Franklin Center Book) - Kindle Edition by Sherry B. Ortner. Politics & Social Sciences Kindle EBooks @ Amazon.Com*. Durham: Duke University Press Books .
- Van Overwalle, Frank and Machteld De Metsenaere. 1990. "The Effects of Attribution-Based Intervention and Study Strategy Training on Academic Achievement in College Freshmen." *British Journal of Educational Psychology* 60(3):299–311.

- Peng, Yinni. 2019. "Getting Rural Migrant Children into School in South China: Migrant Agency and Parenting." *Asian Population Studies* 15(2):172–89.
- Perry, Raymond P., Robert H. Stupnisky, Nathan C. Hall, Judith G. Chipperfield, and Bernard Weiner. 2010. "Bad Starts and Better Finishes: Attributional Retraining and Initial Performance in Competitive Achievement Settings." *Journal of Social and Clinical Psychology* 29(6):668–700.
- Pokropek, Artur and Joanna Sikora. 2015. "Heritability, Family, School and Academic Achievement in Adolescence." *Social Science Research* 53:73–88.
- Sargent, Tanja Carmel. 2009. "Revolutionizing Ritual Interaction in the Classroom." *Modern China* 35(6):632–61.
- Saunders, Peter. 1995. "Might Britain Be a Meritocracy?" *Sociology* 29(1):23–41.
- Schwarz, Ori. 2018. "Cultures of Choice: Towards a Sociology of Choice as a Cultural Phenomenon." *The British Journal of Sociology* 69(3):845–64.
- Sigel, Irving E. and Ann McGillicuddy-De Lisi. 2002. "Parent Beliefs Are Cognitions: The Dynamic Belief Systems Model." Pp. 485–508 in *Handbook of parenting: Being and becoming a parent*, edited by M. Bornstein. Mahwah, NJ, US: Lawrence Erlbaum Associates Publishers.
- Small, Mario Luis, David J. Harding, and Michèle Lamont. 2010. "Reconsidering Culture and Poverty." *The ANNALS of the American Academy of Political and Social Science* 629(1):6–27.
- Stankov, Lazar. 2010. "Unforgiving Confucian Culture: A Breeding Ground for High Academic Achievement, Test Anxiety and Self-Doubt?" *Learning and Individual Differences* 20(6):555–63.
- Swidler, Ann. 1986. "Culture in Action: Symbols and Strategies." *American Sociological Review* 51(2):273.
- Swidler, Ann. 2001. *Talk of Love: How Culture Matters*. Chicago: The University of Chicago Press.
- Tam, Tony and Jin Jiang. 2015. "Divergent Urban-Rural Trends in College Attendance." *Sociology of Education* 88(2):160–80.
- Teachman, Jay. 1997. "Gender of Siblings, Cognitive Achievement, and Academic Performance: Familial and Nonfamilial Influences on Children." *Journal of Marriage and the Family* 59(2):363.
- Töeväli, Paula Karoliina and Eve Kikas. 2017. "Relations among Parental Causal Attributions and Children's Math Performance and Task Persistence." *Educational Psychology* 37(3):332–45.
- Treiman, Donald J. 1970. "Industrialization and Social Stratification." Pp. 207–34 in *Social Stratification: Research and Theory for the 1970s*, edited by E. Laumann. Indianapolis: BobbsMerrill.

- Tsay, Angela, Michèle Lamont, Andrew Abbott, and Joshua Guetzkow. 2003. "From Character to Intellect: Changing Conceptions of Merit in the Social Sciences and Humanities, 1951–1971." *Poetics* 31(1):23–49.
- Vaisey, S. and O. Lizardo. 2010. "Can Cultural Worldviews Influence Network Composition?" *Social Forces* 88(4):1595–1618.
- Vaisey, Stephen. 2009. "Motivation and Justification: A Dual-Process Model of Culture in Action." *American Journal of Sociology* 114(6):1675–1715.
- Vaisey, Stephen and Lauren Valentino. 2018. "Culture and Choice: Toward Integrating Cultural Sociology with the Judgment and Decision-Making Sciences." *Poetics* 68:131–43.
- Weber, Marx. 1978. *Economy and Society: An Outline of Interpretive Sociology*. Berkeley, CA: University of California Press.
- Weiner, Bernard. 1989. *Human Motivation*. Hillsdale, New Jersey: Lawrence Erlbaum Associates.
- Weininger, Elliot B., Annette Lareau, and Dalton Conley. 2015. "What Money Doesn't Buy: Class Resources and Children's Participation in Organized Extracurricular Activities." *Social Forces* 94(2):479–503.
- Wickes, Rebecca and John R. Hipp. 2018. "The Spatial and Temporal Dynamics of Neighborhood Informal Social Control and Crime." *Social Forces* 97(1):277–308.
- Williams, Richard. 2009. "Using Heterogeneous Choice Models to Compare Logit and Probit Coefficients Across Groups." *Sociological Methods & Research* 37(4):531–59.
- Winship, Christopher and Robert D. Mare. 1984. "Regression Models with Ordinal Variables." *American Sociological Review* 49(4):512.
- World Bank. 2018. "Rural Population (% of Total Population)." Retrieved November 19, 2019 (<https://data.worldbank.org/indicator/SP.RUR.TOTL.ZS>).
- Wu, Jinting. 2017. *Fabricating an Educational Miracle: Compulsory Schooling Meets Ethnic Rural Development in ... Southwest China*. New York: State University of New York Press.
- Xiao, Hong and Chenyang Li. 2013. "China's Meritocratic Examinations and the Ideal of Virtuous Talents." Pp. 340–62 in *The East Asian Challenge for Democracy: Political Meritocracy in Comparative Perspective*, edited by D. Bell and C. Li. Cambridge University Press.
- Xie, Yu and Xiang Zhou. 2014. "Income Inequality in Today's China." *Proceedings of the National Academy of Sciences of the United States of America* 111(19):6928–33.
- Yang, Chung Fang, Chi Yue Chiu, Kin Man Chan, Ambrose King, Tak Sing Cheung, and Hoi Man Chan. 2006. "How Confucian Are Contemporary Chinese? Construction of an Ideal Type and Its Application to Three Chinese Communities." *European Journal of East Asian Studies* 5(2):157–80.

- Ye, Hua. 2015. "Key-Point Schools and Entry into Tertiary Education in China." *Chinese Sociological Review* 47(2):128–53.
- Young, Michael Dunlop. 1958. *The Rise of the Meritocracy*. New York: Transaction Publishers.
- Young, Natalie A. E. 2018. "Departing from the Beaten Path: International Schools in China as a Response to Discrimination and Academic Failure in the Chinese Educational System." *Comparative Education* 54(2):159–80.
- Zhang, Yueyun and Yu Xie. 2016. "Family Background, Private Tutoring, and Children's Educational Performance in Contemporary China." *Chinese Sociological Review* 48(1):64–82.
- Zhao, Guochang, Jingjing Ye, Zhengyang Li, and Sen Xue. 2017. "How and Why Do Chinese Urban Students Outperform Their Rural Counterparts?" *China Economic Review* 45:103–23.
- Zhou, Xiang and Yu Xie. 2019. "Market Transition, Industrialization, and Social Mobility Trends in Postrevolution China." *American Journal of Sociology* 124(6):1810–47.

Note: Control variables and residual covariances are not included in the figure.

Figure 1. Theoretical relationships

Table 1. Descriptive statistics of main variables.

Variable	Mean	SD	N	Min	Max
<i>Main predictors</i>					
Class rank in math _{t1}	4.75	2.81	9,163	0	10
Class rank in math _{t2}	4.92	2.87	9,163	0	10
Class rank in Chinese _{t1}	4.74	2.80	9,163	0	10
Class rank in Chinese _{t2}	4.92	2.87	9,163	0	10
Class rank in English _{t1}	4.75	2.80	9,163	0	10
Class rank in English _{t2}	4.92	2.87	9,163	0	10
Belief about hard work _{t1}	0.82	0.38	9,064	0	1
Belief about hard work _{t2}	0.85	0.35	8,284	0	1
Belief about skills _{t1}	0.31	0.46	9,064	0	1
Belief about skills _{t2}	0.37	0.48	8,284	0	1

Note: weighted statistics. Following Hsieh (1989), sample size and distributions of binary variables provide sufficient statistical power for our estimations.

Table 2. Cross-lagged panel results for dual-process model of meritocratic beliefs.

<i>Predictors at t₁</i>	<i>Outcome variables at t₂</i>					
	BHW		BS		EP	
	B (SE)	β	B (SE)	β	B (SE)	β
BHW	0.358*** (0.036)	0.345	0.150*** (0.029)	0.149	0.070 (0.040)	0.032
BS	0.098** (0.033)	0.090	0.347*** (0.026)	0.328	0.028 (0.035)	0.013
EP	0.105*** (0.014)	0.197	0.028** (0.011)	0.055	0.761*** (0.025)	0.687

Notes: BHW: Parents' belief about hard work; BS: Parents' belief about skills; EP: Educational performance. Control variables are not reported. Dummy controls are assumed as exogenous to reduce missing data. Standardized coefficients reported in log odds. *p<0.05, **p<0.01, ***p<0.001. Residual covariance between t1 variables and endogenous controls are included. Model has been weighted.

Table 3. Wald chi-square tests for reciprocal effects and meritocratic beliefs differences.

Panel A. Reciprocal effects					
<i>Motivation paths</i>		<i>Justification paths</i>		X ² Wald Test (1)	<i>P</i>
<i>Predictor</i>	<i>Outcome</i>	<i>Predictor</i>	<i>Outcome</i>		
BHW	EP	EP	BHW	0.969	0.325
BS	EP	EP	BS	0.000	0.991
Panel B. Meritocratic beliefs					
<i>Justification path of skills</i>		<i>Justification path of hard work</i>		X ² Wald Test (1)	<i>P</i>
<i>Predictor</i>	<i>Outcome</i>	<i>Predictor</i>	<i>Outcome</i>		
EP	BS	EP	BHW	21.752	0.000

Note: BHW: Parents' belief about hard work; BS: Parents' belief about skills; EP: Educational performance.

Table 4. Multigroup analyses of motivational and justificatory paths.

Dual-process	Path	Group			
		Close parent-child relationship		Geographic area of school	
		Yes B	No B	Rural B	Urban B
Motivational effects	BHW → EP	0.058 (0.045)	0.145 (0.082)	0.016 (0.058)	0.088 (0.055)
	BS → EP	0.054 (0.038)	-0.078 (0.084)	-0.011 (0.054)	0.052 (0.046)
Justificatory effects	EP → BHW	0.117*** (0.016)	0.067* (0.028)	0.138*** (0.019)	0.074*** (0.019)
	EP → BS	0.035** (0.013)	0.005 (0.023)	0.028 (0.016)	0.023 (0.015)

Note: BHW: Parents' belief about hard work; BS: Parents' belief about skills; EP: Educational performance.
 *p<0.05, **p<0.01, ***p<0.001. Model in Table 2 has been estimated for each group.

Appendix

Table 1A. Descriptive statistics of control variables

Variables	Mean	SD	N	Min	Max
Age	0.79	12.69	8,963	11	17
Male	0.5	0.53	9,163	0	1
Agricultural Hukou	0.49	0.62	9,163	0	1
Urban school	0.5	0.52	9,163	0	1
Migrant status	0.32	0.12	9,098	0	1
Mother's educational level	1.84	3.51	9,154	1	9
Father's educational level	1.86	3.88	9,154	1	9
Number of siblings	0.88	1.89	9,163	1	6
Cognitive skills test	0.87	-0.11	9,163	-2.03	2.33
Time spent on homework (logarithm)	0.75	6.76	8,294	2.30	9.22
Close parent-child relationship	0.43	0.76	9,130	0	1

Note: weighted statistics.

Table 2A. Cross-lagged panel results for dual-process model of meritocratic beliefs using grade rank

<i>Predictors at t₁</i>	<i>Outcome variables at t₂</i>					
	BHW		BS		EP	
	B (SE)	β	B (SE)	β	B (SE)	β
BHW	0.342*** (0.036)	0.329	0.143*** (0.030)	0.141	0.065 (0.039)	0.030
BS	0.093*** (0.033)	0.085	0.347*** (0.026)	0.328	0.055 (0.035)	0.024
EP	0.116*** (0.013)	0.221	0.030** (0.011)	0.059	0.782*** (0.024)	0.703

Notes: BHW: Parents' belief about hard work; BS: Parents' belief about skills; EP: Subjective assessment of educational performance. Control variables are not reported. Dummy controls are assumed as exogenous to reduce missing data. Standardized coefficients reported in log odds. *p<0.05, **p<0.01, ***p<0.001. Model fit: RMSEA=0.031, CFI=0.964, TLI=0.926. Residual covariances between variables within waves and baseline controls are included. Model has been weighted.

Table 3A. Cross-lagged panel results for dual-process model of meritocratic beliefs using parents' subjective assessment of student' performance

<i>Predictors at t₁</i>	<i>Outcome variables at t₂</i>					
	BHW		BS		SEP	
	B (SE)	β	B (SE)	β	B (SE)	β
BHW	0.367*** (0.036)	0.376	0.141*** (0.029)	0.140	0.087*** (0.017)	0.090
BS	0.103** (0.033)	0.095	0.343*** (0.026)	0.324	-0.004 (0.015)	-0.004
SEP	0.163*** (0.026)	0.151	0.084*** (0.021)	0.080	0.713*** (0.015)	0.699

Notes: BHW: Parents' belief about hard work; BS: Parents' belief about skills; EP: Subjective assessment of educational performance. Control variables are not reported. Dummy controls are assumed as exogenous to reduce missing data. Standardized coefficients reported in log odds. *p<0.05, **p<0.01, ***p<0.001. Model fit: Model fit: RMSEA=0.022, CFI=0.986, TLI=0.946. Residual covariances between variables within waves and baseline controls are included. Model has been weighted.

Table 4A. Cross-lagged panel results for dual-process model of meritocratic beliefs using random subsample

<i>Predictors at t_1</i>	<i>Outcome variables at t_2</i>					
	BHW		BS		EP	
	B (SE)	β	B (SE)	β	B (SE)	β
BHW	0.361*** (0.058)	0.351	0.137** (0.047)	0.136	0.055 (0.065)	0.026
BS	0.038 (0.053)	0.035	0.343*** (0.041)	0.326	0.047 (0.057)	0.021
EP	0.112*** (0.021)	0.211	0.049** (0.017)	0.095	0.742*** (0.063)	0.686

Notes: N=3426. BHW: Parents' belief about hard work; BS: Parents' belief about skills; EP: Subjective assessment of educational performance. Control variables are not reported. Dummy controls are assumed as exogenous to reduce missing data. Standardized coefficients reported in log odds. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Model fit: Model fit: RMSEA=0.032, CFI=0.966, TLI=0.930. Residual covariances between variables within waves and baseline controls are included. Model has been weighted.