Culture and the Gender Gap in Competitive Inclination: Evidence from the Communist Experiment in China

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May 2013

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Abstract

Radical communist reforms propelled traditionally secluded Han Chinese women into the labor force but exempted ethnic minorities. Using an economic experiment, this study compares the gender gap in competitive inclination across three ethnic groups in one county. The Han Chinese have no statistically significant gender gap while the patrilineal Yi women are significantly less competitively inclined than Yi men and than Han Chinese women. The matrilineal Mosuo women are as competitively inclined as the Han Chinese women. The findings affirm that culture matters for competitive inclination and suggests the hypothesis that institutional changes can narrow the gender gap in competitive inclination.

Keywords: competition, culture, gender, communism

JEL classifications: C91, C93, J15, J16, O15, P3

*I am deeply grateful to Shachar Kariv and Edward Miguel for their guidance and support throughout this research project. I thank David Card, Fred Finan, Uri Gneezy, Pamela Jakiela, Stevan Harrell, James Kung, Ulrike Malmendier, Albert Park, Ragan Petrie, Betty Sadoulet, Huibin Yan; seminar participants at UC Berkeley; seminar participants at the University of Western Ontario, Williams College, National University of Singapore, Santa Clara University, and Beijing University; and conference participants at the Population Association of America, China Economics Summer Institute, Northeast Universities Development Consortium Conference, and Symposium on Economic Experiments in Developing Countries for their useful comments and discussions. I also thank Zhao Xinghan, Yang Haitao and Mao Falin for their invaluable support and assistance in the field.

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1 Introduction

Women have made significant strides in educational achievement (Goldin *et al.*, 2006), yet they continue to be underrepresented in positions of power and earn less than 80 cents to every dollar earned by men.[1] The leading explanations for these gender differences in labor market outcomes are discrimination and gender differences in preferences (e.g., Bertrand (2011); Altonji & Blank (1999); Goldin & Rouse (2000); Black & Strahan (2001)). In particular, recent experimental evidence on competitive preferences suggests that women are reluctant to enter competitions, which could translate into an unwillingness to apply for competitive jobs or to seek promotions. When given a choice between a tournament payment scheme and a piece-rate payment scheme, men are much more likely to choose the former, despite performing no better than women did in the experimental tasks (e.g., Niederle & Vesterlund, 2007; Niederle *et al.*, 2008; Sutter & Rützler, 2010; Healy & Pate, 2011; Dargnies, 2011; Booth & Nolen, 2012).[2] Zhang (2012) finds that experimental measures of competitive inclination subsequently predicts the rate of taking a highly competitive school entrance exam, even after accounting for traditional explanations.

These findings imply that even when women have the same choices as men and are equally capable, they will be less likely to compete for the opportunities that can maximize their productive capacity, which has potentially enormous efficiency consequences. The goal of this paper is to examine the determinants of the gender gap in competitive inclination. Specifically, I test whether it is influenced by culture.

Since Akerlof & Kranton (2000), economists have increasingly taken note of the impact of gender norms on a variety of labor market outcomes (e.g., Fernandez *et al.*, 2004; Fortin, 2005; Fernandez & Fogli, 2009; Alesina *et al.*, 2013). An

[1] Bertrand & Hallock (2001) find that between 1992 and 1997, of the top 5 highest paid executives in a large set of US public corporations, 2.5% were women; Wolfers (2006) finds that between 1992 and 2004, women occupied the position of CEO of the S&P 1500 companies 1.3% of the time. The UN reports that in 2012, 18% of parliamentarians worldwide are women, including seats reserved specifically for female politicians (United Nations, 2012). In developing regions, this figure is 15%. Gender earnings gap data come from Blau *et al.* (2010).

[2] An earlier strand of the literature finds that males also perform better than females under competitive situations relative to non-competitive situations (Gneezy *et al.* 2003; Gneezy & Rustichini, 2004; Paserman, 2010).

earlier body of literature in psychology offers suggestive evidence that gender-role socialization leads to gender differences in psychological attributes, such as the motivation to achieve (Horner, 1972). Fitzgerald & Betz (1983) states: "... culturally based sex-role socialization operates from early childhood to prepare young girls for the roles of wife and mother and to encourage in them the development of *personality characteristics* and *behavioral competencies* that will facilitate the performance of those roles (emphasis added)."[3]

It is also possible that young men and women choose different behavioral patterns in preparation for their anticipated adult roles.[4] Because they expect to become breadwinners who must compete for resources, young men may develop a taste for competitive games. Young women, who see themselves possibly becoming homemakers or otherwise do not expect to work full-time for pay, may consider competitiveness less useful. Just as cultural norms prescribing lower labor force participation for women may have influenced women to underinvest in labor market skills (Goldin, 1990:156; Sandell & Shapiro, 1980), they may lead men and women to form potentially inefficient attitudes toward competition.

Regardless of the mechanism, if the gender gap in competitive inclination is due to culture, then it may vary across cultures and may change over time, as culture evolves. On the other hand, the gender differences could be innate. Evolutionary biology theory links gender differences in competitive inclination to gender differences in reproductive strategy. While male reproductive success is rewarded by competition for mating opportunities (which often entails competition for resources that are attractive to females), female reproductive success is rewarded by investing in the offspring they have, because physiologically, they invest heavily in reproduction and are limited in the number of offspring they can produce in a lifetime (Trivers, 1972). In economic parlance, the marginal benefit (to reproductive success) from competing is higher for men than for women. This effect would be

[3]In the psychology literature, gender role socialization is thought to occur through three main channels: reinforcement by parents of gender appropriate behavior, children modeling their behavior on same sex parents, and children learning the rules of appropriate behavior from observing adults in a society (e.g., Williams, 1977; Hyde & Rosenberg, 1980).

[4]According to the American Time Use Survey, wives spent twice as much time on housework as husbands did in 2006 and teenage girls spent 50% more time doing housework than teenage boys in 2003 (Blau *et al.*, 2010: 51-53).

magnified in polygamous and otherwise non-monogamous societies.

In a pioneering study, Gneezy *et al.* (2009) shows that among the patrilineal Maasai in Tanzania, men are more competitively inclined than women, whereas in a matrilineal society in India, where men take on a large role in childcare, the gender gap is reversed. This important result was the first to establish that the gender gap in competitive inclination is not universal across all cultures, and suggests that gender norms may influence the gender gap in competitive inclination. A subsequent study comparing Swedish and Colombian children, however, finds no gender gap in competitive inclination for Colombian children, whereas Swedish boys were more competitively inclined than Swedish girls on certain tasks, despite Sweden scoring higher than Colombia on gender equality indices (Cárdenas *et al.*, 2012).

The challenge to attributing the variation in gender gaps in competitive inclination (or in any other domain) across different countries and regions to culture is that a number of other factors may also be at play. For example, gender inequality tends to be larger among lower income countries and to decrease as countries develop (Duflo, 2011). Factors that may influence economic growth (e.g., macroeconomic policy (Fischer, 1993), trade openness (Sachs & Warner, 1995), geography and climate (Diamond, 1997)), then, could potentially help explain variation in the gender gap in competitive inclination around the world. One could take the extreme position that all such variation can be attributed to cross-country and cross-regional differences, rather than to cultural differences.

To address this challenge, this study tests for variation in the gender gap in competitive inclination across cultures in one county of southwest China, approximately one-third the size of the San Francisco Bay Area, using the now standard Niederle and Vesterlund (2007) competition game.[5] To further encourage homogeneity of the subjects in all respects except culture, subjects were drawn from the 11th and 12th grade student body in one high school. The geographical concentration has the added advantage of side-stepping four important methodological difficulties common in cross-cultural experimental studies, as detailed in Camerer (2003): First,

[5]Gong & Yang (2012) studied risk attitudes among the patrilineal Yi and the matrilineal Mosuo in the same county. Flory *et al.* (2011) also take advantage of within-country cultural diversity to study competitive inclination in matrilineal and patrilineal societies in 12 villages in Malawi.

experimental payouts do not require adjustment for purchasing power as they would across different countries. Second, instructions do not need to be translated across cultures because the language of instruction is uniformly Mandarin Chinese. Third, all experiments could be and were conducted by one experimenter (the author), which minimizes experimenter variation. Fourth, any background variables that differ across individuals can be directly controlled for, without having to translate, say, the level of educational attainment in one culture into its equivalent in another.

Three ethnic groups are studied: the Han Chinese, the majority ethnic group in China, the Yi, a patrilineal ethnic group, and the Mosuo, a matrilineal and functionally polygamous ethnic group. Traditional Han Chinese society is a patrilineal society similar to Yi society, in which women had little economic independence and were largely confined to the domestic arena. Genetic distance-wise, the two groups are closer than the French and the Russians (see Section 2). The communist reforms that began in the 1950s, discussed in more detail in Section 3, shocked then prevailing social norms by propelling women into the paid labor force through labor collectivization and legislative reforms. By 1980, labor force participation for women aged 15 and above was 71% (compared with 51% in the United States).[6] These reforms exempted ethnic minorities to a large extent out of concerns for political stability, a fact which will be exploited to aid in the interpretation of the results.

I find no statistically significant gender gap in competitive inclination (defined as the residual gender gap in entry into the experimental competition after accounting for the probability of wining, overconfidence, and risk aversion) among the Han Chinese experimental participants. This is striking, in light of the 20 to 50 percentage point gender gaps documented in Western societies using almost identical measurements. The patrilineal Yi have a statistically significant gender gap of 24 percentage points, with the women less competitively inclined than the men and than the Han Chinese. The Yi men are equally competitively inclined as the Han Chinese. Women from the matrilineal Mosuo are also equally competitively inclined as the Han Chinese, but Mosuo men are statistically significantly more com-

[6]Data from ILO. Data are not disaggregated by ethnic group, but over 90% of Chinese were Han Chinese in 1980.

petitively inclined than Mosuo women, contrary to prior findings from matrilineal societies, and possibly due to polygamy. The results affirm the impact of culture on competitive inclination, and the Han Chinese-Yi comparison further suggests the hypothesis that "fast-moving" institutional changes may alter the gender gap in competitive inclination.[7]

The paper proceeds in Section 2 to discuss the ethnic background of the groups studied. Section 3 describes the communist reforms and the exemptions for minority ethnic groups. Section 4 presents descriptive data on subject characteristics. Section 5 describes the experimental data collection procedures. Section 6 examines the determinants of entry into the lab competition for each ethnic group and defines competitive inclination. Section 7 presents results pooling all three ethnic groups. Sections 8 and 9 check the interpretations of the results and examine alternative explanations. Section 10 concludes.

2 Ethnic background

The experiments were conducted in Ninglang, a mountainous county located in the border province of Yunnan, which is home to 25 ethnic minority groups.[8] Ninglang has been on the register of "poor" counties since the criteria for the designation were first established in 1986.[9] In 2008, GDP per capita was $630 (China County Statistics, 2008).[10]

With a population of 230,000, Ninglang's three main ethnic groups are the Yi, the Han Chinese, and the Mosuo, comprising 62%, 20%, and 9% of the population,

[7]The term "fast-moving" institutions (such as the legal or political system), in contrast to "slow-moving institutions (such as culture), is borrowed from Roland (2004). This paper departs slightly from Roland's approach in allowing for the possibility of "fast-moving" institutions to influence preferences.

[8]In the 1950s, the Chinese government sponsored a massive ethnic identification project, which officially categorized each citizen into one of 56 ethnic groups. Today, ethnic identity can only be transmitted from parent to child (and in rare cases grandparent to grandchild).

[9]The basic standard for qualifying as a "poor" county was rural net income per capita below RMB150 in 1985 (around $50 using 1985 exchange rates). Currently 28% of counties in China (the term "county" is reserved for rural regions) are designated poor. See (Park *et al.*, 2002) for details on the determinants of poor county designation.

[10]Based on the exchange rate at the time of $1 = RMB 6.8.

respectively (China Population Census, 2000). Ethnic classification is based on official government designations, and was obtained from school administrative records and confirmed with subjects' self-reports. Such information is not considered sensitive in any way and can also be found on an individual's national identification card and in other official records. The three main ethnic groups in Ninglang have had a long history of coexistence in the region prior to the founding of the People's Republic of China in 1949. For a more detailed discussion of the history of settlement, see Appendix A.

According to data from the Human Genome Diversity Cell Line Panel, which contains 53 ethnic groups, the genetic distance between the Yi and the Han Chinese is greater than that between the French and the Italians, but is smaller than the distance between the Russians and either the French or the Italians (Ashraf & Galor, 2013).[11] No data are available for the Mosuo, but data for the Naxi, an ethnic group related to the Mosuo, show that the genetic distance between either the Han and the Naxi or between the Yi and the Naxi is about twice as high as the distance between the Yi and the Han Chinese, comparable to the distance between the French and the Palestinians.[12]

2.1 Women in Traditional Han Chinese and Yi culture

In the traditional Han Chinese and Yi societies, women had low status and little autonomy. They were subordinate to men at every stage of their lives: to their fathers and brothers before they marry, to their husbands during marriage, and to their sons should they become widows (e.g., Croll, 1980: 13; Ma, 1995: 18). A woman's marriage was arranged in the interest of the family by the head of the household or clan, almost always male (Stacey, 1983: 34; Harrell, 2001: 91) and often when she is still a young girl (Croll, 1980: 26; Wu, 1997: 207). Once married, a woman belonged to her husband's family (e.g., Stacey, 1983: 34; Bamo, 2001). As in other patrilineal cultures, this meant that she lost her kinship associations and

[11] Data downloaded from http://www.aeaweb.org/articles.php?doi=10.1257/aer.103.1

[12] The Mosuo in Ninglang are actually classified as belonging to the Naxi ethnicity, but have been given state recognition as a "people," (Harrell, 2001, p. 70) and have been issued official documentation identifying them as such.

rights to the property of her natal family (Harrell, 2002). The transient nature of a daughter's membership in her natal family is reflected in traditional proverbs. For example, the Han Chinese have a saying, "A boy is born facing in and a girl is born facing out (Croll, 1980: 23)," and the Yi, "An egg is both meat and not meat; a daughter is both family member and not (Bamo, 2001)."

Producing children is of paramount importance to a woman's status in a household. In both traditional Han Chinese and Yi cultures, not producing children, especially a son, can be grounds for divorcing a woman (Croll, 1980: 28; Feng, 1995: 166). A divorced woman is extremely vulnerable as she has no claims on her husband's family's property or land, and any land and property in her natal home would have already been divvied up between her brothers (Croll, 1980: 33).

Women's activities were confined to the domestic arena in both traditional Han Chinese and Yi societies (Croll, 1980: Ch 2; Stacey, 1983: 39; Dong, 1985: 168). They were denied the opportunity for education, since any investment in a daughter would eventually be lost to another household, and because educated women were thought to be less obedient (Croll, 1980: 26; Feng, 1995: 178-179). They were denied participation in community institutions and other public affairs (Croll, 1980: 15; Ma, 1995: 18). While they may generate income for the household through domestic sidelines and occasional agricultural work or be charged with safeguarding the household cash and grains, they did so only with the permission of the men and could not spend money without male sanction (Croll, 1980: 21; Yang, 1965: 140; Ma, 1995: 18). In one respect the Han Chinese women were even more secluded than their Yi counterparts: they were physically confined to their immediate surroundings by the practice of foot-binding, a practice from which the Yi and other minority women were spared (Croll, 1980: 18-20; Harrell, 2001: 99).

2.2 Women in Traditional Mosuo culture

In Mosuo society, kinship ties are traced through the maternal line (e.g., Cai, 2001; Shih, 1993). Mosuo women enjoy considerably more status and autonomy than women in the traditional patrilineal Han Chinese or Yi societies. At birth, a Mosuo child automatically becomes a member of his or her mother's family. Brothers and

sisters generally work, eat, and raise the children born to the sisters together (Cai, 2001: 121). In each household, there are generally two household heads, one male and one female (Cai, 2001: 122-123) and authority stems from the personal merits of competence and impartiality (Cai, 2001: 124). Each member of the household has the right to enjoy the fruits of his or her own labor, unlike in traditional Han Chinese and Yi households, where income was controlled by the household head. For all important decisions such as those related to farming technology, land sales, or construction, all members of the household would be included in the discussions (Cai, 2001: 125).

A unique feature of the Mosuo matrilineal society is their sexual visitation system called the "walking marriage," whereby a man visits a woman in the evenings but returns to his own matrilineal home by the next morning. It normally does not involve cohabitation and is "nonexclusive, noncontractual, and nonobligatory (Shih, 1993)." A Mosuo man or woman is free to engage in a "walking marriage" with no explicit limitation related to "age, generation, rank, or ethnic identity (Shih, 2010: 77)." There is also no "moral, legal, economic, or other conditions" that prevent either partner from being involved in multiple "walking marriages" at the same time (Shih, 2010: 81; Cai, 2001: 202) or to terminate a relationship at will (Shih, 2010: 79). Children resulting from "walking marriages" usually grow up in their mother's household, with the maternal uncle playing the closest role to a father figure (Shih, 1993). In addition to matriliny, then, Mosuo society differs from the Yi and Han Chinese societies in that it is not a monogamous society.

3 Communist reforms

When the Communist government assumed power in China in 1949, one of the first orders of business was to mobilize labor, in particular, women's labor, for the purpose of rapid industrialization and infrastructure development (Wolf, 1985: 81; Yang, 1965). To this end, it was necessary to weaken the social and economic importance of the traditional Chinese family, which had long been the "dominant organizational unit of production (Yang, 1965: 154-155)." To reach these policy objectives, the Marriage Law of 1950 was enacted and promulgated, which explic-

itly granted wives the freedom to participate in productive labor (Yang, 1965: 145). More indirectly, the Marriage Law abolished arranged marriage, established statutory minimum ages for marriage, and granted both husbands and wives the right to divorce, which increased women's autonomy in the household, weakened the claims of the household head on women's labor, and thus freed women to work for pay outside of the home (Hershatter, 2004: 999).[13] The radical legislation was accompanied by the establishment of local courts to which women could and did turn to defy the authority of the household head and mass education campaigns to make the new legal provisions known throughout the country (Croll, 1983: 1-2).[14]

Supporting the legislation was propaganda stressing that women's participation in collective labor was the "only road to emancipation from man's domination and family oppression (Yang, 1965: 154)." For example, the state-run media publicized stories of mistreated wives who gained respect from their in-laws by bringing home income from their work on the cooperative farms (Yang, 1965: 154). Men, for their part, were re-educated in widespread campaigns exhorting them to undertake their share of domestic chores (Croll, 1983: 7).

Collectivization of industry and agriculture further propelled women into the paid labor force. In urban areas, they worked in state enterprises and neighborhood workers' cooperatives. In rural areas, they worked in agricultural collectives, in which they, like the men, were paid individually in workpoints that translated into grains and cash (e.g., Yang, 1965: 162; Croll, 1983). [15,16] These effects have been

[13]The right for a wife to keep her maiden name after marriage was another provision introduced in the Marriage Law, a custom which differentiates the Han Chinese of the People's Republic of China from those Han Chinese in Hong Kong and Taiwan today.

[14]See Yang (1965): Ch 4 for examples of court cases in which women sued successfully for custody, financial support, and property upon divorce.

[15]While there remains a debate around just how much more valuable was women's work in the collective era compared with their contribution to their households pre-1949 (Benjamin & Brandt, 1995; Kung & Lee, 2010), it is undisputed that collectivization transformed agricultural work into paid work outside of the home, giving unprecedented visibility to women's contribution to household income and presumably control over that income (Yang, 1965: 162; Croll, 1983).

[16]This is not to say that women and men were compensated equally for their work. On average women received 6.5 to 7 workpoints per day to a man's 10 (Wolf, 1985: 88), which, incidentally, was similar to the gender wage gap in the United States at the time (see, for example, Goldin (1990)). However, given the relative transparency of the workpoint system, women were sometimes able to successfully contest blatantly unfair cases by demanding a direct comparison of their productivity against the men's (Wolf, 1985: 97).

long-lasting. In 1980, long after the labor force was decollectivized, labor force participation for women aged 15 and over was 71%, which was higher than that in every OECD country at the time, and was higher even than male labor force participation in some, e.g., Italy and the Netherlands (ILO, 1980). The transition to a market economy has further reduced female labor force participation in China, but it remains higher that in all OECD countries except Iceland (ILO, 2010).[17] Because agricultural work in rural China today is once again mainly unpaid work on the family plot, women's relative labor force participation in the non-agricultural sector is perhaps more telling. According to the 2000 Population Census, for those aged 15 and over, the relative proportion of the female labor force employed in the non-agricultural sector compared to the male proportion is 79% (China Population Census, 2000, 0.095% micro sample).[18]

3.1 Exemptions for minorities

In an exchange of cultural autonomy for regional stability, the Chinese government exempted the 55 officially recognized minority groups, who tended to live along the borderlands, from important aspects of the communist reforms (Mackerras, 1994: 145). The land reform that was completed by 1953 in most of China did not begin in Ninglang until 1956 (Guo, 2008: 229) and unlike the Han Chinese landlords, the Yi elites were allowed to keep some of their political rights (Guo, 2008: 230).

The traditional power structure in the family was also left relatively intact in ethnic minority societies. The national Marriage Law of 1950 allowed the local governments in minority regions to adapt the law as necessary and exempted some minority ethnic groups from the statutory minimum marriage age and from the divorce policies (Dreyer, 1976: 119; Guo, 2008: 78). Furthermore, implementation of marriage reforms among the minority ethnic groups was "halted from the start (Guo, 2008: 78)." For the Yi, it meant that a majority continued to follow customary

[17] In 2010, labor force participation of women aged 15 and over was 67.9% in China and 70.4% in Iceland. The next highest figure from an OECD country is 61.8%, in Canada.

[18] Calculated as $\frac{\text{(number of women employed in the non-agricultural sector)/(number of women employed+unemployed)}}{\text{(number of men employed in the non-agricultural sector)/(number of men employed+unemployed)}}$ for those aged 15 and over, where the non-agricultural sector is defined as all industries excluding the census category of 'farming, forestry, animal husbandry and fishery'.

clan laws regarding marriage.

A marriage law for Ninglang was not enacted until 1981, 30 years after the National Marriage Law. It was less strict than the National Marriage Law toward practices such as child betrothal and early marriage (Wu, 1997: 206, 209), and stipulated a lower statutory minimum marriage age (Wu, 1997: 204; Guo, 2008: 78). The education campaign for the Ninglang marriage law did not begin until 1986, and was hampered by high illiteracy rates (Wu, 1997: 202).

Surveys conducted in a neighboring prefecture, predominantly Yi, confirm that traditional Yi marriage customs have endured. From 1984-1987, the Women's Federation conducted a survey of 99,792 couples and found that 72% had arranged marriages (Yuan, 1992: 119). In the same research project, the Women's Federation surveyed 88,615 minors, which found that 40% of those aged 7-14 were betrothed and 74% of those aged 15-17 were either married or betrothed (Yuan, 1992: 120). According to the 1990 Population Census, nationally, 13.5% of Yi females aged 15-19 were married, while the comparable figure for Han Chinese females was 4.3% (Zhang & Chen, 1995). Where Yi marriage reforms met with any success was among salaried state employees (Wu, 1997: 202; Yuan, 1992: 128).

The Mosuo, whose traditional household labor organization already resembled that of a communist production team and whose traditional culture was characterized by the freedom to choose one's romantic partners, were not greatly affected by collectivization or the marriage reforms, even without the minority exemptions (Guo, 2008: 92, 141).[19] The state did, however, require salaried employees of the state to obtain marriage certificates (Cai, 2001: 403).

If child bearing and child rearing responsibilities that come with marriage limit women's access to skilled work, early marriage among Yi women potentially results in low labor force participation in the non-agricultural sector.[20] The regulation

[19]While there were no formal legislative sanctions on the traditional Mosuo marriage institution, during the Cultural Revolution, with pressure from a Communist party work team, the local commune leaders tried to impose monogamous marriage on those involved in open relationships. However, once the work team left, with the exception of marriages involving cadres, most marriages dissolved shortly thereafter (Cai, 2001: 389). With the end of the Cultural Revolution and the onset of the market reforms, the policy was reversed and Ninglang County officially recognized the Mosuo visiting relationship as legitimate in 1981 (Shih, 1993).

[20]While almost all working age people in Ninglang work, the vast majority of workers are in

prohibiting married persons from enrolling in higher education likely compounds the effect.[21] According to the 2000 China Population Census, in Ninglang County, the relative proportion of the Yi female labor force employed in the non-agricultural sector compared to the Yi male proportion is 37% (see Table 1).[22] The same statistic is 73% for the Han Chinese and 84% for the Mosuo.

Interestingly, the Yi scholar Stevan Harrell notes that pre-reform ethnologists "always compared the position of [Yi] women favorably to that of their foot- and house- bound Han counterparts (Harrell, 2001: 99)." However, Yi women today appear to have lower relative status than Han Chinese women, being less likely to participate in the public sphere and less likely to be educated. Yi women did not become cadres or teachers as Han Chinese women and women of other ethnic minority groups did. And in everyday interaction, the Yi women serve the men, eat after them, and do most of the housework while men "sit, talk and drink (Harrell, 2001: 99)."

4 Descriptive statistics

A short written survey was administered to the subjects after each experimental session to capture socioeconomic and demographic background characteristics. The questions were written to correspond to the 2000 China Population Census whenever possible to maximize clarity.[23] Selected survey results are presented in panel A of Table 1.[24] All three ethnic groups have similar levels of household income,

the agricultural sector. They are mainly unskilled workers working on the land allocated to their family by the government. In contrast, non-agricultural jobs, such as teaching and working for government bureaus, are highly selective, often requiring prospective applicants to pass a competitive employment exam.

[21]The ban on marriage for college students was lifted by the Ministry of Education in 2005.

[22]Calculated as $\frac{\text{(number of Yi women employed in the non-agricultural sector)/(number of Yi women employed+ unemployed)}}{\text{(number of Yi men employed in the non-agricultural sector)/(number of Yi men employed+ unemployed)}}$, using tables T90.L0201 and T90.L0203 for Ninglang county, where the non-agricultural sector is defined as all industries excluding the census category of 'farming, forestry, animal husbandry and fishery'.

[23]Nonetheless, verbal clarifications were required for some of the questions, such as the definition of siblings in a household, since often cousins living together under the same roof are referred to as brothers and sisters colloquially.

[24]For the complete survey instrument, see the web appendix at ihome.ust.hk/~janezhang/.

educational attainment of household heads, propensity to have a head of household working in the non-agricultural sector, and number of siblings. There is no age difference across the ethnic groups since, by design, the subjects were drawn in equal numbers from grades 11 and 12. The ethnic correlates correspond to the ethnographic evidence, with the Mosuo most likely to have a female head of household and to have parents participating in a walking marriage. Given the lack of rules and obligations surrounding the Mosuo union, it is not surprising to find that the Mosuo also have the highest propensity for mixed ethnicity relationships.[25]

The top section of panel B presents high school administrative data. The subjects scored about equally well in the most recent standardized county-wide math exam. There is no significant gender difference in the math scores, consistent with other findings from China (Lai, 2010).

5 Data collection

5.1 Experimental subjects and procedures

The experiments were conducted in one of the only two high schools in Ninglang county. Students of all ethnic backgrounds attend the same classes and live in the same dormitories, as is typical of ethnically diverse schools in China.[26] Subjects were students in grades 11 and 12, recruited randomly from the school's roster by ethnicity, gender, and grade such that each session consisted of one ethnic group in one grade, evenly divided across gender. The data consist of 96 Han, 96 Yi, and 80 Mosuo subjects. The smaller number of Mosuo subjects is a consequence of their small population size.[27]

All sessions were conducted in the fall semester of 2009. Session sizes ranged from 20 to 24 subjects, with a total of 12 sessions. To ensure that any results ob-

[25]The gender differences in competitive inclination among the mixed ethnicity and the non-mixed ethnicity Mosuo subjects are substantively identical (regression results available upon request).

[26]Schools in this county, as elsewhere in China, follow a uniform standard for textbooks, curriculum, and exams. Students generally live in school dormitories, although students whose homes are nearby may choose to commute.

[27]Mosuo students make up 8.3% of the high school population, almost identical to their population representation.

Table 1: Selected Descriptive Statistics

(SD in parentheses)

	Han Chinese	Yi (Patrilineal)	Mosuo (Matrilineal)	F-stat	p-value
Panel A					
Ethnicity correlates					
Head of household is female	0.16	0.15	0.28	2.88	0.06
	(0.37)	(0.36)	(0.45)		
Parents participating in walking marriage	0.01	0.11	0.28	13.97	0.00
	(0.11)	(0.31)	(0.45)		
Mixed ethnicity	0.08	0.07	0.35	17.55	0.00
	(0.28)	(0.26)	(0.48)		
Demographics					
Age	18.43	18.68	18.49	1.33	0.27
	(1.19)	(1.18)	(0.95)		
Siblings	1.94	2.21	1.90	0.66	0.52
	(1.55)	(1.34)	(2.89)		
Is an only child	0.03	0.05	0.06	0.49	0.61
	0.17	0.22	(0.24)		
Socioeconomic Status					
HH engaged in agriculture	0.78	0.75	0.76	0.16	0.85
	(0.41)	(0.44)	(0.43)		
HH educational attainment (years)	7.98	7.67	7.25	0.64	0.53
	(3.10)	(4.78)	(4.37)		
Annual household income (RMB 100)	125.22	127.33	149.05	1.07	0.35
	(94.20)	(107.77)	(123.10)		
Observations	96	96	80		
Panel B					
Academic Performance					
Math grades	46.03	44.40	43.79	0.44	0.64
	(17.26)	(16.98)	(15.12)		
Gender difference in math (male - female)	2.77	-1.21	3.08		
P-value of gender difference (t-test)	0.43	0.73	0.37		
P-value of gender difference (Mann Whitney-test)	0.44	0.62	0.37		
Selection into High School					
Sex ratio in county (ages 8-9, 2000 census)	1.10	1.10	1.01		
Sex ratio in high schools (grades 11 and 12, school records)	1.12	2.00	1.04		
Employment in non-agricultural sector					
Proportion of labor force employed in the non-ag. sector in county, female to male ratio (2000 census)	0.73	0.37	0.84		

tained are not sensitive to the smaller number of Mosuo subjects, two extra sessions with 12 Mosuo subjects each were conducted in the other high school in Ninglang county.[28] All results are substantively identical when the combined 14 sessions of data from the two high schools are used. Appendix C contains reproductions of all the tables and figures in the paper using data from the 14 sessions.

Selected students were informed during class of the time and place to meet for the experiment. Absentees were replaced by the first students on the randomized roster that matched on ethnicity, gender, and grade, and consisted of no more than 5% of the total subjects present. Vacant classrooms generally designated for taking exams were used as the experimental lab. All sessions took place during the school day, either during normal breaks, or during times that administrators deemed appropriate. Each session lasted around an hour, a time limit which was imposed by the school administrators.

In each session, all experimental instructions were read out loud by the author in Mandarin, which is the national language as well as the official language of instruction. Copies of the instructions were also distributed to everyone. Subjects recorded their responses on paper and graders assessed these responses during each session. Scratch paper was provided for everyone.

5.2 Experimental design

The experiment was borrowed from Niederle & Vesterlund (2007). The task used throughout the experiment was to add sets of five two-digit numbers and to do as many as possible in five minutes.[29] The number of problems correctly solved is the subject's "score" in the subsequent discussion. The experiment consists of three rounds, throughout which subjects were randomly seated in groups of four (two males and two females) and were not allowed communication although they could see one another.

[28] Both high schools are located in the county seat, within a mile of each other. Selectivity of the two high schools is comparable - according to a school administrator, in the enrollment process, the two schools each take turns admitting students according to their rank on the high school entrance exam, until that school's quota is reached.

[29] For the experimental instructions, see the web appendix at ihome.ust.hk/~janezhang/.

Round 1: Piece-rate - subjects are compensated RMB 0.5 for each problem solved.[30]

Round 2: Compulsory tournament - The subject who solves the most problems in his or her group of 4 receives RMB 2 for each correctly solved problem, while the others receive no payment.[31]

Round 3: Discretionary tournament - subjects first choose which of the two types of compensation schemes (piece-rate or tournament) they would like to apply to their performance in this round. If they choose piece-rate, they are paid RMB 0.5 per problem solved. If they choose to enter their performance in a tournament, they receive RMB 2 per problem if they score highest in their group of four, and nothing if there is someone in their group who scores higher than they do.

Following Niederle & Vesterlund (2007), if the subject chooses tournament in round 3, their score is compared to the scores of the other three group members in round 2 (the compulsory tournament round), rather than their score in round 3. This ensures that participants choosing the tournament option are competing against the scores of others also performing under the tournament incentives, and rules out reasons for not choosing the tournament such as not wanting to impose negative externalities on others or strategic response to beliefs about other participants' choices.

Subjects receive their scores from the previous round before they begin the next round. However, they do not know their relative ranking within their group. After the third round, subjects are asked to guess their rank in the compulsory tournament. This information will be used in the analysis to assess the accuracy of their beliefs toward their relative performance. The order in which the piece-rate round and the compulsory tournament round was conducted was randomized across sessions of each ethnicity such that half of the sessions for each ethnic group were conducted with the piece-rate round occurring first and the rest with the compulsory tournament round occurring first. The discretionary tournament round always occurred last.

Following standard experimental practice, one unpaid practice round was ad-

[30] As a point of reference, lunch in the school cafeterias costs RMB 3.5.

[31] In the case of a tie all those tied for highest score are paid RMB 2 per problem.

ministered before the first round to familiarize subjects with the task. At the end of the experiment, one of the rounds was randomly chosen for payout, to minimize wealth effects across the rounds. The written survey was distributed as students waited for their payment. The show up fee was RMB 2 and average payout not including the show up fee was RMB 7.5.

6 Tournament entry and competitive inclination

In order to isolate gender differences in *competitive inclination* from other factors influencing a subject's tournament entry decision, I follow the literature in controlling for each individual subject's probability of winning the tournament, overconfidence, and risk aversion using the following empirical model, which can also be derived from a structural model based on constant relative risk aversion (CRRA) preferences (see Zhang (2012)):

$$y_i = \alpha_0 + \alpha_1 male_i + \delta p_i + \tau \gamma_i + \lambda q_i + \varepsilon_i \tag{1}$$

where $y_i = 1$ if the subject chooses tournament and 0 if the subject chooses piece-rate. $male_i = 1$ if the subject is male and zero if the subject is female. The regressors p_i, the probability of winning the tournament, γ_i, the CRRA coefficient, and q_i, the measure of overconfidence, are defined below.

6.1 Probability of winning the tournament

The decision of entering a tournament involves an assessment of the probability of winning against the risk of losing.[32] Typically, experimental subjects are drawn from large universities and are virtually anonymous to each other. Assuming no expected increases in computational ability from the compulsory tournament round to the discretionary tournament round, the objective probability of winning p_i can be fully proxied by one's own realized score on the compulsory tournament s_{ri}. In the current setting, subjects are known to each other, and, moreover, their ability

[32]The gap between a subject's objective probability of winning and his or her subjective probability of winning will be addressed in the section on overconfidence.

in math is known to each other, given that grades are public knowledge in China. Therefore, a more precise proxy for the objective probability of winning would take into account not only one's own scores, but the scores of one's competitors as well. To summarize the four scores into one measure, I employ a standard logit probability equation. Assume that the potential score s_{pi} is known up to some noise around the realized score s_{ri}:

$$s_{pi} = s_{ri} + k\eta_i \tag{2}$$

where η_i is an i.i.d. extreme value type I noise term, and k is inversely proportional to the standard deviation of the noise. Then the closed-form expression for p_i, the true probability of winning in a group g is:

$$p_i = \Pr(s_{pi} > s_{pj},\, j \neq i) = \frac{\exp(ks_{ri})}{\sum_{j \in g} \exp(ks_{rj})} \tag{3}$$

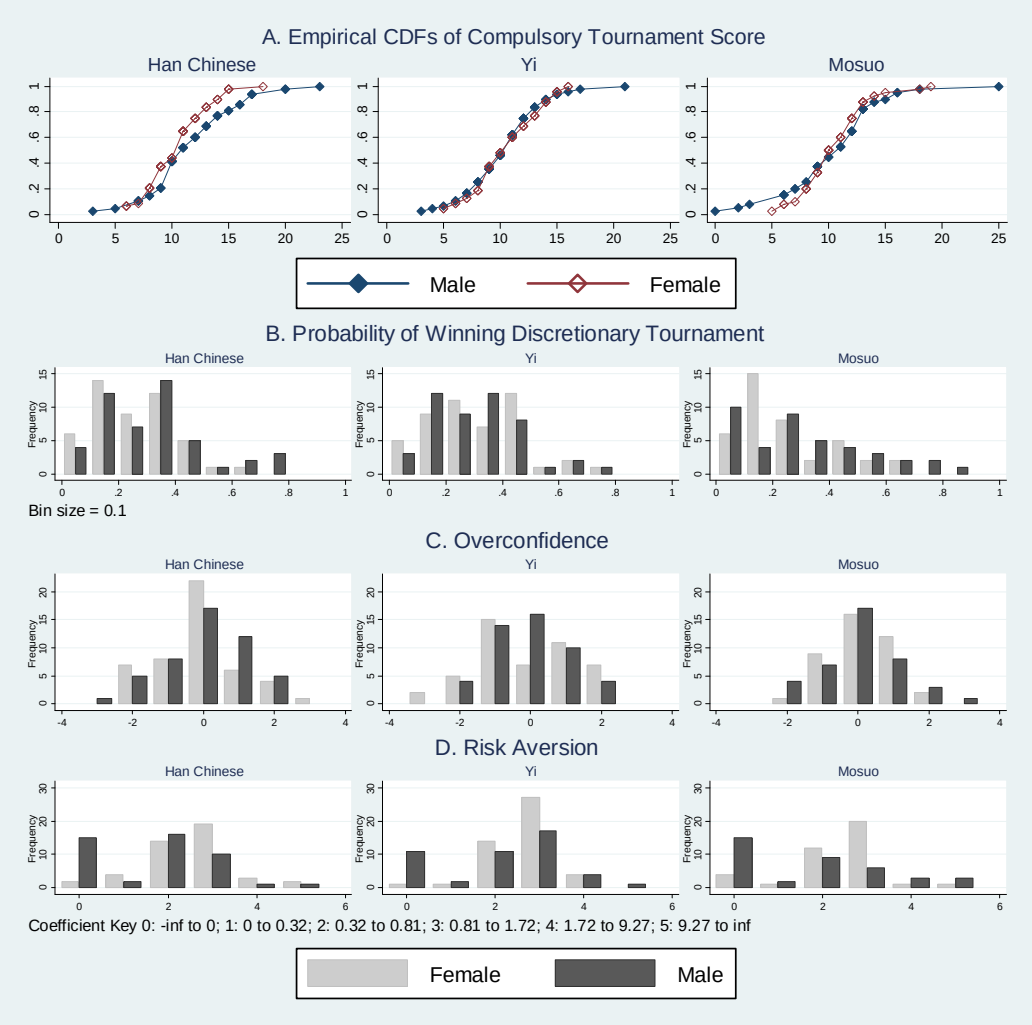
Since winning in the discretionary tournament is defined as scoring higher than the other three group members did in the compulsory tournament round, s_{ri} denotes the score in the discretionary tournament round and $s_{rj},\, j \neq i$, denotes the scores in the compulsory tournament round. k, the non-linear scale parameter was estimated separately in Zhang (2012).

Panel A in figure 1 shows the empirical cdfs of performance in the compulsory tournament round by gender for each ethnic group. Mann-Whitney tests find no significant gender differences for the Yi and the Mosuo (p-values=0.73 and 0.85, respectively) and marginally higher scores for the Han Chinese men (p-value=0.13). The literature typically finds no significant gender differences in performance on this task (e.g., Niederle & Vesterlund (2007)).

Panel B in figure 1 shows distributions of the probabilities of winning the tournament, calculated using Equation 3. The overlap by gender is substantial, and Mann-Whitney tests reveal no significant gender differences (all p-values > 0.10). This is consistent with the above analysis of performance on the tasks.

Table 2 presents the results from estimating equation 1, using a probit model and clustering standard errors by session. Column 1 in each panel includes no controls

Figure 1: Experimental Determinants of Tournament Entry by Ethnicity and Gender



and thus tests for gender differences in raw tournament entry rates. Substantial gender differences exist for the Yi and the Mosuo, with the men more likely to choose the tournament by 23 and 28 percentage points, respectively. The Han Chinese have a somewhat smaller gender difference of 15 percentage points. The gender differences in raw entry rates are smaller than that found in Niederle and Vesterlund (2007), and are similar in size to that found in Gneezy *et al.* (2009), also conducted in developing regions (See Appendix Table A.2).[33]

Column 2 of each of the three panels in Table 2 controls for the probability of winning. The coefficients on male remains largely unchanged from Column 1, although they are now slightly smaller for the Han Chinese and the Mosuo.

Because the tournament entry decision depends not only on the probability of winning the tournament, but also on the potential payout if piece-rate is chosen, another piece of information that is relevant for subjects is the effect that the tournament incentive has on their performance itself. In the literature this effect has been measured by the improvement in scores between the piece-rate and compulsory tournament rounds (Gneezy *et al.*, 2003). In order to isolate the effect of the tournament incentive from learning between Round 1 and Round 2, the current study departed from the standard Niederle & Vesterlund (2007) design in randomizing the order of the piece-rate and tournament rounds. Thus, the improvement between the piece-rate round and the tournament round indicates the degree to which performances respond to tournament incentives, net of any learning effects. In essence the first two rounds replicate the design of Gneezy *et al.* (2003).[34] Comparisons across

[33]Zhang (2012) studied competitive inclination in students from two middle schools in Ninglang county and found no gender differences among subjects of the three ethnic groups. While age is an obvious difference between the subjects in the current study and in Zhang (2012), middle school students and high school students are also selected differently, which prevents a direct comparison of the results from identifying age effects. While middle school is compulsory, only around 30% of middle school students are accepted into high school. Furthermore, whereas high schools draw from all middle schools in the county, the two middle schools in Zhang (2012) are not representative of the county's middle schools. The first middle school was selected because of its high proportion of Mosuo students, and the other was selected because of its high proportion of Yi students and its proximity to the first.

[34]More precisely, the performance in the first chronological round is equivalent to performances of subjects who only participated under one incentive scheme, as was the case in Gneezy *et al.* (2003). Results from an analysis of the first round alone (not reported) are consistent with results from analyzing the combined first two rounds.

Table 2: Tournament Entry, Separated by Ethnicity

Dependent Variable: Choose Tournament

	(1)	(2)	(3)	(4)	(5)
	Han Chinese				
Male	0.146***	0.117*	0.085	0.047	0.037
	(0.052)	(0.067)	(0.080)	(0.080)	(0.087)
Prob of winning		0.557	1.113**	1.052*	1.028*
		(0.516)	(0.554)	(0.620)	(0.600)
Overconfidence			0.144***	0.132***	0.133***
			(0.037)	(0.035)	(0.031)
Risk aversion					-0.018
					(0.018)
Observations	96	96	96	89	89
Mean dep var	0.552	0.552	0.552	0.551	0.551
	Yi (patrilineal)				
Male	0.229**	0.245***	0.269**	0.242**	0.237***
	(0.092)	(0.090)	(0.107)	(0.097)	(0.085)
Prob of winning		0.517	0.777*	0.836**	0.853**
		(0.469)	(0.417)	(0.387)	(0.381)
Overconfidence			0.082**	0.093**	0.084**
			(0.037)	(0.037)	(0.039)
Risk aversion					-0.066*
					(0.037)
Observations	96	96	95	92	92
Mean dep var	0.490	0.490	0.484	0.478	0.478
	Mosuo (matrilineal)				
Male	0.275***	0.251***	0.249***	0.285***	0.297***
	(0.065)	(0.044)	(0.043)	(0.052)	(0.066)
Prob of winning		0.783***	0.830***	0.856***	0.881***
		(0.208)	(0.101)	(0.146)	(0.198)
Overconfidence			0.017	0.020	0.029
			(0.040)	(0.045)	(0.048)
Risk aversion					-0.032
					(0.027)
Observations	80	80	80	77	77
Mean dep var	0.613	0.613	0.613	0.610	0.610

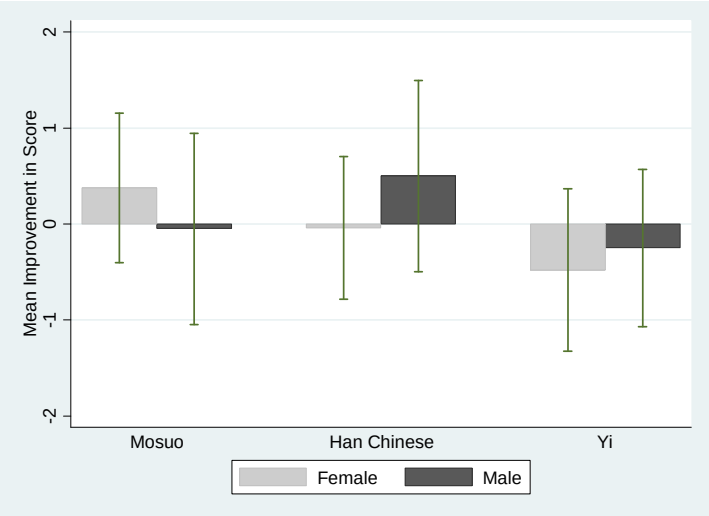
*** p<0.01, ** p<0.05, * p<0.10

Marginal effects; robust standard errors in parentheses, clustered by session.

Probit regression: dependent variable = 1 if subject chooses to enter competition, 0 otherwise.

Column (4) includes only observations for which risk aversion data is not missing.

Figure 2: Improvement in Score from Piece-Rate to Tournament Round across Ethnicity, by Gender



gender and ethnic group show no gender or ethnic differences in performance improvement from piece-rate to tournament and, in fact, there are no improvements in performance on average (see Figure 2). This is consistent with other studies that use a short task (Niederle & Vesterlund, 2011) and could also result from the environment of test-taking priming students to perform to the extent of their ability on each task.

6.2 Overconfidence

The decision to enter the tournament may reflect both an objective and a subjective assessment of one's probability of winning the tournament. Using the guessed rank for the compulsory tournament, I construct the measure for overconfidence, q_i, by subtracting the guessed rank from the actual rank, with the best rank being 4 and the worst 1. This measure takes on integer values between -3 and 3, with positive (negative) values signifying overconfidence (underconfidence), and zero representing a correct guess. The distribution of this variable is symmetric about zero, implying that subjects in this study are on average correct about their rank, despite the fact the guesses were not monetarily incentivized (see Appendix Figure A.1). Panel C

in Figure 1 shows the distribution of overconfidence by ethnicity and gender. The average value of the overconfidence variable for each ethnic group is statistically indistinguishable from zero, with no differences in distribution by gender detected in Mann-Whitney tests for any ethnic group (all p-values>0.10). Both results are contrary to the typical findings of overconfidence, with males more overconfident than females (e.g., Niederle & Vesterlund (2007); Balafoutas & Sutter (2010), Niederle *et al.* (2008), Sutter & Rützler (2010), Healy & Pate (2011)).

The fact that the subjects in the current study are high school classmates and grades are public knowledge in China may have contributed to the accuracy of their guessed ranks in the experiment. Given that contestants in competitions with labor market consequences, i.e., the types of competitions that motivated this research, often have an informed opinion of their relative abilities and chance of success (e.g., employees up for a promotion), the current lab setting may provide a closer approximation to such competitions than lab settings where a high degree of anonymity leads to less accurate assessments of relative ability.

Although overconfidence has significant explanatory power for tournament entry for the Han Chinese and the Yi, controlling for overconfidence in addition to the probability of winning the tournament in Column 3 of Table 2 does not reduce gender differences in tournament entry among the Yi, whereas the coefficient on male for the Han Chinese is reduced to insignificance.

6.3 Risk aversion

Because payoffs are uncertain under the tournament payment scheme given performance, the decision to enter the tournament could depend on one's tolerance of risk. I measure risk aversion using an ordered lottery selection instrument, where each subject is asked to choose one lottery out of six, with the first lottery offering a certain amount and all other alternatives offering higher expected payoff along with higher variance. The size of the stakes was designed to be roughly comparable to the stakes in the competition experiment. Each choice along with its corresponding expected value, standard deviation, and implied CRRA coefficient range is shown in Appendix Table A.1. This instrument was first developed for studying

risk aversion in rural India (Binswanger, 1980), and is similar to the independently developed instrument used in Eckel & Grossman (2008a).[35] The main advantage of this instrument is its simplicity, which has been shown to generate less noise and more consistency over time, especially for subjects with low cognitive ability, as compared with finer but more complex risk instruments (Dave *et al.*, 2010). See Appendix B for a comparison of the risk aversion data with the results from Binswanger (1980) and Eckel and Grossman (2008).

Panel D of Figure 1 shows the distribution of risk aversion by ethnicity and gender. Casual observation indicates that in general, the female distributions are right-skewed, whereas the male distributions are left-skewed, indicating that females are more risk averse than males, as is consistent with the literature on gender differences in risk preferences (see, for example, Croson & Gneezy (2009), and Eckel & Grossman (2008b)). Mann-Whitney tests confirm that the gender differences are significant for all three ethnic groups (all p-values<0.05).

Because the risk instrument was presented separately from the competition experiment, some subjects were not present for the risk measurement.[36] In order to explicitly address any selection effects this may cause, Column 4 of Table 2 reproduces the specification in Column 3 but contains observations for only those subjects for whom I observe risk aversion. The coefficients differ somewhat from Column 3 to Column 4, indicating that some selection effects are present, although none of the results are substantively affected.

Column 5 adds risk aversion, γ_i, as a control.[37] The coefficient on gender for all three ethnic groups remains virtually unchanged. Other studies in the literature have also found risk aversion to either play no role in explaining tournament entry, or, if it does play a significant role (as in Sutter & Rützler (2010)), to leave the significant

[35]The formatting for the instrument was adapted from Barr & Genicot (2008). See the web appendix at ihome.ust.hk/~janezhang/.

[36]Due to time constraints imposed by the high schools, the risk instrument could not be administered in the same sessions as the competition experiment. Instead, in order to minimize wealth effects from earnings in the experiment, the risk instrument was presented after the Chinese New Year, where any earnings from the experiment are presumed to have been spent.

[37]γ_i is measured as the geometric mean of the implied CRRA coefficient range, following Binswanger (1981).

gender gap in tournament entry intact.[38] See Niederle & Vesterlund (2011), section 2.2, for a survey of the literature on this point.

Following the literature, having included all three controls, I interpret any residual gender differences in tournament entry as gender differences in *competitive inclination* per se and use this measure in the subsequent examination of cultural differences in preference for competition. There is no statistically significant gender gap in competitive inclination for the Han Chinese, whereas for the Yi and the Mosuo, there is a gender gap of greater than 20 percentage points, significant at the 1% level. The existence of a gender gap for both the Yi and the Mosuo belies important differences in levels of competitive inclination, which is discussed in the next section.

7 Pooled Results

To formally test for cultural differences in competitive inclination gender gaps, this section combines the data for the three ethnic groups and estimates a regression equation that interacts gender with ethnicity:

$$y_i = \beta_0 + \beta_1 male_i + \sum_{j=2}^{3} \beta_j ethn_{ji} \times male_i + \sum_{j=1}^{3} \beta_{j+3} ethn_{ji} + \delta p_i + \lambda q_i + \tau \gamma_i + X_i' B + \varepsilon_i \tag{4}$$

where $y_i = 1$ if the subject chooses tournament and 0 if the subject chooses piece-rate. Measurements of p_i, q_i, and γ_i are described in Section 6. $ethn_{1i}$, $ethn_{2i}$, and $ethn_{3i}$ are indicator variables for Han Chinese, Yi and Mosuo, respectively. $male_i$ is an indicator variable taking the value of 1 for males and 0 for females. X_i represents a vector of background characteristics that include age, age squared, number of brothers, number of sisters, education of the household head, and family income. The coefficient of interest is $\beta_2(\beta_3)$, which indicates the gender difference among the Yi (Mosuo), as compared with the Han Chinese, the omitted group.

[38] Unfortunately, the magnitudes of the coefficients on risk aversion cannot be directly compared across studies, since the measures of risk aversion differed across studies.

Table 3 Column 1 reports the results from this estimation without background controls. Consistent with the results in Table 2, the Han Chinese exhibit a small and insignificant gender difference in competitive inclination while the Yi and the Mosuo gender gaps are statistically significantly larger by 20 and 26 percentage points, respectively. Controlling for demographics and socioeconomic status in Column 3 leaves the result substantively unchanged.

Compared with the Han Chinese women, Yi women are statistically significantly less competitively inclined by 20 percentage points while Mosuo women are less competitively inclined by 6 percentage points, with the difference statistically insignificant. These results roughly track the differences across the three ethnic groups in female relative non-agricultural employment (see Table 1).

The coefficient of -0.2 on Yi implies that the difference in the gender gap compared with the Han Chinese is entirely due to Yi women being less competitively inclined than the Han Chinese women, with Yi men and Han Chinese men about equally competitively inclined. In light of the cultural similarity between the Han Chinese and the Yi prior to the radical communist gender egalitarian reforms from which the Yi were largely exempted, the findings suggest the hypothesis that "fast-moving" institutional changes can narrow the gender gap in competitive inclination.

The Mosuo, too, have a gender difference in competitive inclination that is significantly larger than that of the Han Chinese. But because the Mosuo matrilineal culture was different from the Han Chinese patrilineal culture prior to the reforms, the comparison of the Han Chinese results with the Mosuo results does not speak to the impact of institutional changes.

This is the first finding of a significant gender gap in competitive inclination favoring males in a matrilineal society, and shows that matriliny is not sufficient to reverse or eliminate the gender gap. One conjecture for the high Mosuo male competitive inclination is that the non-exclusivity of Mosuo marriages increases the return to competitive behavior for Mosuo males relative to males in monogamous societies, as is consistent with the Trivers theory.[39] Of course, without a proper comparison group, e.g., a matrilineal society similar to the Mosuo but is

[39]The Khasi of India and the Chewa of Malawi, the other two matrilineal societies for which we have measures of competitive inclination, are monogamous (Gneezy *et al.*, 2009; Flory *et al.*, 2011).

Table 3: Tournament Entry, Pooled across Ethnicity

Dependent Variable: Choose Tournament	(1)	(2)	(3)
Male	0.034	0.021	0.019
	(0.062)	(0.062)	(0.064)
Male*Yi	0.201**	0.213**	0.202*
	(0.099)	(0.096)	(0.121)
Yi	-0.200*	-0.205**	-0.197*
	(0.113)	(0.101)	(0.117)
Male*Mosuo	0.264***	0.310***	0.308***
	(0.070)	(0.062)	(0.062)
Mosuo	-0.058	-0.101	-0.119
	(0.115)	(0.099)	(0.094)
Prob of winning tourn.	0.009***	0.010***	0.008***
	(0.002)	(0.002)	(0.002)
Overconfidence	0.093***	0.101***	0.094***
	(0.022)	(0.024)	(0.020)
Risk aversion	-0.035**	-0.031*	-0.030*
	(0.018)	(0.016)	(0.016)
School Fixed Effect	Yes	Yes	Yes
Demographic controls	No	Yes	Yes
SES controls	No	No	Yes
Observations	258	258	226
Log likelihood	-158.9	-155.6	-135.9
Mean dep var	0.543	0.543	0.549

*** p<0.01, ** p<0.05, * p<0.10
Marginal effects; robust standard errors in parentheses, clustered by session.

Probit regression: dependent variable = 1 if subject chooses to enter competition, 0 otherwise.
Han Chinese and female are omitted.
Demographic controls include age, age squared, number of siblings.
SES controls include education of household head and household income.

not polygamous, or a society that is similar to the Yi or to the Han Chinese but is polygamous, it is impossible to test this conjecture in the context of this paper.[40]

8 Interpretation checks

As with any typical experimental study, the interpretation of the findings presumes that subjects understood the experimental instructions. Although this is not directly observable, a useful check in this setting is to look at the coefficients on the control variables in the empirical model. Referring to the third specification in Table 3, a one percentage point increase in the probability of winning the tournament increases the probability of tournament entry by 0.8 percentage points. An increase of one in the perceived rank compared with actual rank increases the probability of tournament entry by 9.4 percentage points. A one unit increase in the CRRA coefficient decreases the likelihood of tournament entry by 3 percentage points. These coefficients take the expected signs, have reasonable magnitudes, and are jointly statistically significant (p-value<0.01), which suggests high-quality decision-making on the part of the participants.

The second interpretation check tests whether competitive inclination measured in the lab is merely proxying for general ability. Appendix Table A.3 reproduces Table 3 but includes the subjects' performance on standardized county-wide tests as a control (variable name: grades). The results indicate that while grades is correlated with competitive inclination, the gender gap patterns we see across ethnic groups remain substantively unchanged. The similarity in the estimates compared to the estimates in Table 3 suggests that academic ability is largely orthogonal to the other determinants of competitive inclination.

The third interpretation check directly tests whether government policies can account for the gender difference in competitive inclination among the Yi. I exploit the fact that exemptions from the marriage reform policies did not apply uniformly to everyone in minority ethnic groups. In particular, for those who are salaried

[40]It is perhaps suggestive, though, that raw tournament entry rates for Mosuo males are almost identical to that among male college students in the United States, whose courtship practice of dating has also been characterized by some as polygamous (Fisman *et al.*, 2006).

employees of the state, non-compliance with the national marriage laws could result in the loss of an enviable job. As a matter of measurement, since the private sector is negligible in Ninglang, for all intents and purposes, the non-agricultural sector in Ninglang represents the state sector.

Given that the marriage reforms discouraging child betrothals were successful among the Yi cadres whereas they made little headway with the rest of the Yi, those Yi women whose head of household works for the state are presumably less likely to be engaged at a young age and more likely to marry at a later age than those Yi women whose head of household works in agriculture. In so far as the ability to pursue work outside of the home is hindered by early marriage, if anticipated labor force participation influences female competitive inclination, the Yi women with household heads in the agricultural sector would be expected to be less competitively inclined than Yi women whose household heads work for the state. The Han Chinese, being the majority ethnic group in China, were not given exemptions from the national Marriage Law and therefore no differences in gender gap patterns are expected across the two sectors for the Han Chinese.

To test these predictions, I interact gender with sector of work of the household head for each ethnic group in the following probit regression:

$$y_i = \alpha_0 + \alpha_1 male_i + \alpha_2 sector_i + \alpha_3 sector_i \times male_i + \delta p_i + \lambda q_i + \tau \gamma_i + \varepsilon_i \quad (5)$$

where, as before, $y_i = 1$ if the subject chooses tournament and 0 if the subject chooses piece-rate. $male_i$ is an indicator variable taking the value of 1 for males and 0 for females. $sector_i$ is an indicator taking the value of 1 if the household head works in the non-agricultural sector and 0 if the household head work in the agricultural sector. p_i, $q_i$and γ_i are the controls for the probability of winning, overconfidence, and risk aversion, respectively. α_1, α_2, and α_3 are the coefficients of interest. α_1 indicates the gender difference in competitive inclination for those whose families are in the agricultural sector; α_2 indicates the difference in competitive inclination for females who come from non-agricultural families compared to those females from agricultural families; α_3 indicates the difference in the gender

gaps in competitive inclination between the two sectors.

The results from this estimation are presented in Table 4 in two panels, one for the Han Chinese and one for the Yi. Columns 1, 2, and 3 in each panel explicitly highlight any changes to the coefficients of interest that result from a reduced and potentially selected sample of subjects who were observed for risk aversion. For all three panels, it appears that the inclusion of risk aversion in column 3 has a negligible effect on the gender, sector, and gender-sector interaction terms. In comparison, excluding the observations that could not be measured for risk aversion has a larger effect on these coefficients, as seen in the difference in the coefficients of interest between column 1 and column 2. Including additional controls for grades, education of household head, and household income in columns 4 and 5 does not change the coefficients of interest substantively, with the exception that the effect of coming from a non-agricultural family on competitive inclination is now positive for Han Chinese women, although this effect is insignificant across all specifications. For these reasons, I refer to the first columns of each panel when evaluating model predictions.

For the Yi, the entire gender difference in competitive inclination is driven by those from agricultural families, where women are 40.5 percentage points less likely to choose tournament, conditional on the probability of winning and on overconfidence. There is no difference in male competitive inclination across the two sectors, as predicted. For the Han Chinese, very little gender difference is observed for those from agricultural families, and an insignificant increase in gender difference is observed when moving from the agricultural to the non-agricultural sector.

9 Alternative explanations

9.1 Selection

High school admissions is determined by a competitive standardized entrance exam. No other academic criteria (e.g., grades, extracurriculars) are considered. A concern is that differential selection into high school could potentially account for the patterns of variation in competitive inclination across gender and ethnicity. In panel B

Table 4: Regressions of Tournament Entry on Gender, Sector, and Interaction, Separated by Ethnicity

Dependent Variable: Choose Tournament

	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
	Han Chinese					**Yi**				
Male	0.045	-0.024	-0.037	-0.064	-0.056	0.405***	0.388***	0.398***	0.516***	0.502***
	(0.130)	(0.148)	(0.157)	(0.144)	(0.153)	(0.130)	(0.120)	(0.102)	(0.147)	(0.173)
Non-agricultural	-0.012	-0.094	-0.107	0.080	0.041	0.419***	0.418***	0.428***	0.509**	0.543***
	(0.071)	(0.133)	(0.143)	(0.183)	(0.193)	(0.139)	(0.136)	(0.148)	(0.247)	(0.190)
Male*Non-agricultural	0.119	0.215	0.221	0.177	0.170	-0.435***	-0.443***	-0.480***	-0.538***	-0.539***
	(0.250)	(0.282)	(0.283)	(0.337)	(0.383)	(0.131)	(0.104)	(0.086)	(0.064)	(0.106)
Prob of winning tourn. (percentage)	0.011**	0.011*	0.010*	0.011**	0.010*	0.008**	0.009**	0.009**	0.008**	0.008**
	(0.005)	(0.006)	(0.006)	(0.005)	(0.005)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Overconfidence	0.137***	0.120***	0.120***	0.132***	0.124***	0.088***	0.102***	0.090***	0.082***	0.068
	(0.036)	(0.032)	(0.027)	(0.035)	(0.041)	(0.031)	(0.032)	(0.034)	(0.028)	(0.043)
Risk aversion			-0.021	-0.046*	-0.046**			-0.086*	-0.096*	-0.102*
			(0.022)	(0.024)	(0.022)			(0.046)	(0.053)	(0.054)
Grades (percentile)				0.003	0.003				0.009**	0.009***
				(0.003)	(0.003)				(0.004)	(0.003)
SES controls	No	No	No	No	Yes	No	No	No	No	Yes
Observations	92	85	85	84	80	94	91	91	89	83
Log likelihood	-57.62	-54.35	-54.15	-51.13	-49.05	-56.49	-54.63	-53.11	-49.14	-45.91
Mean dep var	0.554	0.553	0.553	0.548	0.550	0.489	0.484	0.484	0.483	0.494

*** p<0.01, ** p<0.05, * p<0.10

Marginal effects; robust standard errors in parentheses, clustered by session.

Probit regression: dependent variable = 1 if subject chooses to enter competition, 0 otherwise.
Agricultural head of household and female are omitted.
SES controls include education of household head and household income.
Columns (2) includes only observations for which risk aversion data is not missing.

of Table 1, the first row under the section "Selection into High School" shows male to female sex ratios for children aged 8 and 9 in the county in 2000, who should be in grades 11 and 12 in 2009. Compared to the US sex ratio of 1.04 for children under 15, it appears that there is male preference among the Han Chinese and the Yi, but not among the Mosuo. With regard to enrolling in high school, male and female Han Chinese and Mosuo are equally likely to be in high school, conditional on being alive in the year 2000. Thus, selection into high school cannot explain the larger gender difference in competitive inclination among the Mosuo compared to the Han Chinese. In contrast, Yi females are much less likely to be in high school than Yi males, even relative to their already smaller proportion in the population. Assuming that the probability of enrolling in high school increases with competitive inclination, the Yi females in high school should be relatively more competitively inclined than the Yi females in the population, compared to the Yi males. Therefore, the Yi gender gap in competitive inclination found in high school underestimates the population gender gap, and selection into high school does not explain the gender difference in competitive inclination among the Yi compared to the Han Chinese.

9.2 One Child Policy

The well-known One Child Policy also exempted minorities to a large extent, so an alternative interpretation of the results is that it is the experience of growing up as an only child, rather than any cultural factors, that raised Han Chinese women's competitive inclination relative to minority women.[41] However, the prevalence of only children in the current study is uniformly low across all three ethnic groups (see Table 1). For example, of the Han Chinese subjects, only 2 females (one non-agricultural) and 1 male (non-agricultural) are only children. Such low rates of only children cannot support the interpretation that the experience of growing up as an only child contributed significantly to the patterns of competitive inclination seen in the data.[42] Family planning regulations, however, could have differentially

[41]For a discussion of the literature on growing up as an only child and its potential impact on competitive inclination see Appendix C.

[42]The low prevalence of only children is consistent with the fact that prior to 1990, Ninglang County fell into a category of regions that merely carried out education campaigns on the merits and

affected family size for the Han Chinese compared with the Yi.[43] A one-sided t-test indicates that the Han Chinese subjects have fewer siblings than the Yi subjects (p-value = 0.09), but, as seen earlier, controlling for the number of siblings in Column 2 in Table 3 and Appendix Table A.3 did not affect the substantive results.

Another potential effect of the One Child Policy is ethnic differences in expected fertility. Knowing that they will be raising fewer children in the future and have more time to pursue a skilled vocation could increase the competitive inclination of Han Chinese women compared to the Yi women. This is perhaps another channel through which government policy leads to higher female competitive inclination among the Han Chinese. The equality in competitive inclination between Mosuo women and Han Chinese women is also consistent with this interpretation, given the low fertility rates of the Mosuo.

9.3 Matriliny versus patriliny

Establishing property rights for women is considered by many to be instrumental to women's empowerment. In the Mosuo tradition, property is collectively owned and inherited by all members of the family, whereas in the Han Chinese and Yi traditions, property is only inherited by males. Under the communist reforms, however, land is not owned, but rather its usage is allocated on a per capita basis with deaths and births resulting in reallocations administered by village government (Kung & Liu, 1997). I am not aware of any exceptions to this policy for ethnic minorities. To the extent there are not exceptions, property inheritance is unlikely to contribute significantly to ethnic differences in the gender gap in competitive inclination.

Post-marital residence norms are also widely thought to impact parental investment in girls. A common saying in India, where patrilocality is prevalent, is that investing in your daughter is akin to "watering you neighbor's garden." If lower investment in girls causes lower competitive inclination, one might expect the Yi

methods of birth control, without setting birth quotas (China Family Planning Yearbook, 1986: 349; Gazetteer of Ninglang Yi Autonomous County, 1993: 591). Only 0.33% of couples were certified as parents of only children from 1980 to 1989 (Gazetteer of Ninglang Yi Autonomous County, 1993: 591).

[43]The Mosuo have had low fertility long before the regulations were introduced, the causes for which has been the subject of a number of academic articles (e.g., Shih & Jenike (2002))

women to be less competitively inclined given their tradition of patrilocality. But since the subjects are all high school students, presumably the male and female subjects have received comparable parental investment thus far, at least with regard to education. It is possible, though, that the Yi female subjects have been shortchanged in other forms of investment important for competitive inclination.

Matriliny may also play a role in explaining the higher competitive inclination of the Mosuo women compared with the Yi women. However, given that Mosuo society is similar to contemporary Han Chinese society in relative female labor force participation in the non-agricultural sector and in low fertility, if matriliny exerts an additional impact on competitive inclination, then one would expect an appreciable difference in competitive inclination between the Mosuo women and the Han Chinese women. In fact, there is not.

9.4 Discrimination

Labor market discrimination against minorities and women could lead to differences in competitive inclination across ethnicity-gender groups. It should be emphasized that in Ninglang county, the Yi are the predominant ethnic group, with 62% of the population, whereas the Han Chinese make up 20% of the population. In fact, county government officials informed me that all the heads of the government bureaus in the county are from the Yi ethnic group.

It is possible that the Yi discriminate against their own females in the skilled labor market, but not against the Han Chinese males or females. It would seriously challenge the interpretation of the results if the Han Chinese would also discriminate against their females in areas where they are the majority group. In fact, the proportion of Han Chinese female labor force employed in the non-agricultural sector across China is 80% that of the male proportion (China Population Census, 2000, 0.095% micro sample). Furthermore, a recent study conducted in Beijing, where the predominant ethic group is Han Chinese, found no statistically significant gender difference in competitive inclination (Cameron *et al.*, 2013).

10 Conclusion

An emphasis in the women's empowerment movement has been on expanding women's available choices, for example, in access to education and productive work, and in the freedom to choose their marriage partners and to control their fertility. If, however, internalized cultural messages can influence women to opt out of competitions that can increase their productive capacity, even when they have the same choices as men and are equally capable, then women may make suboptimal choices for themselves, even when these choices are freely made.

The findings of this study affirm the Gneezy *et al.* (2009) conclusion that culture matters for gender differences in competitive inclination, and show that it matters in a setting where subjects from different cultural backgrounds are of the same age, from the same small geographical area, have similar socioeconomic status, and have advanced through the same schooling system to be now attending the same high school.

This study is also the first to examine the impact of a large scale attempt at cultural change on competitive inclination. The finding that two genetically similar cultures with traditionally patrilineal values, one exposed to communist gender egalitarian reforms and one exempted, exhibit a large difference in the gender gap in competitive inclination that is entirely attributable to those whose families are exempt, suggests the hypothesis that institutional changes can narrow the gender gap in competitive inclination. To the extent that competitive inclination is malleable, policies that encourage women to enter labor market competitions will not only have an impact on women's labor market outcomes in the short-run, but may also alter women's attitude toward competition so that these encouragements become unnecessary in the long-run.

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Appendix A History of settlement

The Mosuo came to settle in the Ninglang region around 700 A.D., having been displaced from their home in the north as a result of wars between the Tibetan Kingdom and Tang China (Guo, 2008: 111-112). The first Han Chinese in the region were soldiers of the Ming dynasty (1368-1644 A.D.) garrisons, stationed in the borderlands to maintain regional security. During the Qing dynasty (1644-1912 A.D.), Han merchants and craftsmen, as well as the Yi from the neighboring Greater Cool Mountains of Sichuan province, migrated to Ninglang for work in the silver mining industry (Guo, 2008: 71; Social and Historical Survey of the Yi of the Yunnan Lesser Cool Mountains, 2009: 1-2). When the mines ceased their operations, the migrants settled down to farm in the local communities (Guo, 2008: 29). Thus, the three ethnic groups have had a long history of coexistence in the region prior to the founding of the PRC. While there has been mutual cultural influence, for example, in crop choice (Guo, 2008: 144-145), core ethnic distinctions persisted, so that the nationwide ethnic identification project of the 1950s classified the Mosuo, the Yi, and the Han Chinese as separate ethnic groups.[44]

Appendix B Risk aversion instrument

Appendix Table A.1 shows, for each gamble, the expected payout, the standard deviation of the payout, the implied range of CRRA coefficients, and the percentage of participants who chose the gamble. The bottom panel of Appendix Table A.1 shows the same data from two other studies using similar instruments for comparison. The distribution of choices in the current study appear most similar to the Binswanger (1980) data using small stakes (Rs. 5 level). 9.9% (9.8%) of subjects in the current study (in Binswanger (1980)) chose the two safest choices. 23.7%

[44]This is in part due to each group's distinct language and history. See (Heberer, 1989: 31-34) for a detailed discussion of the determinants of ethnic classification. Although ethnic consciousness is undoubtedly more fluid than official categories would suggest, Stevan Harrell, an expert on the Yi and other ethnic groups in Southwest China, argues that official categories have created at least another identity with which groups differentiate themselves from one another (Harrell, 2001).

(23.9%) of subjects in the current study (in Binswanger (1980)) chose the two most risky choices. Compared with Eckel and Grossman (2008), whose subjects are US college students, the subjects in both the current study and in Binswanger (1980) made more safe choices. One possible interpretation is that the populations in developing countries are more risk averse than the populations in developed countries. However, a clean cross country comparison would need to fix the stake sizes, relative to purchasing power.

Table A.1: Risk Instrument

50 / 50 gamble	Low payout	High payout	Expected payout	S.D. of payout	implied CRRA coefficient range[1]	% of participants choosing gamble
N=283, currency = RMB						
1	2.5	2.5	2.5	0	r>9.27	3.2%
2	2.3	4.6	3.45	1.15	1.72<r<9.27	6.7%
3	2	6	4	2	0.81<r<1.72	38.9%
4	1.5	7.5	4.5	3	0.32<r<0.81	27.6%
5	0.5	9	4.75	4.25	0<r<0.32	4.6%
6	0	10	5	5	r<0	19.1%
Comparison with previous studies						
Binswanger (1980)[2]						
N = 471, currency = INR						
1	5	5	5	0	r>7.51	0.9%
2	4.5	9.5	7	2.5	1.74<r<7.51	8.9%
3	4	12	8	4	0.812<r<1.74	26.2%
4	3	15	9	6	0.316<r<0.812	40.2%
5	1	19	10	9	0<r<0.316	13.1%
6	0	20	10	10	r<0	10.8%
Eckel and Grossman (2008)						
N = 256, currency = USD						
1	16	16	16	0	r>2	4.3%
2	12	24	18	6	0.67<r<2	16.4%
3	8	32	20	12	0.38<r<0.67	32.8%
4	4	40	22	18	0.2<r<0.38	22.7%
5	0	48	24	24	r<0.2	23.8%

[1] CRRA coefficient range calculated as the range of r in the function $U=I^{(1-r)}/(1-r)$ for which the subject chooses each gamble.

[2] Data from the incentivized Rs. 5 games on the full sample. Distribution of participant choices adjusted to exclued the 9.1% of respondents who chose one of the inefficient choices.

Appendix C Table and Figures

Table A.2: Raw Tournament Entry Statistics

	Female	Male	Sex Difference	P-value*	Obs (Female)	Obs (Male)
Tournament Entry						
High school (avg age 18.4)						
Han (Chinese)	48%	63%	15%	0.154	48	48
Yi (Chinese Patrilineal)	38%	60%	22%	0.025	48	48
Mosuo (Chinese Matrilineal)	48%	75%	28%	0.011	40	40
Total					136	136
University undergraduates						
Niederle & Vesterlund (2007)						
United States	35%	73%	38%	0.001	40	40
Adults (avg age 33.9)						
Gneezy, Leonard, and List (2009)						
Maasai (Tanzanian Patrilineal)	26%	50%	24%	0.040	34	40
Khasi (Indian Matrilineal)	54%	39%	-15%	0.201	52	28
Total					86	68

* P-value is based on two-sided t-test, calculated from reported tournament entry rates and number of observations by gender.

Figure A.1: Distribution of Overconfidence

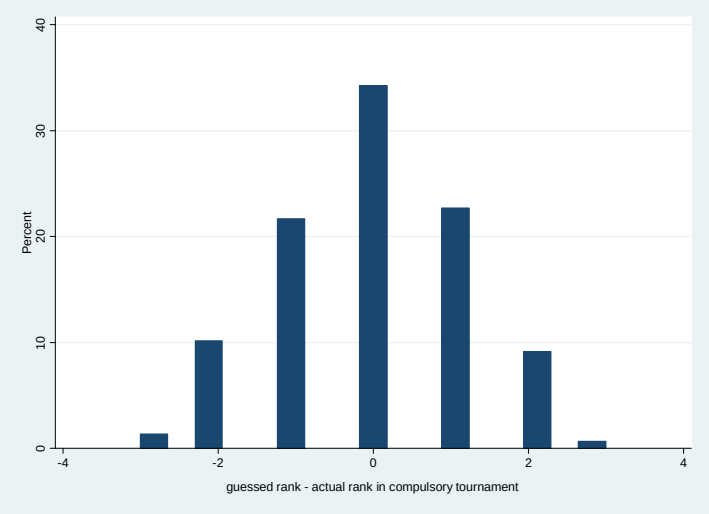


Table A.3: Regressions of Tournament Entry on Gender, Ethnicity and Interactions, Pooled across Ethnicity

Dependent Variable: Choose Tournament				
	(1)	(2)	(3)	(4)
Male	0.034	0.035	0.022	0.018
	(0.062)	(0.054)	(0.054)	(0.058)
Male*Yi	0.201**	0.230**	0.240***	0.229*
	(0.099)	(0.093)	(0.091)	(0.120)
Yi	-0.200*	-0.193	-0.199*	-0.187
	(0.113)	(0.120)	(0.106)	(0.125)
Male*Mosuo	0.264***	0.275***	0.318***	0.326***
	(0.070)	(0.063)	(0.060)	(0.067)
Mosuo	-0.058	-0.075	-0.116	-0.144*
	(0.115)	(0.112)	(0.095)	(0.086)
Prob of winning tourn.	0.009***	0.009***	0.010***	0.008***
	(0.002)	(0.002)	(0.002)	(0.002)
Overconfidence	0.093***	0.095***	0.103***	0.099***
	(0.022)	(0.023)	(0.024)	(0.020)
Risk aversion	-0.035**	-0.041**	-0.038**	-0.035**
	(0.018)	(0.017)	(0.016)	(0.015)
Grades (percentile)		0.004**	0.004**	0.005**
		(0.002)	(0.002)	(0.002)
School Fixed Effect	Yes	Yes	Yes	Yes
Demographic controls	No	No	Yes	Yes
SES controls	No	No	No	Yes
Observations	258	258	258	226
Log likelihood	-158.9	-156.5	-153.3	-133.5
Mean dep var	0.543	0.543	0.543	0.549

*** p<0.01, ** p<0.05, * p<0.10

Marginal effects; robust standard errors in parentheses, clustered by session.

Probit regression: dependent variable = 1 if subject chooses to enter competition, 0 otherwise.

SES controls include education of household head and household income.

Han Chinese and female are omitted.

Demographic controls include age, age squared, number of siblings.

Table A.4: Selected Descriptive Statistics (including additional Mosuo sessions)

(SD in parentheses)

	Han Chinese	Yi (Patrilineal)	Mosuo (Matrilineal)	F-stat	p-value
Panel A					
Ethnicity correlates					
Head of household is female	0.16	0.15	0.34	7.04	0.00
	(0.37)	(0.36)	(0.48)		
Parents participating in walking marriage	0.01	0.11	0.27	13.77	0.00
	(0.11)	(0.31)	(0.45)		
Mixed ethnicity	0.08	0.07	0.34	17.84	0.00
	(0.28)	(0.26)	(0.47)		
Demographics					
Age	18.43	18.68	18.38	2.16	0.12
	(1.19)	(1.18)	(0.94)		
Siblings	1.94	2.21	1.78	1.27	0.28
	(1.55)	(1.34)	(2.57)		
Is an only child	0.03	0.05	0.06	0.42	0.66
	0.17	0.22	0.23		
Socioeconomic Status					
HH engaged in agriculture	0.78	0.75	0.79	0.25	0.78
	(0.41)	(0.44)	(0.41)		
HH educational attainment (years)	7.98	7.67	6.89	1.79	0.17
	(3.10)	(4.78)	(4.30)		
Annual household income (RMB 100)	125.22	127.33	140.71	0.55	0.58
	(94.20)	(107.77)	(113.11)		
Observations	96	96	104		
Panel B					
Academic Performance					
Math grades	46.03	44.40	46.66	0.47	0.63
	(17.26)	(16.98)	(16.89)		
Gender difference in math (male - female)	2.77	-1.21	2.10		
P-value of gender difference (t-test)	0.43	0.73	0.53		
P-value of gender difference (Mann Whitney-test)	0.44	0.62	0.45		
Selection into High School					
Sex ratio in county (ages 8-9, 2000 census)	1.10	1.10	1.01		
Sex ratio in high schools (grades 11 and 12, school records)	1.12	2.00	1.04		
Employment in non-agricultural sector					
Proportion of labor force employed in the non-ag. sector in county, female to male ratio (2000 census)	0.73	0.37	0.84		

Figure A.2: Experimental Determinants of Tournament Entry by Ethnicity and Gender (including additional Mosuo sessions)

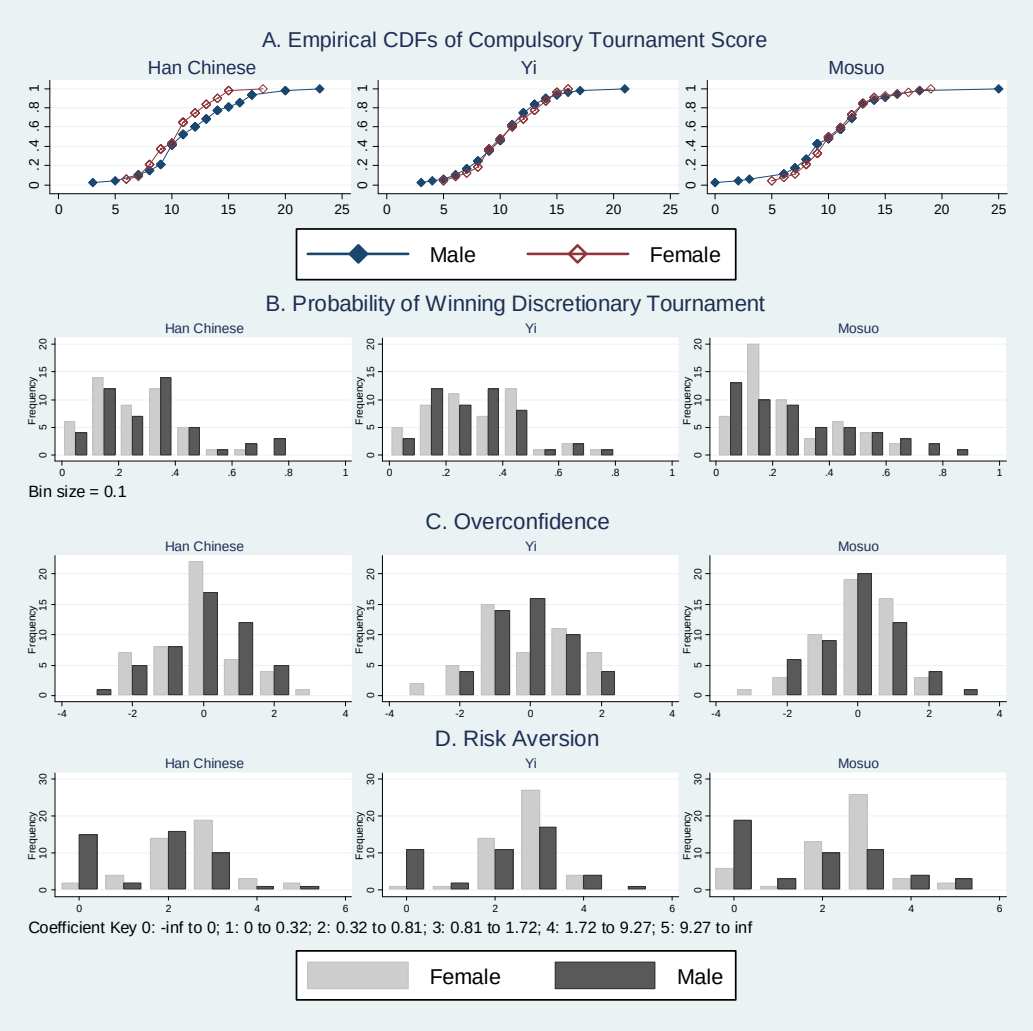


Table A.5: Tournament Entry, Separated by Ethnicity (including additional Mosuo sessions)

Dependent Variable: Choose Tournament					
	(1)	(2)	(3)	(4)	(5)
Han Chinese					
Male	0.146***	0.117*	0.085	0.047	0.037
	(0.052)	(0.067)	(0.080)	(0.080)	(0.087)
Prob of winning		0.557	1.113**	1.052*	1.028*
		(0.516)	(0.554)	(0.620)	(0.600)
Overconfidence			0.144***	0.132***	0.133***
			(0.037)	(0.035)	(0.031)
Risk aversion					-0.018
					(0.018)
Observations	96	96	96	89	89
Mean dep var	0.552	0.552	0.552	0.551	0.551
Yi (patrilineal)					
Male	0.229**	0.245***	0.269**	0.242**	0.237***
	(0.092)	(0.090)	(0.107)	(0.097)	(0.085)
Prob of winning		0.517	0.777*	0.836**	0.853**
		(0.469)	(0.417)	(0.387)	(0.381)
Overconfidence			0.082**	0.093**	0.084**
			(0.037)	(0.037)	(0.039)
Risk aversion					-0.066*
					(0.037)
Observations	96	96	95	92	92
Mean dep var	0.490	0.490	0.484	0.478	0.478
Mosuo (matrilineal)					
Male	0.231***	0.218***	0.218***	0.242***	0.241***
	(0.057)	(0.045)	(0.043)	(0.049)	(0.052)
Prob of winning		0.500	0.496	0.499	0.506
		(0.320)	(0.355)	(0.379)	(0.389)
Overconfidence			-0.002	0.000	0.002
			(0.028)	(0.030)	(0.031)
Risk aversion					-0.012
					(0.020)
School fixed effect	0.010	0.008	0.008	0.006	0.010
	(0.054)	(0.067)	(0.066)	(0.068)	(0.069)
Observations	104	104	104	101	101
Mean dep var	0.615	0.615	0.615	0.614	0.614

*** p<0.01, ** p<0.05, * p<0.10

Marginal effects; robust standard errors in parentheses, clustered by session.

Probit regression: dependent variable = 1 if subject chooses to enter competition, 0 otherwise.
Column (4) includes only observations for which risk aversion data is not missing.
The school fixed effect only applies to the Mosuo because the Han Chinese and the Yi were all drawn from the same high school.

Table A.6: Tournament Entry, Pooled across Ethnicity (including additional Mosuo sessions)

Dependent Variable: Choose Tournament			
	(1)	(2)	(3)
Male	0.047	0.043	0.039
	(0.060)	(0.061)	(0.061)
Male*Yi	0.185*	0.195**	0.201*
	(0.097)	(0.093)	(0.112)
Yi	-0.187*	-0.196**	-0.197*
	(0.113)	(0.099)	(0.109)
Male*Mosuo	0.196**	0.218**	0.239***
	(0.082)	(0.087)	(0.071)
Mosuo	-0.025	-0.052	-0.080
	(0.109)	(0.102)	(0.094)
Prob of winning tourn.	0.768***	0.798***	0.730***
	(0.241)	(0.258)	(0.222)
Overconfidence	0.076***	0.080***	0.081***
	(0.024)	(0.026)	(0.021)
Risk aversion	-0.024	-0.017	-0.029*
	(0.015)	(0.014)	(0.015)
School Fixed Effect	Yes	Yes	Yes
Demographic controls	No	Yes	Yes
SES controls	No	No	Yes
Observations	282	282	247
Log likelihood	-177.9	-175.2	-150.6
Mean dep var	0.550	0.550	0.551

*** p<0.01, ** p<0.05, * p<0.10
Marginal effects; robust standard errors in parentheses, clustered by session.

Probit regression: dependent variable = 1 if subject chooses to enter competition, 0 otherwise.
Han Chinese and female are omitted.
Demographic controls include age, age squared, number of siblings.
SES controls include education of household head and household income.

Table A.7: Regressions of Tournament Entry on Gender, Ethnicity and Interactions, Pooled across Ethnicity (including additional Mosuo sessions)

Dependent Variable: Choose Tournament				
	(1)	(2)	(3)	(4)
Male	0.047	0.049	0.040	0.035
	(0.060)	(0.053)	(0.052)	(0.056)
Male*Yi	0.185*	0.211**	0.217**	0.216*
	(0.097)	(0.092)	(0.091)	(0.115)
Yi	-0.187*	-0.179	-0.181*	-0.172
	(0.113)	(0.119)	(0.109)	(0.121)
Male*Mosuo	0.196**	0.211***	0.242***	0.277***
	(0.082)	(0.076)	(0.083)	(0.071)
Mosuo	-0.025	-0.043	-0.071	-0.112
	(0.109)	(0.105)	(0.096)	(0.081)
Prob of winning tourn.	0.008***	0.007***	0.008***	0.007***
	(0.002)	(0.002)	(0.003)	(0.002)
Risk aversion	-0.024	-0.029*	-0.023	-0.034**
	(0.015)	(0.015)	(0.015)	(0.015)
Overconfidence	0.076***	0.076***	0.081***	0.084***
	(0.024)	(0.025)	(0.026)	(0.021)
Grades (percentile)		0.004**	0.004**	0.005**
		(0.002)	(0.002)	(0.002)
School Fixed Effect	Yes	Yes	Yes	Yes
Demographic controls	No	No	Yes	Yes
SES controls	No	No	No	Yes
Observations	283	282	282	247
Log likelihood	-182.3	-177.9	-175.2	-150.6
Mean dep var	0.551	0.550	0.550	0.551

*** p<0.01, ** p<0.05, * p<0.10

Marginal effects; robust standard errors in parentheses, clustered by session.

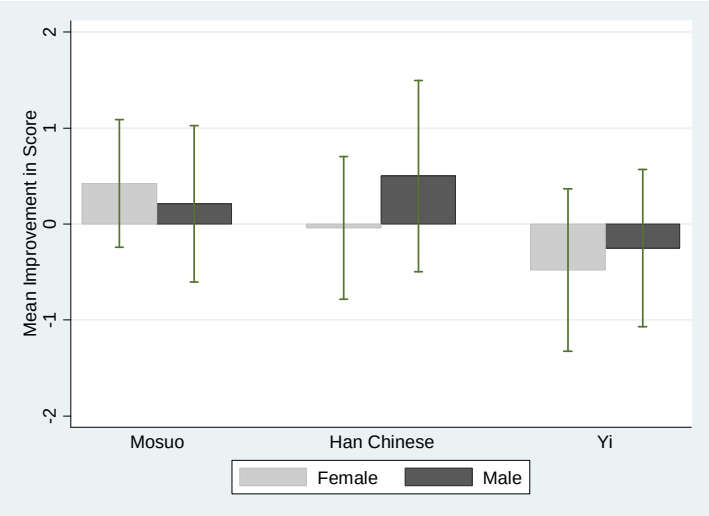
Probit regression: dependent variable = 1 if subject chooses to enter competition, 0 otherwise.

SES controls include education of household head and household income.

Han Chinese and female are omitted.

Demographic controls include age, age squared, number of siblings.

Figure A.3: Improvement in Score from Piece-Rate to Tournament Round across Ethnicity, by Gender (including additional Mosuo sessions)



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