

Gender Differences in Competition: Evidence from a Matrilineal and a Patriarchal Society

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Abstract

This study uses a straightforward experimental task to explore whether there are gender differences in selecting into competitive environments across two distinct societies: the Maasai in Tanzania and the Khasi in India. One unique aspect of these societies is that the Maasai represent a textbook example of a patriarchal society whereas the Khasi are matrilineal. Similar to the extant evidence drawn from experiments executed in Western cultures, Maasai men opt to compete at roughly twice the rate as Maasai women. Interestingly, this result is reversed amongst the Khasi, where women choose the competitive environment more often than Khasi men, and even choose to compete weakly more often than Maasai men. We view these results as potentially providing insights into the underpinnings of the factors hypothesized to be determinants of the observed gender differences in selecting into competitive environments.

Key words: Gender and competition, matrilineal and patriarchal societies, field experiment

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I. Introduction

Although women have made important strides in catching up with men in the workplace, a gender gap persists both in wages and in prospects for advancement. Commonly cited explanations for such disparities range from charges of discrimination to claims that women are more sensitive than men to work-family conflicts and therefore less inclined to make career sacrifices.¹ Combining results from psychology studies (see Campbell (2002) for a review) with recent findings in the experimental economics literature (e.g., Gneezy, Niederle, and Rustichini (2003); Gneezy and Rustichini (2004), Niederle and Vesterlund (2005)), an alternative explanation arises: men are more competitively inclined than women.² A stylized fact in this literature is that men and women differ in their propensities to engage in competitive activities, with men opting to compete more often than women, even in tasks where women are more able. Such data patterns might provide insights into why we observe a higher fraction of women than men among, for example, grammar school teachers, but the reverse among CEOs.

An important puzzle in this literature relates to the underlying factors responsible for the observed differences in competitive inclinations. One oft-heard hypothesis is that men and women are innately different (Lawrence (2006)). For example, in discussions concerning why men considerably outnumber women in the sciences, several high profile scholars have argued that men are innately better equipped to compete (see, e.g., Baron-Cohen (2003), Lawrence (2006), and the citations in Barres (2006)). An empirical regularity consistent with this notion is the fact that substantial heterogeneity exists in the

¹ For example, Altonji and Blank (1999); Blau and Kahn (1992; 2000); Blau, Ferber, and Winkler (2002).

² See also Vandegrift, Yavas, and Brown (2004); Gneezy and Rustichini (2005); and Datta, Poulsen, and Villeval (2005).

competitiveness of individuals raised in quite similar environments (see for example the discussion of the tendency to compete in bargaining, Shell (1999)).

Nevertheless, the role of nurture, or the fact that culture might be critically linked to competitive inclinations, is also an important hypothesis. More than a handful of our male readership can likely recall vividly their physical education teacher scolding them with the proverbially “you’re playing like a girl” rant to induce greater levels of competitive spirit. Clearly, however, the explanations might not be competing; rather the nature/nurture interaction might be of utmost importance (see, e.g., Ridley 2003, Turkheimer 1998, 2003).

For our purposes, the “nature” hypothesis is that women are inherently less competitive than men due to innate differences.³ Alternatively, the nurture hypothesis is that competitiveness differences are not due to biological or evolutionary reasons, but rather to culture, or the socialization process.⁴ Gender socialization begins at the moment we are born, with the simple question “is it a boy or a girl?” (Gleitman, Friedlund, and Reisberg, 2000, p. 499). Our societal gender roles are taught to us by family, peers, and the media. Indeed, even at early childhood there are large differences between how boys and girls interact that are attributed to socialization (Martin, Wood and Little, 1990).

³ This, of course, does not suggest that all women are less competitive than men, but rather there exists a difference in the distribution of types. A large body of literature in evolutionary biology and socio-biology documents differences in competitiveness between males and females, across a myriad of species. Such differences in competitiveness arise because of differences in the cost of reproduction and the level of investment in offspring. Because the cost associated with raising offspring is higher for females than it is for males, competitive males attempt to mate at every opportunity. Females, on the other hand, are inherently choosy, reserving their favors for the strongest suitor. In other words, competitiveness is more important to the reproductive success of males than of females. As a result males have evolved to be more competitive. We direct the interested reader to Knight (2002) or Tregenza and Wedell (2002) for recent overviews. The debate is a classic in the field (see Darwin (1871), Bateman (1948) and Trivers (1972)).

⁴ An entertaining twist highlighting the power of this argument can be found in the 1988 movie *Twins*, which starred Arnold Schwarzenegger, a physically perfect and innocent man, and his twin, Danny DeVito, a short, overweight small-time crook. Such differences are suggested to have occurred because Schwarzenegger was raised in a pristine environment whereas DeVito spent his childhood on the streets.

According to the socialization explanation, it is life experiences that reinforce or contradict gender differences: females are taught appropriate behaviors for their gender (Burn, 1996; Basow, 1980; Crespi, 2003).⁵

Our goal in this study is to provide some insights into the underpinnings of the observed differences in competitiveness across men and women using a simple, but real experimental task. A useful starting point is a hypothesis wherein behavioral differences are purely driven by sex (innate differences), and culture—past or current—and its accompanying influences have little link to choices of competitiveness. Using this notion as a working hypothesis (and a straw man), the empiricist’s job is to find two distinct societies and observe choices that provide direct insights into the competitiveness of the participants. After months of background research, we concluded that the Maasai tribe of Tanzania and the Khasi tribe in India provided interesting natural variation that permitted an exploration into the competitiveness hypothesis. As explained in greater detail below, while several other potentially important factors vary across these societies, the Maasai represent a textbook example of a patriarchal society whereas the Khasi are a matrilineal society.

Our experimental results reveal interesting differences in competitiveness: in the patriarchal society women are less competitive than men, a result consistent with Western cultures. Yet, this result *reverses* in the matrilineal society, where we find that women are more competitive than men. Perhaps surprisingly, Khasi women are even slightly

⁵ The socialization base of gender differences is not limited to young ages. It could also be differential treatments in later ages, or even in the work place itself. For example, Riley et al. (2004) demonstrate the potential for backlash against assertive female negotiators in a hiring experiment. In their experiment participants judged female candidates who negotiated for benefits to be less employable than females who did not negotiate, or than males in either condition. This, and related research (Babcock and Lascheve, 2003), show that women are treated differently than men when initiating negotiation.

more competitive than Maasai men, but this difference is not statistically significant at conventional levels under any of our formal statistical tests. We view these results as providing potentially useful insights into the crucial link between culture and behavioral traits that influence economic outcomes.⁶ Such insights might also have import within the policy community where targeting of policies can be importantly misguided if the underlying mechanism generating the data is ill-understood.

The remainder of our study proceeds as follows. The next section provides an overview of the two societies and our experimental design. We proceed to a discussion of the experimental results in Section III. Section IV concludes.

II. Societal background and experimental design

“We are sick of playing the roles of breeding bulls and baby-sitters.”

--A Khasi man (Ahmed, 1994)

“Men treat us like donkeys”

--A Maasai woman (Hodgson, 2001)

Brief Societal Backgrounds

The Maasai and the Khasi represent, respectively, a patriarchal and a matrilineal society. Originally, we attempted to find two societies in which the roles of men and women were mirror images, but this approach found little success. Indeed, the sociological literature is almost unanimous in the conclusion that truly matriarchal societies no longer exist, and there is some controversy over whether or not such societies ever existed (Sanday, 2002).⁷ In addition, even ordinal classification of societies on any dimension is dangerous, as culture and society are not static fixtures handed down from

⁶ As we discuss below, this result might be due to learning or an evolutionary process whereby the selection effects across societies generate natural differences. We argue that in either case culture has an important influence.

⁷ Certain authors claim that reports of matriarchy from the 19th century are based on the misunderstandings of social norms that arise when anthropologists or explorers have tried to describe a society using language and constructs designed to describe western societies (Sanday, 2002; Hua, 2001; Hodgson 2000a;b;c; 2001).

pre-history. Certain reports of extreme female domination in the Khasi or strong male domination amongst the Maasai are somewhat exaggerated and subject to charges of ethnocentrism.⁸

A. The Khasi

The Khasi of Meghalaya, India are a matrilineal society and inheritance and clan membership always follow the female lineage through the youngest daughter. Family life is organized around the mother's house headed by the grandmother who lives with her unmarried daughters, her youngest daughter (even if she is married), and her youngest daughter's children. Additionally, her unmarried, divorced, or widowed brothers and sons reside in the home. Even in cases when married men reside with their wife's family they spend much, if not most, of their time in the mother's or sisters' household (Van Ham, 2001, Nakane 1967).

Women are therefore raised from infancy in their mother's or grandmother's house. The youngest daughter never leaves and eventually becomes the head of the household. Older daughters usually form separate households adjacent to their mother's household. Women never join the household of their husband's family and some men will leave their mother's household to join their wife's household. In some cases, men will practice duolocal marriage (in which they live in both their mother's and wife's households).

Though Khasi women do not generally assume the roles held by men in patriarchal societies (they do not become warriors or hunters, for example) they always live in households in which they or their mother have authority over most household

⁸ About the Maasai in particular, there is a vigorous debate on the current and historical role of women (see Hodgson 2000a, 2001 and Spencer 1965, 1994).

decisions. Men, and in particular husbands, on the other hand frequently hold roles that seem to mirror those of women in patriarchal societies. The Khasi husband dwells in a household in which he has no authority or property, is expected to work for the gain of his wife's family, and has no social roles deemed important. His role is summarized by Nakane (1967, p. 125):

“When we visited the Khasi household of a youngest daughter, if a man (obviously the husband) came first to greet us, he always said ‘please wait, my wife (or mother-in-law) is coming.’ And it was the wife who entertained us... while her husband remained silent in the corner of the room, or in the next room.”

The status of men in Khasi society has even lead to the formation of a men's rights movement (Ahmed, 1994; Van Ham, 2000; Nonbgri, 1988).

Perhaps the most important economic feature of Khasi society is that the return to unverifiable investment in the human capital of girls is retained within the household, whereas in other cultures only the verifiable component of investment can be retained through bride price or dowry.

B. The Maasai

Age and cattle dominate the Maasai social structure. The most important distinctions between men are age based, and as a pastoralist society almost all wealth is in cattle. The age structure prevents men from marrying until they are roughly 30 years old and polygamy is the most common form of marriage. Therefore, the average Maasai woman is married to a much older man who typically entertains multiple wives (Spencer, 2003).

The plight of women among the Maasai is such that wives are said to be less important to a man than his cattle. For example, daughters are not counted in response to the question “how many children do you have?” and a Maasai man will refer to his wife

and children as “property.” When their husband is absent, most Maasai women are required to seek permission from an elder male before they travel any significant distance, seek health care, or make any other important decision. Although traditionally few Maasai receive any formal education, women receive even less education than men. Their restricted roles and authority combined with the inequality of age in marriage noticeably influence the view that married women have of their roles in society. Of Samburu women (who are part of the larger Maa family of tribes and are very similar to the Maasai), Spencer (1965, p. 231) notes:

On the whole I found women were quite ignorant of many aspects of the total society and usually unhelpful as informants. Outside the affairs of their own family circle they often showed certain indifference. They were less inquisitive than the males and less quick to grasp situations. They found it harder to comprehend my remarks and questions. I had the impression that they had never been encouraged to show much initiative on their own, and this was a quality which they simply had not developed; any inborn tendencies to this had been baulked by the strictness of their upbringing. Their demeanor was sometimes listless and frequently sour. They often lacked the general conviviality and warmth that typified the adult males and it was only with ameliorating circumstances of middle-age that they tended to acquire it -- and many never did.

Below we provide more thorough descriptions of these two societies in light of the data patterns that we observe in our experiment.

Experimental Design

The experiment was conducted in similar environments within both societies. In each session we recruited the participants in advance and asked each potential subject to arrive at a central place in the village (either the school or the clinic) at a given time. This attenuated selection problems since everyone was interested in participating in the experiment after they were made aware of the pecuniary incentives involved. The experiment with the Maasai was conducted in two villages in the Arumeru district in the

Arusha region of Tanzania. The experiment with the Khasi was conducted in the Shillong region of India. Upon arrival at each experimental site, participants were directed into one of two groups randomly. These groups were separated for the entire experiment. Similar procedures were used across the societies to ensure comparability.

For example, in a representative session amongst the Maasai, the actual experiment was conducted around a small house with four sides, called side 1, 2, 3, and 4. The structure was such that each side of the house was private, and could not be observed from any of the other sides. Subjects in each group were seated on two different sides of the small house: group 1 was seated on side 1 and group 2 was seated on side 2. One by one we privately called participants—one from each group—to the experimental area. Members of group 1 were called to side 3 and members of group 2 were called to side 4. Participants did not know the identities of participants in the other group. On each of those sides was an experimenter awaiting the participants. In a second Maasai session, we were able to use four empty classrooms, similarly isolated from each other. The setup was otherwise identical. The Khasi sessions were run similarly in a classroom setting.

When a participant moved to the area where the experiment was being conducted, he/she met an experimenter who explained the task. Instructions used in the Khasi sessions are reproduced in the Appendix; the Maasai instructions are identical (both sets of instructions are available at www.). The instructions were translated from English to the local language (either Maasai or Khasi) and were checked by having a different person translate them back into English. The instructions were read aloud to the individual participant by the experimenter. In each session we had one male and one

female experimenter to control for possible gender effects of the experimenter, and we balanced the gender of the participants to have an equal ratio of male and female participants per experimenter.

The task participants were given was to toss a tennis ball into a bucket that was set 3 meters from them. They were informed that they had 10 chances. A successful shot meant that the tennis ball entered the bucket and stayed there. The task was chosen because it was simple to explain and implement, and no gender differences in ability were expected (as was found in a pilot experiment and reinforced in the results discussed below). Further, we are aware of no other popular task in these societies that is similar to the ball games that we implemented. Indeed, the Khasi are known archers and the Maasai are known lancers. Thus, we are unaware of any popular sporting activities in these societies that mimic our task. In this spirit, our data represent signals of initial competitive inclinations. By exploring the propensity to compete we believe that we are gaining insights into the competitive preferences among agents.

Participants, which numbered 155 in total, were told that they were matched with a participant from the other group who was performing the same task at the same time in another area. For example, in the Maasai representative session discussed above, a group 1 member on side 3 was anonymously paired with a group 2 member on side 4, and both subjects were informed that their identities would remain anonymous. The only decision participants were asked to make concerned the manner in which they would be paid for their performance. They made this choice before performing the task, but only after they fully understood the instructions and the payment schemes. The two options participants were asked to choose between were: a) X per successful shot, regardless of the

performance of the participant from the other group with whom they were randomly matched, or b) 3X per successful shot if they outperformed the other participant. They were told that in case they choose the second option and scored the same as the other participant they would receive X per successful shot. We set X equal to 500 Tanzanian Shillings in Tanzania, and 20 Rupees in India. This choice equalized payments in terms of the prevailing exchange rates.

After choosing the incentive scheme, participants completed the task and were told how the other participant performed. Then they were asked to go to another location in which they completed an exit survey and were paid their earnings in cash. As promised, participants were never given the opportunity to learn with whom they were paired.

III. Results

Summary data on the experimental participants is presented in Table 1.⁹ We include all information drawn from the post-experimental survey, which included queries on gender, age, years of education, income, marital status, wage earning activities, and relation to head of household (see Appendix C for the experimental survey—Ken, please place the survey as Appendix C).

We find that our average subject was in the 30-40 age range, but the Maasai sample had slightly older subjects. Average educational attainment is roughly similar across the two groups—about four years of education—but is slightly higher for women (men) among the Khasi (Maasai). Income levels show similar patterns: Khasi women earn more than Khasi men, and the qualitative nature of this result is reversed among the

⁹ Note that the Maasai sample does not sum to 155 (34 women and 40 men). This is because one participant failed to complete the gender on the survey (Ken, is this correct?).

Maasai. Considering purchasing power, the Khasi village is slightly wealthier than the Maasai. Activities across the societies, marital status, and relation to head of household differences are consonant with past anthropological evidence. For example, as suggested above, the Khasi tribe is a monogamous group whereas polygamy is practiced amongst the Maasai. In addition, Khasi women seem to hold a more prominent place in their households than Maasai women.

The differences in observable characteristics across gender, both intra- and inter-society, highlights that it is important to control for as many of these factors as possible when examining the data. For example, variables such as income might importantly influence play and relationship to head of household might provide an indication of control over income. Even after this is done, however, there might remain a critical vector of other variables (whether gambling is condoned, wealth, etc) that might vary between the societies other than the role of women. Clearly, this issue is central to inference made from data gathered across any distinct groups, and highlights that care should be taken when making inference from the data patterns observed herein. Ultimately, what is necessary to shed light on these issues is to build on our work by studying other matrilineal societies.

The top panel in Table 2 provides a summary of experimental choices, balls successfully tossed in the bucket, and earnings across gender and societies. In terms of task proficiency, subjects made roughly 25 percent of their attempts, and the rates of success are similar across societies and genders within each society. More importantly for our purposes, roughly half of the Khasi subjects opted to compete whereas only 39 percent of the Maasai chose to compete. When broken down by gender, the underlying

force behind the competitiveness differences across the two societies becomes clear. Figure 1 complements these summary data with an ocular depiction of the observed choices.

In the Maasai data, the gender result that we oftentimes observe in the literature is evident: whereas 50 percent of men choose to compete, only 26 percent of women select to compete. Alternatively, as Figure 1 highlights, Khasi women choose to compete more often than Khasi men—whereas 54 percent of Khasi women choose to compete, only 39 percent of Khasi men select the competitive incentive scheme. Perhaps even more surprisingly, the Khasi women select the competitive environment more often than the Maasai men (54% versus 50%).

Although the raw data summary provides some evidence that behavior varies across the two societies, there has been no attempt to control for observables—such as age, education, and income—that might influence behavior. To rectify this situation, we use the individual observations to estimate a regression model in which we regressed the individual choice to compete on a dummy variable for society, a dummy variable for gender, their interaction, the observables collected from our survey, and the gender of the experimenter. Due to the dichotomous nature of the regressand, we present estimates from a probit model.

Empirical results from several specifications are contained in Table 3. The leftmost regression models in Table 3 pool the Khasi and Maasai data, and provide a sense of the data patterns across the two societies. The rightmost columns split the data by society, permitting the controls to have a heterogeneous effect in the two societies. Specification (1) can be considered the parsimonious specification, including only

variables that provide the unconditional effect of gender on competition. Specification (2) includes the individual level variables—age, education, and income—that might be most expected to influence competitive tendencies. Specification (3) includes the full set of controls—work activities, marital status, and relationship to head of household.¹⁰

Regardless of which specification is preferred, empirical results suggest that females (males) compete more often than males (females) in the Khasi (Maasai) society. These data patterns are observed in the pooled data models in the leftmost columns, where both the female variable and the Khasi*female interaction are significant at conventional levels. These results suggest, for example, that amongst the Maasai, women are roughly 25-32 percent less likely to compete than men. For the Khasi, women are roughly 15 percent more likely to compete than Khasi men. In the pooled data, all of the other variables, including the gender of the experimenter, are not significant at conventional levels.

Models that use only Khasi data, presented in the middle columns of Table 3, reveal that the observed gender differences are marginally significant. In specification (1), the differences are not significant at conventional levels, suggesting that unconditionally, Khasi females do not compete more than Khasi males. Yet, in the two models that include controls to condition on observables, the female coefficient of 0.24 is significant at the $p < .07$ level. These estimates suggest that upon properly controlling for

¹⁰ Given that many of the cells are not well populated for these other controls (see Table 2), we i) made the activity variable binary: farmer/non-farmer, ii) split the marital status variable to also be binary: single/married, where single includes divorced and widowed, and iii) split the relation to head of household variable as binary: either head of household or spouse. In the pooled regression models these distinctions never matter; these changes are necessary to yield parameter estimates for the models with Khasi or Maasai data only (rightmost columns). We also experimented with higher order age terms but they were never significant. Also, we interacted gender of the experimenter with subject gender and this variable was never significant.

observable differences across subjects, Khasi females are 24 percent more likely to compete than Khasi men.

In the rightmost columns, the specifications using the Maasai data reveal reverse effects on gender—in 2 of 3 model specifications the female coefficient is negative and significant at the $p < .05$ level, with the full-blown model causing the estimate to be measured imprecisely. Amongst the Maasai, men are 24-29 percent more likely to compete than women.

Concerning impacts of the other regressors, in the Khasi data we observe some evidence of an experimenter effect—in this case, both male and female subjects were about 18 percent more likely to compete when the experimenter was a male, an effect that is only marginally significant. In addition, those with higher incomes opted to compete slightly more often, though again the effect is only marginally significant. Interestingly, the only control variable that approaches statistical significance in the Maasai data is the gender of the experimenter. In this case, subjects tend to compete less when the experimenter is a male.

Robustness Tests

A. Group composition

One aspect of the experimental design that we chose to remain neutral was the identity of the subject's potential competitor. This choice was in the spirit of the recent literature that begins with an exploration of the underlying subject preferences and leaves the opponent's gender ambiguous (see, e.g., Gneezy et al., 2003). While in and of itself this choice does not present an inferential problem for our purposes, what is potentially

troubling is the fact that our samples are unbalanced across societies: 52 of 80 Khasi subjects are female whereas only 34 of 75 Maasai subjects are female. If subjects deduce the gender distribution of potential competitors, then our preferred interpretation might be compromised. For example, if women are more likely to compete against other women regardless of whether they are from a matrilineal society, then we might be simply observing a consequence of the subject pool rather than a fundamental preference for competition. Considering the literature on gender and self identity (Cross and Medson (1977)), this is an important consideration.

As aforementioned, in each society we executed the treatments in sessions, whereby the subjects were split into one of two groups randomly. These two groups were separated for the entire experiment. Similar procedures were used across the societies to ensure that subjects were unaware of the identity of potential competitors. Importantly for our purposes, in each society subjects were lined up to participate and were called one by one to participate. Whether, and how, subjects deduced the gender composition of potential competitors is unknown, but it is plausible that subjects made inference on the gender distribution in the experiment by what they observed in their own surroundings.

Since we do not know exactly what subjects observed within their own group, we use a broad array of sensitivity checks to model empirically the effect of group composition. This is possible because we have data on the exact order in which subjects completed the experiment within their session. We proceed by using nearest neighbor variables and systematically enlarge the set as active control variables in the regression model estimated above (specification 3).

A first empirical augmentation simply includes a variable that depicts the gender of the subject standing immediately in front of the person (where male =1). The next empirical specification uses the arithmetic average of the gender identity of the adjacent subjects.¹² A third model uses the arithmetic average of the gender identity of the four nearest subjects. A fourth model expands this variable to be the average of the gender identity of the eight nearest subjects. A fifth and final model is entirely exhaustive—the arithmetic average of the gender identity of all others in the group.

Table 4 contains summary empirical results. The columns in Table 4 represent the various specifications of the group composition variable. The three panels of Table 4 present the results for the pooled data, the Khasi data, and the Maasai data, in a manner consonant with Table 3. Although all of the controls of specification 3 are included, we present only the results of interest.

Most importantly, all of the previously discussed empirical results hold across every model, suggesting that we are finding evidence of competitive preference differences across gender, and not merely observing a consequence of the subject pool. This is evident in all of the pooled data specifications in the top panel. In certain specifications where we split the society data, the results even become stronger in certain specifications. For example, in column 1 of the middle panel of Table 4, we find that in the Khasi data women are 36 percent more likely to compete than men, a coefficient that is significant at the $p < .01$ level. Although in this same empirical specification, the Maasai gender result is not close to being significant at conventional levels, it gains marginal significance as the group composition variable becomes more encompassing.

¹² This variable equals one for those subjects who are standing between two men, 0.5 for those standing between one man and one woman, and 0 for those who are standing between two women. Subjects at the front and end of each line have only one adjacent neighbor.

Concerning the effects of the group composition variable, we find only marginal and negative effects in the pooled data. Yet, in the Khasi data we observe a more consistent negative effect that gains statistical significance in some of the specifications, particularly in the models that allow a broader scope of neighboring effects. The inference from these models is that as the proportion of males increases in your group, the probability of choosing the competitive option decreases. The effect is also found to be negative in most of the specifications using the Maasai sample, but the t-ratios on these coefficients never reach unity. Overall, if subjects were making inference on potential competitors based on the mix they observed, then the effects reported in Table 4 are consonant with the notion that women are more likely to compete against other women, especially in matrilineal societies.

B. An exploration into who competes

Recall that our design was chosen to explore initial competitive inclinations, rather than observe choices in games that were commonplace. In doing so, we aim to capture insights into the primitive competitive preferences among agents rather than the preferences bundled with stereotypes on task, societal expectations, and the like. In this manner, it is interesting to examine the success rates among those who chose to compete versus those who chose not to compete. Since the experimental game is like no other game or task the agents in either society participate, we do not have strong priors on whether those who are more efficient at task will choose to compete.

This is buttressed by the results in the literature that find even in those cases where the subjects have just executed the task and received performance feedback, those who perform well are not significantly more likely to compete or to perform better if they

do choose to compete (Niederle and Vesterlund, 2007; see also Datta et al (2005) who find that men that chose competition outperformed those who chose piece rate, but women's performance did not depend on the chosen payment scheme). The expected positive relationship between task proficiency and selection into the tournament is further muddled if one considers results in Gneezy et al. (2003), which suggest the competitive environment itself might induce differences in task proficiency. Together, the literature teaches us that any effort to deduce selection is quite difficult, even in experienced tasks.

Our experimental game therefore represents a particularly demanding task in which to find a positive correlation between the competitive choice and success rates. The raw statistics in the middle and bottom portions of Table 2 paint a picture consonant with the literature—we find no evidence of any significant correlation in task proficiency and the decision to compete.

What is interesting in the data is that Khasi women and Maasai men who chose to compete i) earned the highest amount of money in their respective societies and ii) were most likely to win the competition. For instance, the Khasi women won 13 times and lost 10, and their win rate represents the highest of any of the four Khasi groups. Compared to Maasai women, Khasi women are more likely to select correctly, perhaps because Khasi women have a more accurate sense of their relative abilities.¹³ Similar data patterns are observed among Maasai men, where those who chose to compete won 11 times and lost 7, a win rate that exceeded all the other observed win rates. Furthermore, again we find that Maasai men seem to have a better understanding of relative ability than Khasi men. Clearly, however, these data patterns should be considered as only suggestive, as more work is necessary.

¹³ We thank an anonymous referee for urging us to proceed in this direction.

C. Risk Aversion

One aspect of the results in Table 2 and the broader results reported in this study that should be considered more deeply is whether risk aversion is playing an important role. We should stress that the manner in which we use the term “competitiveness” in this study is meant to be a “catch-all” phrase that might be due to deeper underlying preferences, such as risk aversion. Nevertheless, risk aversion by itself could serve to sever the relationship between task proficiency and competition choice observed in Table 2 if those more able also happen to be the most risk averse. In addition, given that a large portion of subjects did not choose to compete even though with our payoff functionals risk-averse subjects who believed that they would win with 33 percent probability should enter the competition, hints at some level of risk aversion. This possibility is particularly possible in our experiments since they might well be considered to be over large stakes (several days wages).

To lend insights into these issues, we conducted parallel risk aversion experiments to explore whether the competitive differences might be driven by heterogeneous risk postures across gender groups. To operationalize a simple procedure that measures the propensity to take risks, we made use of a standard risk game (see, e.g., Gneezy and Potters, 1997 and Haigh and List, 2006).¹⁴ Appendix B contains the experimental instructions.

Briefly, the risk experiment has subjects play a one-shot game in which they are endowed with 100 units. The subject must decide what portion of this endowment (0, 100) she desired to bet in a lottery that returned two-and-a-half times the bet with one-

¹⁴ We also conducted a standard investment game (see, e.g., Fehr and List, 2004); we find no differences in propensities to take invest across gender in either society. These results are available upon request.

third probability and nothing with two-thirds probability. As illustrated in the experimental instructions contained in Appendix B (please make sure these are correct!), subjects were made aware of the probabilities, payoffs, and the fact that the lottery would be played directly after all subjects had made their choices. Subjects were therefore aware of the fact that they could earn anywhere between 0 and 350 units from this task. Lastly, subjects were informed that monies earned would be paid in private at the end of the experiment.

A few noteworthy items should be mentioned before proceeding to the results discussion. First, we chose the stakes to overlap with the stakes over which the ball tossing game would be played. Thus each unit is worth xx Tanzanian Shillings in Tanzania, and zz Rupees in India. Second, the subjects in this game are again drawn randomly from the two societal populations, but the subject pool does not overlap with those subjects whom played the ball tossing game. This was done to avoid contamination effects while still providing a glimpse of gender differences in risk preferences. Third, beyond using these data to dig deeper into the underlying mechanism at work in this environment, these data might be interesting in their own right considering the recent findings in Henrich and McElreath (2002). They report that there are important differences in risk posture between male and female Sangu herders, but not between male and female Sangu farmers. Given that the Sangu are situated geographically just south of the Maasai in Tanzania, our estimates across farmers, housewives, and other laborer types complements their data.

Table 5 presents the summary choices, split by gender across the two societies. In short, we find that (Ken, please insert numbers in table and summarize the tests that you have done—perhaps also add a few sentences that complement Henrich and McElreath).

Discussion

We find that Khasi women are more likely to choose to compete than Maasai women or any group of women in the various settings in which preferences for this type of behavior have been elicited. At the very least, this represents an existence result: it is not universally true that the average female avoids competition because we have discovered at least one setting in which this is not true. To the best of our knowledge this is the first demonstration of such reversal.

Moreover, because the Khasi and Maasai were deliberately chosen for this research due of their cultural uniqueness, these results allow us to speculate on the reasons for these results. The Maasai were chosen because they represent an extreme patriarchal society. The Khasi were chosen because they are a matrilineal society dominated by the matrilocal form of married residence and there is solid ethnographic evidence that women in Khasi society enjoy significant authority over the allocation of resources in their own and their mothers' households. In particular, references to the historically high rates of school attendance among Khasi girls suggest that some of the cultural features of the Khasi might have real economic implications.¹⁵

¹⁵ “Since the establishment of the lower primary school in the village in 1961 the people have been showing considerable appreciation of the value of education. Amongst the Khasis is the percentage of children attending school stands at 73.3% while that for the Nepalese comes to 33.3%. In the field of education especially that of female education the Khasis are a bit forward and their outlook on life in this direction seems to be more progressive than that of the Nepalese. This has been revealed by the fact that while the Khasis have sent so many of their girls to the school not a single girl belonging to the Nepalese fold has been found in the roles of the school on the contrary. From this it can be understood that the Khasis are more education minded. The advancement of the Khasis in this respect may be attributed either

What is the source of the difference in preferences for competition observed in the literature? One extreme hypothesis—rejected by our data—is that females are biologically different from men in their preferences for competition, and hence will always choose to compete less than men. From Darwin through today, many evolutionary biologists and psychologists hold that the basic structure of the brain is genetically determined.¹⁶ Under such a view, the regularities of human behavior as well as the consistent differences in the male and female psychology are genetically inherited characteristics.

The reasoning behind the biological differences suggests that at some point in human history men and women evolved different strategies to maximize the fitness of their genes. Women, who are naturally limited in the number of their offspring at any point as well as over their lifetimes, increase their fitness by investing in the survival of their offspring. Men, on the other hand, face different reproductive limits and may therefore increase the chances of passing on their genes by having large numbers of children. Given that women invest in their children, they should mate with resource wealthy men, and given that men seek to maximize their reproductive potential, they should mate with fertile women.

In this environment, it is likely that unfit women enjoy some reproductive success, but unfit men enjoy no reproductive success. This would foster competition among men for access to mates, but self-investment and offspring-investment in women. In other words, women can increase the fitness of their offspring independent of the

to the growing influence of Christianity in the village or to their peculiar system of matriarchal society and of allowing more freedom to women in general.” (Agro-economic research centre for North East India, 1969).

¹⁶ See Darwin (1871), Bateman (1948), and Trivers (1972).

success of other women, but men increase the success of their offspring only at the expense of other men.¹⁷ If this environment existed for long enough to allow significant evolution in psychological tendencies, the proportion of women who prefer competition would remain constant (or even fall) and the proportion of men who prefer competition would rise.

Most evolutionary biologists and sociologists go to pains to point out that a common human evolutionary history does not mean that biology determines our personal choices (Laland and Brown, 2002). Biology guides our capacities or tendencies, but the expression of behavior is a function of both biology and all other possible influences. Yet, the hypothesis that men and women have consistently different psychological approaches to competition and that these differences are biologically determined is a commonly held hypothesis (Laland and Brown, 2002; Daly and Wilson, 2003; Darwin, 1871 (pp. 316, 320, 325, 326); Campbell 2002); one that our data reject.

At the opposite end of the human behavior spectrum, we have a view of human behavior as a “*tabula rasa*” (the mind as a blank slate). In such a view, culture or the environment is the only source of preferences. This view of human behavior has suffered many a setback over the past few decades as evidence of the genetic origins of abnormal and normal behavior accumulates (e.g., Ilies, Avery and Bouchard, 2006). For example, many personality traits have been shown to be highly hereditary in twin studies (Turkheimer, 2004, Loehlin, 1993). Notwithstanding this evidence that many behavioral traits are genetically determined, it is possible that preferences for competition are not

¹⁷ This reasoning derives directly from the descriptions of Campbell (2002) and Daly and Wilson (1983).

and therefore that features of the culture or environment determine the degree to which females avoid or seek competition.

Our data are also consistent with a series of models that are intermediate between these two, models in which both biology and society play a role in forming preferences. In particular, these models allow for the impact of current societal features to be less important than the impact of past societal features. The appeal of these alternative models depends on an understanding of the ways in which culture can influence underlying preferences.

On the one hand, culture (via a system of shared or transmitted values) can directly encourage or discourage individuals to display certain types of behavior, such as competitiveness. On the other hand, culture (via the economic environment) can indirectly reward or punish certain types of behavior without explicitly sanctioning or punishing these behaviors. The different ways in which culture affects choices have implications for the dynamic relationship between culture and preferences, to which we shall return.

In discussing the relevant features of Khasi society, it is important to restate that Khasi society is not matriarchal. Various authors have suggested that matriarchy does not exist; that patriarchy is the universal form of society (Campbell, 2002, Sanday, 2002; Hua, 2001 Hodgson 2000a;b;c; 2001). It is true that women in the Khasi society dominate the day-to-day decision-making in the household and that husbands play only a limited role in the household. However, many important decisions in Khasi society remain the domain of men. Women do not participate in politics, civil defense or justice and priesthood is a male profession (Nongbri, 2003). There is evidence that women who

attempt to speak about such domains are chastised.¹⁸ In addition, the cultural descriptions of ideal woman are no different from descriptions of virtue in patriarchal societies (Nongbri, 2003).

In addition the methods of transmitting behavioral patterns can be described as cultural artifacts themselves. For example, Maasai men are explicitly initiated in Maasai society through long periods of indoctrination and this process is as much a part of Maasai society as the behaviors that young men learn. There are other, more subtle forms of cultural transmission including that of prestige-based transmission. Henrich and Gil-White (2001) suggest that freely conferred deference (prestige) is an adaptation that allows potential imitators proximity to individuals who represent models of successful behavior. This model of social learning highlights the facts that individuals may choose who to imitate based on the perceived worth of the superior person, that access and proximity improve the fidelity of social learning, and that the imitated gains status from the fact that he or she is imitated. The Khasi institutions of matrilineal residence and matrilineal inheritance may perform a similar role in cultural transmission. The fact that women live in (or next to) their maternal grandmother's residence for their whole lives allows access and proximity, though only to mothers, aunts, great-aunts and grandmother. On the other hand, Khasi women are in a position to pass on accumulated wealth, and if competitiveness is differentially rewarded, women who learn competitiveness from their mothers will benefit both from their own efforts and from those of their mothers. In addition, female heads of households, even if they do not gain status by being imitated by

¹⁸ "A woman who dares to voice her opinion on public affairs is regarded as a 'hen that crows'--a freak of nature." (Nongbri, 2003, pp. 187)

their daughters, have an incentive to encourage success in their daughters, unlike families in other societies, the household can gain from the success of their daughters.

Thus, even though Khasi society does not appear to explicitly encourage aggressive and competitive behavior in women, the institutions that differentiate the Khasi from most other societies would encourage the transmission of wealth accumulating female behaviors.

A potential problem with the view that competitiveness can be socially learned, is that women have to actually learn to prefer competition (not just to follow career paths that are competitive) because the experimental setting does not allow women to imitate other women. Faced with a new task, Khasi men and women make a choice for themselves, based on their own preferences. Would women who are imitating competitive women choose to be competitive in an experimental setting? As noted earlier, Henrich and McElreath (2002) suggest that men and women in Sangu and Mapucha cultures are risk-loving, but that by imitating the behavior of successful men and women in these societies they make choices in their everyday lives that reflect risk-aversion. Thus, Henrich and McElreath (2002) suggest that the experimental setting can reveal behavior that reflects underlying preferences but is different from real world behavior.

It is worth noting though, that those Khasi institutions that favor the transmission of a behavior through social learning, would also favor the transmission of a genetically inherited characteristic. The evolution of behavioral characteristics is frequently thought to take place at a scale that would rule out systematic cross cultural differences. However, the study of gene-culture co-evolution in mathematically modeling suggests that when a

particular genetic characteristic favors the transmission of a particular cultural feature, and the cultural feature increases the fecundity of the genetic characteristics, evolution can occur much faster (cite XXX). In particular, some researchers suggest that significant evolution can take place within the 1,000 year time span that the Khasi have existed as a separate culture (cite XXX).

Ken--I also think it is in our best interests to include more of the citations that the referee provides. Can you try to slip many of them in here or there?

V. Concluding Remarks

The link between gender and competition has been shown in several recent experimental studies. The importance of these results should not be understated: in both a positive and normative sense these insights have the potential to explain important puzzles in economics and in social science more generally. In this study we use a real experimental task to explore whether there are gender differences in selecting into competitive environments across two distinct societies: the Maasai in Tanzania and the Khasi in India. The societies are unique in that the Maasai represent an example of a patriarchal society whereas the Khasi are matrilineal.

We observe some interesting data patterns. For example, Maasai men opt to compete at roughly twice the rate as Maasai women, evidence that is consistent with data from Western societies that use different tasks and smaller relative stake levels. Yet, this data pattern is reversed amongst the Khasi, where women choose the competitive environment considerably more often than Khasi men. We interpret these results as providing initial insights into the underlying determinants of the observed gender differences.

Viewed through the lens of extant models, our results might have import within the policy community. For example, policymakers often are searching for efficient means to reduce the gender gap. If the difference in reaction to competition is based primarily on nature, then some might advocate, for example, reducing the competitiveness of the education system and labor markets in order to provide women with more chances to succeed. If the difference is based on nurture, or an interaction between nature and nurture, on the other hand, the public policy might be targeting the socialization and education at early ages as well as later in life to eliminate this asymmetric treatment of men and women with respect to competitiveness.

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Appendix A. Experimental Protocol (Khasi sessions)

Welcome to this study of decision-making. The experiment will take about 15 minutes. The instructions are simple, and if you follow them carefully, you can earn a considerable amount of money. All the money you earn is yours to keep, and will be paid to you, in cash, immediately after the experiment ends. In addition to any earnings you might have in this task, you will be paid 20 rupees to participate.

The task that we ask you to perform today is throwing this ball into this bucket from this line. (*Show them the ball, bucket and line*). You will have 10 tries.

We now ask you to choose one of two options according to which you will be paid in the experiment.

Option 1:

If you choose this option you will get 20 Rupees for each time you get the ball in the bucket in your 10 tries. So if you succeed 1 time, then you will get 20 Rupees. If you succeed 2 times, then you will get 40 Rupees. If you succeed three times you will get 60 Rupees and so on.

Option 2:

If you choose this option you will receive a reward only if you succeed more times than the person who is playing in the next room. If you succeed more than this person you will be paid 60 Rupees for every time you succeed. So if you succeed 1 time, then you will get 60 Rupees. If you succeed 2 times, then you will get 120 Rupees. If you succeed 3 times you will get 180 Rupees and so on. But you will only receive a reward if you are better than the person in the next room. If you both succeed the same number of times you will both get 20 Rupees for each success.

We now ask you to choose how you want to be paid: according to option 1 or option 2. Now you may play. Record both their ID number and their choice.

Allow the participant to toss the balls and record the result on the back of their ID card. You can record the result of each toss with a checkmark and X (check mark for success and X for failure). At the end of the 10 tosses, write the total number of successes on the back of the card and the money value of each toss (based on their choice). Also write down whether they succeeded more than their opponent with and Y or N.

For example, $\checkmark\checkmark X\checkmark XX\checkmark\checkmark\checkmark\checkmark$ 7 X 20 Y

You do not need to write the total payment on the card. Tell them that they must go to the person who will fill an exit survey. Once they have filled this survey they should take their card and the survey to the “cashier” and they will receive their payment.

IF THEY ASK YOU WHAT TO DO:

Tell them that you cannot give them advice about what to choose and offer to read the script to them again.

Appendix B. Experimental Instructions for Risk Aversion Game

You begin with 100 units (1 unit = xx). You must decide which part of this amount (between 0 units and 100 units) you wish to bet in the following lottery:

You have a two-thirds chance (67%) to lose the amount you bet and a one-third chance (33%) to win two-and-a-half times the amount you bet.

You are requested to record your choice on your registration form. Suppose you decide to bet an amount of X units ($100 \geq X \geq 0$) in the lottery. Then you must fill in the amount X in the column headed *Amount in lottery*, in the row with the number of the present round.

Whether you win or lose in the lottery depends on your personal *win color*. This color is indicated on top of your individual sheet. Your win color can be red, blue or white. You win in the lottery if your win color matches the *color* that is drawn by the assistant, and you lose if your win color does not match the color.

The color is determined as follows. After you have recorded your bet in the lottery, the assistant will, in a random manner, pick one color from a cup containing three colors: red, blue, and white. The color drawn is the color, if it matches your win color you win in the lottery; otherwise you lose. Since there are three colors, one of which matches your win color, the chance of winning in the lottery is one-third (33%) and the chance of losing is two-thirds (67%).

Hence, your earnings in the lottery are determined as follows. If you have decided to put an amount of X units in the lottery, then your earnings in the lottery are equal to $-X$ if the color does not match your win color (you lose the amount bet) and equal to $+2.5X$ if the color matches your win color (you win two-and-a-half times the amount bet).

Table 1 Participant Characteristics

	Pooled	Khasi		Pooled	Maasai	
		Mean (Std. dev.) Women	Men		Mean (Std. dev.) Women	Men
Individual Characteristics						
<i>Age</i>	30.9 (16.1)	32.1 (16.7)	28.8 (15.0)	37.8 (13.5)	36.5 (12.1)	38.9 (14.6)
<i>Education</i>	4.3 (3.6)	4.5 (3.6)	4.1 (3.5)	4.3 (3.9)	4.1 (4.4)	4.5 (3.5)
<i>Income</i>	23569 (76088)	25794 (93429)	19437 (20585)	195040 (400538)	154294 (341903)	234550 (448855)
<i>Activity</i>						
Farmer	0.60 (0.5)	0.60 (0.5)	0.61 (0.5)	0.73 (0.5)	0.53 (0.5)	0.93(0.3)
Student	0.23 (0.4)	0.21 (0.1)	0.25 (0.4)	0.00 (0.0)	0.00 (0.0)	0.00(0.0)
Teacher	0.05 (0.2)	0.06 (0.2)	0.04 (0.2)	0.00 (0.0)	0.00 (0.0)	0.00(0.0)
Housewife	0.01 (0.1)	0.00 (0.0)	0.04 (0.2)	0.17 (0.4)	0.38 (0.5)	0.00(0.0)
Other	0.05 (0.2)	0.06 (0.2)	0.04 (0.2)	0.07 (0.3)	0.06 (0.2)	0.08(0.3)
Unemployed	0.06 (0.2)	0.08 (0.3)	0.04 (0.2)	0.00 (0.0)	0.00 (0.0)	0.00(0.0)
<i>Marital Status</i>						
Single	0.36 (0.5)	0.33 (0.5)	0.43 (0.5)	0.24 (0.4)	0.18 (0.4)	0.30 (0.5)
Marr. (mono.)	0.44 (0.5)	0.42 (0.5)	0.46 (0.5)	0.32 (0.5)	0.38 (0.5)	0.28 (0.5)
Marr. (poly.)	0.00 (0.0)	0.00 (0.0)	0.00 (0.0)	0.36 (0.5)	0.35 (0.5)	0.38 (0.5)
Widowed	0.13 (0.3)	0.17 (0.4)	0.04 (0.2)	0.01 (0.1)	0.03 (0.2)	0.00 (0.0)
Divorced	0.08 (0.3)	0.08 (0.3)	0.07 (0.3)	0.04 (0.2)	0.03 (0.2)	0.05 (0.2)
<i>Relation to Head of Household</i>						
HH	0.38 (0.5)	0.39 (0.5)	0.36 (0.5)	0.53 (0.5)	0.18 (0.4)	0.85 (0.4)
Spouse	0.23 (0.4)	0.29 (0.5)	0.11 (0.3)	0.32 (0.5)	0.71 (0.5)	0.00 (0.0)
Son/Daughter	0.36 (0.5)	0.31 (0.5)	0.46 (0.5)	0.09 (0.3)	0.03 (0.2)	0.15 (0.4)
Brother/Sister	0.04 (0.2)	0.02 (0.1)	0.07 (0.3)	0.00 (0.0)	0.00 (0.0)	0.00 (0.0)
Father/Mother	0.00 (0.0)	0.00 (0.0)	0.00 (0.0)	0.03 (0.2)	0.06 (0.2)	0.00 (0.0)
<i>N</i>	80	52	28	75	34	40

Age denotes chronological age in years.

Education denotes years of education.

Income denotes reported yearly income (Khasi in Rupees and Maasai in Tanzanian Shillings)

Marital Status denotes whether the individual is single, married (monogamous), married (polygamous), widowed, or divorced.

Activity denotes the wage earning activities that subjects report.

Relation to Head of Household denotes whether the individual is the household head (HH), spouse, son/daughter, brother/sister, or father/mother of the HH.

The Maasai women and men observations do not sum to the total observations because we failed to obtain the gender of one participant.

Table 2 Participant Choices

		Khasi			Maasai	
		Mean			Mean	
		(Std. dev.)			(Std. dev.)	
	Pooled	Women	Men	Pooled	Women	Men
<u>Experiment Summary</u>						
<i>Compete</i>	0.49 (0.5)	0.54 (0.5)	0.39 (0.5)	0.39 (0.5)	0.26 (0.5)	0.50 (0.5)
<i>Success</i>	2.38 (1.5)	2.38 (1.6)	2.36 (1.4)	2.78 (1.6)	2.97 (1.7)	2.63 (1.5)
<i>Earnings (X)</i>	3.46 (3.9)	3.73 (4.2)	2.96 (3.3)	4.02 (4.3)	3.68 (4.0)	4.33 (4.5)
<i>N</i>	80	52	28	74	34	40
<u>Those who chose to compete</u>						
<i>Success</i>	2.23 (1.5)	2.25 (1.5)	2.18 (1.5)	2.69 (1.6)	2.33 (2.2)	2.85 (1.3)
<i>Won-loss-tie</i>	16-14-9	13-10-5	3-4-4	14-13-2	3-6-0	11-7-2
<i>Earnings (X)</i>	4.46 (5.2)	4.75 (5.3)	3.72 (5.0)	5.86 (6.2)	5.00 (7.7)	6.25 (5.6)
<u>Those who chose not to compete</u>						
<i>Success</i>	2.51 (1.5)	2.54 (1.6)	2.47 (1.4)	2.84 (1.6)	3.20 (1.4)	2.40 (1.7)
<i>Won-loss-tie</i>	18-20-3	11-11-2	7-9-1	19-18-8	9-9-7	10-9-1
<i>Earnings if choice reversed (X)</i>	4.95 (5.9)	5.42 (6.2)	4.29 (4.3)	5.42 (6.2)	5.60 (6.2)	5.20 (6.3)

Compete denotes whether the individual opted to compete in the experiment.

Success denotes the number of successful attempts in the experiment (out of 10 balls tossed).

Earnings denotes the units earned during the experiment, where the units = successes if the agent chose not to compete, = 3*successes if the agent chose to compete and won, = successes if the agent chose to compete and tied, and = 0 if the agent chose to compete and lost.

Earnings if choice reversed denotes the units foregone because the agent chose not to compete.

Table 3 Regression Results

	Pooled Data			Khasi			Maasai		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Female	-0.25 (0.12)	-0.29 (0.13)	-0.32 (0.15)	0.15 (0.11)	0.24 (0.13)	0.24 (0.13)	-0.24 (0.12)	-0.29 (0.12)	-0.27 (0.18)
Khasi	-0.11 (0.12)	-0.14 (0.13)	-0.15 (0.14)	---	---	---	---	---	---
Khasi*Female	0.39 (0.17)	0.43 (0.17)	0.46 (0.19)	---	---	---	---	---	---
Male Exp.	0.007 (0.08)	-0.02 (0.08)	-0.03 (0.08)	0.08 (0.11)	0.19 (0.12)	0.18 (0.12)	-0.07 (0.12)	-0.16 (0.12)	-0.21 (0.13)
Constant	-0.003 (0.09)	-0.03 (0.17)	-0.09 (0.20)	-0.14 (0.11)	-0.36 (0.20)	-0.34 (0.27)	0.03 (0.09)	0.14 (0.26)	-0.03 (0.31)
Age	---	0.002 ((0.003)	0.002 (0.003)	---	-0.003 (0.004)	-0.002 (0.005)	---	0.001 (0.005)	0.002 (0.005)
Education	---	0.005 (0.01)	0.009 (0.01)	---	0.003 (0.02)	0.003 (0.02)	---	-0.006 (0.02)	-0.004 (0.02)
Income	---	-0.2e-6 (0.2e-6)	-0.2e-6 (0.2e-6)	---	0.1e-4 (0.4e-5)	0.1e-4 (0.4e-5)	---	-0.3e-6 (0.2e-6)	-0.3e-6 (0.2e-6)
Other Controls	NO	NO	YES	NO	NO	YES	NO	NO	YES
Chi-square	7.3(4)	9.8(7)	12.6(10)	2.0(2)	11.4(5)	11.9(8)	4.7(2)	9.3(5)	12.9(8)
N	154	151	151	80	80	80	74	71	71

Notes:

1. Dependent variable is “compete” and takes on a value of 1 if the participant opted to compete, and 0 otherwise.
2. Standard errors are in parentheses.
3. Estimates are partial derivatives computed at the sample means from Probit models.
4. Variables defined in Table 1 notes. “Other controls” include all of the other variables defined in Table 2.

Table 4 Group Composition Robustness Tests

	Specification				
	(In Front)	(Adjacent 2)	(Adjacent 4)	(Adjacent 8)	(Group)
Pooled Data					
Female	-0.38 (0.16)	-0.42 (0.16)	-0.41 (0.16)	-0.43 (0.16)	-0.38 (0.16)
Khasi	-0.25 (0.16)	-0.28 (0.16)	-0.25 (0.15)	-0.28 (0.16)	-0.23 (0.16)
Khasi*Female	0.60 (0.22)	0.65 (0.23)	0.56 (0.20)	0.58 (0.20)	0.53 (0.20)
Group Composition	-0.16 (0.10)	-0.19 (0.12)	-0.28 (0.17)	-0.35 (0.21)	-0.23 (0.25)
Other Controls	YES	YES	YES	YES	YES
N	141	151	151	151	151
Chi-square	13.8(11)	15.2(11)	15.4(11)	15.5(11)	13.5(11)
Khasi Data					
Female	0.36 (0.15)	0.34 (0.15)	0.24 (0.14)	0.25 (0.14)	---
Group Composition	-0.28 (0.15)	-0.25 (0.18)	-0.68 (0.36)	-0.95 (0.51)	---
Other Controls	YES	YES	YES	YES	---
N	78	80	80	80	---
Chi-square	16.1(9)	13.9(9)	15.6(9)	15.6(9)	---
Maasai Data					
Female	-0.25 (0.20)	-0.27 (0.20)	-0.27 (0.19)	-0.31 (0.20)	-0.34 (0.20)
Group Composition	0.09 (0.15)	-0.008 (0.17)	-0.007 (0.21)	-0.12 (0.25)	-0.20 (0.27)
Other Controls	YES	YES	YES	YES	YES
N	63	71	71	71	71
Chi-square	14.2(9)	12.9(9)	12.9(9)	13.2(9)	13.5(9)

Notes:

1. Dependent variable is “compete” and takes on a value of 1 if the participant opted to compete, and 0 otherwise.
2. Standard errors are in parentheses.
3. Estimates are partial derivatives computed at the sample means from Probit models.
4. Variables defined in Table 1 notes. “Other controls” include all of the other variables defined in Table 2.

Table 5. Raw Data Summary for Risk Aversion Game

	Average Bet (Standard deviation)			
	<i>Khasi Women</i>	<i>Khasi Men</i>	<i>Maasai Women</i>	<i>Maasai Men</i>
Bet	xx (xx)	zz (aa)	xx (xx)	xx (xx)

Amount in the cell is average (standard deviation) amount bet for the depicted group.

