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Motivated beliefs, spillovers, self-confidence, competitiveness, Affirmative Action, experiment

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Ritwik Banerjee ^a, Nabanita Datta Gupta ^b, Marie Claire Villeval ^c

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1. Introduction

Before undertaking a risky action where only a fraction of candidates can succeed, individuals need to be convinced that their ability gives them a reasonable chance to be successful, since costly effort will be expended. This is the case for investors who have to decide whether entering a new market and for any individual who has to decide on whether or not to invest in a selective education program or to apply for a promotion. When individuals have imperfect information about their ability, sometimes they distort their beliefs to motivate themselves to undertake a task or to persevere in an activity, for affective reasons (Köszegi 2006) or for instrumental reasons (Benabou and Tirole 2002; Benabou 2015). Several strategies are used by individuals to distort their beliefs and motivate themselves. These include overconfidence (Camerer and Lovallo 1999; Barber and Odean 2001; Hoelzl and Rustichini 2005; Malmendier and Tate 2008; Moore and Healy 2008; Merkle and Weber 2011; Schwardmann and van der Weele 2016), information avoidance (Carillo and Mariotti 2000; Karlsson *et al.* 2009), wishful thinking (Mayraz 2012), denial of reality (Benabou and Tirole 2002), selective updating (Möbius *et al.* 2010; Eil and Rao 2011), or selective memory (Thomson and Loewenstein 1992; Benoit and Anderson 2012; Chew *et al.* 2013; Gottlieb 2014). Signals about one's ability can also be used strategically to influence others' decisions in competitive settings (Charness *et al.* 2018).

In this paper, we explore another mechanism by which individuals may distort their beliefs to motivate themselves in a competitive environment: confidence spillovers. After receiving positive feedback on being more successful than others in a given activity, biased individuals may be inclined to generalize this relative ability advantage in one activity to other, independent, activities, although success in the first activity is objectively silent on the ability to succeed in the subsequent, unrelated, activities. For instance, job rotation within multi-task organizations can enhance not just worker knowledge about the different tasks

within the organization but also confidence in performing own tasks. Similarly, succeeding at sports is often credited for building self-esteem in children which helps them perform well in other spheres, such as at school or when interacting with their peers. While the previous literature has investigated extensively the impact of relative feedback on belief updating and on goal setting and competitiveness within the same task (*e.g.*, Eriksson *et al.* 2009; Azmat and Iriberry 2010; Gill and Prowse 2012; Wozniak *et al.* 2015; Buser 2016), it is almost silent on the across-task impact of feedback.¹ Our first contribution is testing whether individuals use their success in one task as a self-enhancement strategy to inflate their belief about their ability to succeed in another independent task, and whether or not they decide to compete in the second task on the basis of these motivated beliefs. If inflated beliefs were only due to mistakes, then they should be independent of the success in the previous orthogonal task.

Regardless of whether motivated beliefs are driven by affective (ego-utility) or by strategic reasons (motivating oneself to compete), we anticipate that the spillover, if any, is asymmetric. Receiving negative feedback on one's ability relative to that of competitors may be less likely to spill over on the beliefs about one's ability to succeed in the other unrelated task. This is based on previous studies showing that people tend to discount bad news (Sharot 2011), forget negative feedback (Rabin and Schrag 1999; Compte and Postlewaite 2004), process information on relative performance asymmetrically (Eil and Rao 2011; Ertac 2011), and treat positive signals as more informative than negative ones (Möbius *et al.* 2014).

A second contribution of our paper is studying whether confidence spillovers are affected by an individual's status. Indeed, when a group feels discriminated in the society, its members may have a greater need for motivating their beliefs in order to compete against

¹ We have been recently made aware of a study about the impact of relative performance feedback across tasks (Huang and Murad 2017). The two studies developed independently. While the aim of the two studies is similar, in contrast to us the authors investigate whether gender differences in overconfidence and competitiveness react to feedback, and the design employed is different (see below). They found that the impact of feedback on competitiveness operates independently of feedback effects on beliefs, and that the gender difference in competitiveness disappears when feedback is provided.

higher status individuals. We test whether lower status individuals are more likely to inflate their beliefs on their ability after receiving good news on their relative performance in an unrelated task, compared to higher status individuals.

To study the spillover effects of feedback on one's success in a prior competitive task on self-confidence in another task and to test whether status matters in this process, we have conducted an artefactual field experiment in a highly socially segmented society, India. We recruited 360 subjects in 17 villages from South 24 Parganas district of West Bengal. Status is captured by caste membership. 171 subjects were from the General category (a higher status category), 185 from the Scheduled Castes and 4 from the Scheduled Tribe category (lower status categories).² Subjects were matched in groups of six, with three subjects from the General category and three subjects from the other castes. The caste composition of groups was made common knowledge. We expected that lower caste members might need to motivate their beliefs more in order to compete with higher caste members.³

The experiment consists of four treatments. The structure of the Baseline treatment is close to that of Niederle and Vesterlund (2007) and to that used in our companion paper in which we study the spillover effects of Affirmative Action policies on self-confidence in the same task (Banerjee *et al.* 2017).⁴ In the first part, subjects performed a memory task under a piece-rate payment scheme. In the second part, they performed the same memory task under a tournament payment scheme in groups of six performers with two winners. Then, in the third part subjects had to choose the payment scheme to be applied to their performance in this new part. Subjects did not receive any feedback on their score in any part. In the fourth

² The Scheduled Castes represent 16.6% of the general population in India and the General category about 34% (the rest belong to Scheduled tribes, 8.6%, and Other Backward categories, 41%) (Census 2011). In the study Scheduled Tribe members are aggregated with Scheduled Castes members.

³ Stereotype threat has been identified when caste identity is salient: a gap in performance favors the high caste and learning by the low caste is impaired (Hoff and Pandey 2006, 2014). Our companion paper (Banerjee *et al.* 2017) showed that making the caste composition of groups public generates a gap in relative self-confidence.

⁴ Only the first three parts of the Baseline treatment are similar to Banerjee *et al.* (2017). Note that the region where we conducted the experiment is the same as in Banerjee *et al.* (2017), but the village/town-wards –and thus, the participants– are different.

part we introduced a new task involving a motor-skill ability: in the Ball-in-Bucket task, subjects had to throw a ball in a basket. Like in the third part, before performing this new task subjects had to choose either to be paid with an individual piece-rate payment scheme or to enter a tournament with five other players. In each part, we elicited the subjects' beliefs about their absolute and relative performance by using an incentive compatible mechanism.

Treatment 1 is similar to the Baseline, except that before making their choice in the fourth part subjects received binary feedback on whether they won or lost the compulsory tournament in the second part. The comparison between the Baseline and this treatment allows us to study whether receiving a positive or a negative feedback on one's relative performance in one domain influences self-confidence and the willingness to compete in another, unrelated, domain, and whether this depends on the status conferred by caste.

A last contribution of our study is studying whether a policy intervention that objectively changes the probability of the lower status group to win the competition in the memory task affects self-confidence in the unrelated task. Treatment 2 differs from treatment 1 in that we implemented Affirmative Action: in the memory task (but not in the Ball-in-Bucket task) a quota rule is imposed such that at least one of the two winners in the tournament is the best performer among the lower caste subjects.⁵ This allows us to test whether such a policy intervention boosts or weakens the impact of feedback on one's success on self-confidence of subjects across domains.⁶ Our conjecture is that under Affirmative Action, there are no self-confidence spillovers across tasks for low caste winners and high-caste losers, but there are still self-confidence spillovers (in the opposite direction) for low caste losers and high caste

⁵ Affirmative Action has been introduced decades ago in India to reduce the gap between castes in the access to higher education and jobs (*e.g.*, Deshpande 2011). After the independence of the country, lists of Scheduled Castes ("Dalit" or Untouchables), based on heredity, have been established for caste-based job reservations.

⁶ Several studies have investigated the cross-context impact of reservation policies for females in politics in India. For example, Ghani *et al.* (2014) show that political reservations increased females' empowerment and their willingness to start new business. Maitra and Rosenblum (2017) show the upstream effects of political reservations at the local level. In contrast, we study spillover effects on the same individuals and across tasks.

winners. Indeed, since they lost despite the support of the policy, the low caste losers may feel more pessimistic about their ability to succeed in the new task. On the other hand, the high caste winners may become more optimistic about the new task since they have won despite their handicap under the quota policy.

Finally, treatment 3 is similar to treatment 1 except that subjects exclusively performed the Ball-in-Bucket task from part one to part four. This aims at controlling for whether confidence spillovers across tasks differ from confidence spillovers within the same task.

Our results show that although performances in the two tasks are uncorrelated, learning that one is successful when being forced to compete in the memory task increases both relative self-confidence and competitiveness in the Ball-in-Bucket task. Thus, we identify confidence spillovers as a source of motivated beliefs in a competitive environment: individuals use their success in one activity to boost their relative self-confidence in their ability to succeed in another, independent, task. As a result, this increases their competitiveness. We also show that the motivation of beliefs is a somewhat asymmetric process. If success breeds self-confidence and thus competitiveness across tasks, failure when competing in one task produces a weaker and less consistent effect in the opposite direction. When learning that they failed in the forced competition in the memory task, losers form lower beliefs about their chance of winning in the new task compared to uninformed losers, but they do not change their belief on being a winner and their willingness to enter the tournament in the Ball-in-Bucket task is not reduced.

Status has some effect on the motivation of beliefs: after a success, only the low-caste individuals increase their belief of being one of the two top scorers in the second task. After Affirmative Action was implemented during the memory task, the quota policy boosted the confidence of the low-caste members of being among the two top scorers in the second task even though the second task is not supported by the policy and regardless of their status of

winner or loser in the memory task; as a result, there is no caste difference in competitiveness in the new task, whereas low-caste subjects were less likely to compete than higher-caste individuals in the absence of Affirmative Action.

The remainder of this paper is as follows. Section 2 develops the experimental design, the procedures, and our behavioral conjectures. Section 3 presents our findings. Section 4 discusses these results and concludes.

2. Experimental Design, Procedures and Behavioral Conjectures

We first present the experimental design, then the procedures. Finally, we develop our behavioral predictions.

2.1. Experimental Design

The experiment consists of four treatments across which we manipulate whether or not information about success in a forced tournament is revealed to the subjects. We vary across parts or treatments the tasks and the rules for determining the winners in the tournament. Each treatment has five parts. To prevent hedging in earnings and wealth effects, subjects are paid for one part randomly selected at the end of the session. We first describe the tasks and the Baseline treatment and then, move on to the other treatments.

The tasks

Since we are interested in examining whether success in one domain generates a positive spillover in self-confidence and attitude to competition in an orthogonal domain, we implement two tasks that demand different skill sets to be successful. The task that is used in the first three parts of all treatments except the third one is a memory task. An experimenter calls out 15 numbers, randomly drawn between 0 and 100, one at a time. After all the numbers have been called out, subjects are given three minutes to recall and write down as many numbers as they can remember. A subject's final score is given by the number of correctly recalled numbers.

The second task, that is used in the fourth part of treatments 1 to 2 and in all parts of treatment 3, is a Ball-in-Bucket task (BiB, henceforth). Subjects are given fifteen hard plastic balls and are asked to toss them one by one into a bucket placed 3.5 meters away. A successful toss means that the ball enters the bucket and stays there. The task is simple to explain and implement with relatively low educated participants. It has been used in artefactual field experiments in the past (*e.g.*, Gneezy *et al.* 2009) and demands skills which are orthogonal to skills necessary for the first task. In the results section, we confirm that there is no correlation between performances in the two tasks. Furthermore, the two tasks are isomorphic, as subjects earn the same amount through piece rate or tournament payment schemes for the same number of correct recalls and successful tosses.

Baseline Treatment

In the Baseline treatment (T0, henceforth) each session comprises of twelve invited subjects, with six from General category (GC, henceforth) and six from Scheduled Caste category (SC, henceforth). Two groups of six are formed such that each group has three General and three Scheduled Caste category subjects. Subjects are told right at the outset about the caste composition of their group and that the group remains unchanged through the course of the session. Anonymity is preserved since they do not know which of the twelve participants are in their group. Using a design inspired from Niederle and Vesterlund (2007), the content of parts and the compensation schemes are as follows.

Part 1 – Piece rate in the memory task: Subjects are paid for their individual absolute performance. They receive a piece rate of 10 Indian Rupees (INR) for every correctly recalled number during the three minutes (INR10 = \$0.56 in 2015 Purchasing Power Parity).

Part 2 – Tournament in the memory task: The top two performers in the group of six are the “winners” and they earn INR 30 for every correctly recalled number whereas the losers get nothing. In case of a tie, a random draw selects the winners.

Part 3 - Choice of compensation scheme in the memory task: First, before performing the task again, subjects choose between being paid a piece rate for their absolute performance or entering a tournament. The comparison between the competing subject's performance in part 3 and the performances of the five other group members in the forced tournament in part 2 (regardless of their choice in part 3) determines whether or not the competing subject is a winner in part 3. If the subject's score is among the two highest scores, the subject is a winner, otherwise he earns INR0 in this part. The advantage of presenting subjects both piece rate and tournament payment schemes before letting them choose, is that it allows them to get a first-hand experience of what otherwise could be abstract notions.

The subjects are never informed about their absolute or their relative performance in the memory task in any part. They do not receive any feedback about whether or not they are a winner in part 2 until the end of the session.

Part 4 - Choice of compensation scheme for the Ball-in-Bucket task: Contrary to the previous parts, subjects now have to perform the Ball-in-Bucket task. First, they are given a demonstration of the task at hand by one experimenter. Then, they have to choose whether they want to be paid a piece rate or by a tournament payment scheme for their performance in this part. If the subject chooses the piece rate, he earns INR10 for every ball that lands up in the bucket. If he chooses the tournament and if he ends up being one of the top two scorers, he earns INR30 for each successful toss; otherwise, he earns nothing. Tournament winners in part 4 are decided by comparing intra-group performances in part 4, regardless of the choice of the five other group members. When they choose their compensation scheme, subjects do not know how good they are at the BiB task. When they perform the task, they are isolated from the other participants and cannot see how well they perform relative to others.

It should be noted that we introduce more than one change between part 3 and part 4: first, the task is different; second, in the BiB task, subjects can directly observe their absolute

performance when performing the task, while in the memory task they can only form a belief about it; subjects have no chance to practice the task under each payment scheme before making their choice;⁷ the winner is determined by comparing the score of the competitor with that of all the other players in the same part although they may have made different payment choices. Therefore, when comparing beliefs and choices of the payment scheme in part 3 and in part 4 in a given treatment, we cannot attribute any difference to one specific cause. However, it is important to keep in mind that our main objective is comparing these differences in beliefs and choices across treatments.

Part 5 – Risk elicitation: Risk attitudes may influence the choice of a payment scheme. Thus, we elicited the subjects' risk attitudes by using the method of Gneezy and Potters (1997).⁸

Other Treatments

Treatment 1 (T1, henceforth) - This treatment replicates the Baseline treatment, except that between part 3 and part 4 the subjects are given feedback on whether or not they were a winner in the forced tournament of part 2. The result is written on a piece of paper and privately handed out to the subjects along with the response sheet. After seeing the result, subjects move on to their decision in part 4. Comparing T0 and T1 allows us to test whether subjects who learn they were winners in the forced tournament in the first task are more likely than uninformed winners to believe that they can win the tournament in the second task. We can also test whether this effect depends on caste.

Treatment 2 (T2, henceforth) - T2 is similar to T1, except that a quota-based Affirmative Action (AA, henceforth) is introduced in part 2. In the Quota tournament, one of the two

⁷ An option would have been to decompose part 4 into three parts: BiB under a piece-rate scheme, then under a tournament scheme, and finally a choice between the compensation schemes. However, this would have increased the duration of the experiment and thus, it would have possibly reduced the chance to observe spillovers between the two tasks. Note that this decomposition is done in T3.

⁸ Subjects are given an endowment of INR100 and they can invest any amount, between 0 and 100 included, in a risky project. With 50% chance the amount invested is trebled and with 50% chance it is lost. The payoff is the initial endowment minus the amount invested plus the return from investment. A risk-neutral or risk-seeking agent should invest his entire endowment. Lower investments indicate a degree of risk aversion.

winners is necessarily the best performer from the SC category and the other winner is the best performer among the five other members. In part 4, however, subjects choose between piece rate and a standard tournament (without quota) payment scheme. By comparing it with T1, this treatment allows us to test whether a policy intervention, such as quotas, makes the manipulation of beliefs more or less likely depending on success or failure in the forced tournament and depending on caste status.

Treatment 3 (T3, henceforth) - The comparison between T0 and T1 indicates whether success in one task breeds confidence in one's ability in the other task. However, how does the cross-domain spillover compare with the within-domain spillover? T3 is designed to answer that question. It is similar to T1 except that subjects play the Ball-in-Bucket task in all parts. At the end of part 3, subjects are informed on whether or not they are among the winners in part 2. Since in part 2 subjects perform the BiB task and are paid by tournament scheme, the spillover we measure is from feedback on success in one domain to self-confidence and competitiveness in the same domain. Note that since subjects perform repeatedly the same task in T3, we capture also potential expected learning effects on absolute performance between part 4 and the previous parts. Thus, if we find similar spillover effects across domains and within the same domain when focusing on beliefs about the absolute performance, the difference between across-domain and within-domain spillovers may be underestimated. However, this should not affect beliefs about relative performance.

Table 1 summarizes the main characteristics of our experimental design.⁹

⁹ Our design differs from that of Huang and Murad (2017) in several respects. Their experiment consists of three parts : in the first two parts each task is performed under a piece rate scheme; in the third part, after being informed or not (depending on the treatment) on their relative performance in the first task, subjects choose whether to submit their performance in the second task to a tournament or to different piece rates. As a result, they measure retrospective competitive preferences whereas we measure the willingness to compete.

Table 1. Summary of the experimental design

Treatments	T0 (Baseline)	T1 (Feedback)	T2 (Feedback + Quota)	T3 (Feedback + single task)
Part 1	M, Piece Rate	M, Piece Rate	M, Piece Rate	BiB, Piece Rate
Part 2	M, Tournament	M, Tournament	M, Quota Tournament	BiB, Tournament
Part 3	M, Choice between piece rate and tournament	M, Choice between piece rate and tournament	M, Choice between piece rate and Quota tournament	BiB, Choice between piece rate and tournament
Part 4	BiB, Choice between piece rate and tournament	Info on part 2 result, BiB, Choice between piece rate and tournament	Info on part 2 result, BiB, Choice between piece rate and tournament	Info on part 2 Result, BiB, Choice between piece rate and tournament
Part 5	Risk elicitation	Risk elicitation	Risk elicitation	Risk elicitation

Note: M refers to the memory task and BiB to the Ball-in-Bucket task

Belief Elicitation

In treatments T0 to T2, at the end of each part after performing the task subjects report their beliefs about their absolute and their relative performance. They report their absolute self-confidence by answering the question: “How many numbers do you think you have correctly written down?”. Relative self-confidence, on the other hand, is captured from responses to the following two questions: “Between 1 and 6, which rank do you think you have obtained, compared to the five other group members?” and “What is the chance, in percent, that you will be among the winners of your group?”. In T2, subjects have to report their perceived within-caste rank in addition to overall rank. In parts 3 and 4 the questions on relative performance are asked regardless of the choice of the payment scheme. In part 4 of all treatments and in each part of T3, subjects are asked to report their belief about how many balls they think they will be able to put in the bucket *before* they go on to perform the BiB task, unlike in the earlier treatments. Indeed, in this task subject are able to see immediately what their absolute performance is while performing the task. The relative self-confidence is elicited after completion of the task, like in the other parts or treatments.

We incentivize responses to these questions to encourage subjects to report their true beliefs without introducing hedging (this is another difference compared to Huang and Murad (2017)). The incentive scheme has been kept very simple for the purpose of making it comprehensible to the subject pool.¹⁰ Eliciting beliefs gives us rich data on the evolution of beliefs following feedback that we can use to identify spillover effects.

2.2. Procedures

We conducted the experiment in South 24 Parganas district of West Bengal, India. Nine blocks in the district were randomly chosen and two village/town-wards were randomly selected from each block.¹¹ Appendix 2 displays maps of the sampled villages/wards and Appendix 3 shows pictures of some of the experimental sites in various public spaces (schools, open spaces, ...). In each village we recruited twelve to twenty four subjects with the help of local intelligence to guarantee a balance in the number of GC and SC subjects. Finally, the study has been conducted in 17 villages and has involved 360 subjects (171 GC subjects, 185 SC subjects, and 4 Scheduled Tribe category subjects; the ST subjects are pooled with the SC subjects in the data analysis).

Table A1 in Appendix 4 displays the descriptive statistics of the subject pools across the four treatments. The subject composition is roughly balanced across treatments: females represent between 41% and 49% of the sample, the average age is between 18.9 to 22.3 years, between 51% to 53% belong to the SC group. Subjects invest on average from INR36 to 44 in the risk elicitation game, which indicates a relatively high degree of risk aversion.

¹⁰ See instructions in Appendix 1. For each question on absolute and on relative confidence in the part randomly selected for payment at the end of the session, we paid subjects INR50 if their prediction matched their actual score or rank. For the estimate of the chance of being a winner, subjects had to indicate a number between 0 and 100, with 0 if they were absolutely sure they were not among the top two, 100 if they were absolutely sure that they were among the top two, and some number in between 0 and 100 depending on how sure they were of being among the top two. They could earn between INR0 and INR50 for answering this question. We told them that the more truthful they were in their report, the higher the bonus would be. We also proposed to those who were interested to explain the details of the procedure at the end of the session (see Figure A1 in Appendix 5).

¹¹ The census data which was used for sampling purposes identifies at the village or ward-of-a-town level.

Twelve subjects participated in each session. After subjects arrived, they were randomly assigned a desk and given a set of instructions. Instructions for the next part were distributed after completion of the previous part. The experiment has been conducted with pen and paper. All questions were answered in private. Each session lasted for 75 to 90 minutes. Subjects received a show up fee of INR100. Moreover, earnings from the different parts ranged from INR100 to INR550, with an average of INR268 (~\$15 in PPP terms).

2.3. Behavioral Conjectures

In this subsection we motivate our main behavioral conjectures from a theoretical framework developed in Benabou and Tirole (2002) and Benabou (2015). In this framework, a risk neutral individual has a horizon of three periods: 0, 1 and 2. At $t=0$, she performs a task, say task M, for which there are two possible outcomes: success and failure, *i.e.*, $\sigma \in \{S, F\}$. At $t=1$, she obtains and processes information about her success in task M, updates her prior and decides whether or not to exert effort e in a completely unrelated task, task B, $e \in \{0,1\}$. If she does, then she pays a cost ce_i but she also gets an anticipatory utility $sE_1(U_2)$ that is discounted by δ . So, her utility at $t=1$ is given by $U_1 = -ce_i + \delta E_1(U_2)$. At $t=2$, she receives the payoff from her effort, U_2 , where $U_2 = \theta[\alpha e + (1 - \alpha)k]$. The final payoff depends on the productivity at task B, θ , which can take value θ_S or θ_F , such that $\theta_S - \theta_F > 0$. The structure further implies that a part of the outcome comes from effort while another part comes from an exogenous fixed factor k , such as age, gender, caste, etc, which may also be state-dependent.¹²

The agent updates her belief at $t=1$. The key element here is that the agent can respond with either *realism* or *denial* to the feedback received about success or failure in task M at $t=0$. Realism means that she recognizes that the success status in task M has no bearing on

¹² Prior research shows that in a deeply segmented society such as the Indian one, low caste individuals are severely discriminated against, have lower status in society and receive lower remuneration (Deshpande, 2011). In our study, the SC subjects may thus have lower self-confidence and hence, a greater need to believe in their ability to succeed, and a higher k compared to the GC subjects.

the success status in task B, *i.e.*, $\text{Corr}(S_M, S_B) = 0$. Denial implies that she believes that success in task M has a bearing on success in task B, *i.e.*, $\text{Corr}(S_M, S_B) > 0$. If $\sigma = F$, agent will not be in denial. The interesting case is to analyze the environment when $\sigma = S$. Let $\lambda \in [0, 1]$ be the equilibrium probability with which the agent responds with realism and $(1 - \lambda)$ be the probability of self-deception or being in denial. If q is the prior that her outcome in task B is S given $\sigma = S$, then $q(\lambda) = \frac{q}{q + (1-q)(1-\lambda)}$ is the updated posterior. Notice that if $\lambda = 0$, *i.e.*, the agent is always in denial, then the posterior $q(\lambda)$ is the same as prior q . On the other hand, if the agent is always realistic with $\lambda = 1$, then $q(\lambda) = 1$. The net gain from adopting the denial strategy is a function of the probability with which the agent responds with realism, *i.e.*, $U_{0,D} - U_{0,R} = f(\cdot, q(\lambda))$. Given this structure, Benabou (2015) shows that there exists a unique fixed point which solves for the equilibrium probability of self-deception. Further, for certain parameter combinations, the net benefit from denial is maximum for $0 < q(\lambda) < 1$, indicating that it is optimal for the agent to hold a positive probability of self-deception.

Finally, with respect to the fixed factor or “sunk” capital, k , if it represents some initial endowment that is more valuable in the S state, then Benabou (2015) shows that $\partial(U_{0,D} - U_{0,R})/\partial k > 0$, meaning that the larger is k , the greater will be the net gain from self-deception. With this backdrop in mind, we turn to our conjectures regarding self-confidence:

Conjecture 1: When subjects receive positive feedback about their relative performance in the memory task, there will be a boost in self-confidence when asked to evaluate their relative and absolute abilities in the BiB task, although the two tasks are unrelated.

If conjecture 1 is supported by the data, we should thus observe that in treatment T1, people who receive good news and believe that success in the first task influences their likelihood to succeed in the second task are more willing to choose the tournament in part 4, compared to the uninformed winners in the baseline T0.

What about the impact of receiving negative feedback? If a subject receives bad news on her relative performance in the first task, we expect there will be no spillover in the form of lower self-confidence in the second task. This is based on evidence from psychology, showing an optimism bias: humans discount bad news, whereas they update their beliefs in a Bayesian manner when news are good (Sharot, 2011). It is also based on Möbius *et al.* (2014) who develop a model of Bayesian information processing and test experimentally the impact of feedback on performance in an IQ quiz on belief updating. They show that updating is asymmetric: subjects overweight positive feedback relative to negative feedback when ego is at stake.¹³ Thus, we conjecture that receiving negative feedback on one's ability relative to that of competitors in one task is unlikely to spillover on the beliefs about one's ability to succeed in the second independent task.

Conjecture 2: When subjects receive negative feedback about their relative performance in the memory task, this will not significantly influence their self-confidence in the BiB task.

If conjecture 2 is supported by the data, we should thus observe no difference in the tournament entry decisions between the subjects who received bad news in treatment T1 and the non-informed losers in the baseline T0.

Our third conjecture is that low-caste individuals will be more likely to motivate beliefs compared to high-caste individuals after receiving positive feedback. Low-caste individuals have been for centuries evaluated as being inferior to high-caste individuals of the same ability and consequently denied opportunities in a deeply segmented society. Thus, they have a greater gain in utility to be in the S state (a higher k); in contrast, high-caste members are more used to winning and should react less to good news. Considering now the F state, we conjecture that receiving negative feedback on relative ability in the first task spills over negatively on the low-caste members' beliefs about their ability to succeed in the second task,

¹³ There is also a literature on information avoidance when people expect the information to be negative (*e.g.*, Sweeny *et al.*, 2010, Eil and Rao, 2011, Burks *et al.*, 2013). It does not apply to our study, however, since subjects cannot choose whether to be informed or not about their relative performance.

because it reminds them of their lower status. We do not expect such an effect in high-caste subjects.

Conjecture 3: After receiving positive (negative, conversely) feedback about their relative performance in the memory task, low-caste members are more likely to boost (decrease, respectively) their self-confidence about the second task than high-caste members.

If conjecture 3 is supported by the results, then we should observe that informed winners (losers, conversely) from the low caste are more (less, respectively) likely to enter the tournament in part 4 in T1 compared to uninformed winners (losers, respectively) in T0.

Our final conjecture has to do with Affirmative Action. AA should make self-deception less likely by decreasing the gain in utility from the S state when belonging to a low caste (*i.e.*, by decreasing k). Low-caste subjects are aware that when performing the BiB task in part 4 they will no longer benefit from AA: even if they need more motivation to engage in competition in this condition, self-deception is more difficult when knowing that being a winner in the memory task may be due to the presence of AA. Thus, we conjecture that there will be no self-confidence spillovers when low-caste subjects receive good news under AA, because the benefit of AA makes more clear that the informative value of being a winner in part 2 is null.¹⁴ On the other hand, low-caste subjects who receive bad news under AA may be even less confident about their ability to succeed in the new task without AA. So, we expect negative spillovers from the F state in the first task on the beliefs about the second task for the low-caste subjects. In contrast, the high-caste winners may boost their confidence after receiving good news, because they learn they have won the tournament despite the quota policy; conversely, they should ignore bad news because they can persuade themselves that they lost because of the quota policy. Overall, the spillover effects should be lower in T2.

Conjecture 4: Under Affirmative Action, there is no self-confidence spillover across unrelated tasks for low-caste winners and high-caste losers; there are self-confidence spillovers for low-caste losers and high-caste winners.

¹⁴ In our companion paper (Banerjee *et al.* 2017) we did not find any within-task spillover effect of having succeeded under AA in a previous round on self-confidence in a new round of the same task without AA.

If conjecture 4 is supported by the results, then we should observe that the low-caste winners and the high-caste losers in T2 are likely to choose the tournament in part 4 in the same proportion as in the baseline T0. We also expect that low-caste losers will enter the competition less and high-caste winners will enter more in part 4 in T2 compared to T0.

3. Results

We first study self-confidence spillovers and their possible asymmetry, without considering status. Next, we consider the roles of caste status and Affirmative Action. We conclude with an analysis of the effects of spillovers on efficiency.

3.1. Self-Confidence Spillovers Across Tasks

Table 1 displays mean scores in part 1 and absolute self-confidence in each part, by treatment. Absolute self-confidence is measured as the number of figures subjects think they recalled correctly in T0 to T2 (alternatively, the number of balls subjects think they *will* toss in the bucket in T3). We compute prediction errors by comparing beliefs with the actual numbers of correct recalls (ball tosses). As a total score of 15 can be earned in both tasks, cardinal responses on the self-confidence question are comparable across the memory and BiB task. Table 1 also reports the level of significance of two-sided Mann-Whitney tests comparing each treatment to T0, each subject contributing one independent observation.

Table 1. Score in part 1 and absolute self-confidence, by part and treatment

Treatment	T0	T1	T2	T3
Score in part 1	8.54	8.01	7.76	5.64
<i>Comparison Ti-T0</i>	-	-0.53	-0.78**	-2.90**
<i>Absolute self-confidence – Prediction error</i>				
Part 1	1.42	1.43	1.40	1.47
<i>Comparison Ti-T0</i>	-	0.01	-0.02	0.05
Part 2	1.36	1.33	1.39	1.31
<i>Comparison Ti-T0</i>	-	-0.03	0.03	-0.05
Part 3	1.38	1.49	1.38	0.62
<i>Comparison Ti-T0</i>	-	0.11	0.00	-0.76**
Part 4	2.42	1.87	2.35	0.75
<i>Comparison Ti-T0</i>	-	-0.55	-0.07	-1.58**

Notes: In T0, T1 and T2 score in part 1 refers to the memory task; in part 4 it refers to the Ball-in-Bucket task. Prediction errors are the mean differences between beliefs and the actual numbers of correct recalls or ball tosses. The comparisons between treatment T_i (with $i = 1, 2$ or 3) and the baseline T0 report p -values from Mann-Whitney ranksum tests. ** indicates significance at the 5% level.

Table 1 shows that there is no significant difference in the mean score in part 1 between T1 and T0. This indicates that the combination of effort and ability is similar across these treatments before we introduce any feedback. Note that the mean score in part 1 in T2 and in the BiB task in T3 is significantly lower than in the memory game in T0.¹⁵ Importantly, the correlation between the scores in the memory game and the BiB game is found to be essentially zero. Figure A3 in Appendix 5 displays a scatter plot of score in the memory task in part 1 and in the BiB task in part 4, pooling data from T0, T1 and T2. This figure shows no evidence of a correlation between the score in the two tasks. In addition, we estimated a regression in which the dependent variable is the score in the BiB task and the independent variable is the score in the memory task. This variable is far from being significant ($p=0.945$).

Table 1 also reveals widespread overconfidence, as prediction errors are in almost all cases positive. The differences in prediction errors with the baseline levels are insignificant in all but two cases: in parts 3 and 4 in T3 compared to T0. Subjects playing BiB as the sole task throughout the experiment score lower in absolute self-confidence compared to the baseline memory game. This may result from the fact that since part 1 subjects have been able to observe how well they perform in this task. In contrast, subjects performing the BiB task after the memory task do not show a different level of absolute self-confidence than in T0.

Table 2 indicates whether or not subjects display different levels of relative self-confidence across parts and tasks. It displays two measures of relative self-confidence, based either on the belief that the subject will be among the two top scorers in their group in parts 2 to 4 (mean proportion of subjects who hold this belief), or on the percent chances of being a winner. At this stage, we consider all subjects together, regardless of their success in the forced competition in part 2, and regardless of their decision when given the opportunity to choose to compete or not.

¹⁵ As a complement, Figure A2 in Appendix 5 depicts the distribution of scores in the memory task and in the ball tasks. The BiB task has lower mean but wider variance than the memory task (this is observed in any part).

Table 2. Relative self-confidence, by part and treatment

Treatment	T0	T1	T2	T3
<i>Relative self-confidence measured by belief of being one of the two top scorers</i>				
Part 2	0.32	0.36	0.39	0.43
<i>Comparison Ti-T0</i>	-	<i>0.04</i>	<i>0.07</i>	<i>0.11</i>
Part 3	0.24	0.26	0.35	0.29
<i>Comparison Ti-T0</i>	-	<i>0.02</i>	<i>0.11</i>	<i>0.05</i>
Part 4	0.30	0.37	0.40	0.34
<i>Comparison Ti-T0</i>	-	<i>0.07</i>	<i>0.10</i>	<i>0.04</i>
<i>Relative self-confidence measured by percent chance of winning</i>				
Part 2	56.10	57.04	58.96	59.05
<i>Comparison Ti-T0</i>	-	<i>0.94</i>	<i>2.86</i>	<i>2.95</i>
Part 3	56.51	55.83	52.61	50.38
<i>Comparison Ti-T0</i>	-	<i>-0.68</i>	<i>-3.90</i>	<i>-6.13</i>
Part 4	51.04	44.99	47.63	46.71
<i>Comparison Ti-T0</i>	-	<i>-6.05</i>	<i>-3.41</i>	<i>-4.33</i>

Notes: When relative self-confidence is measured by the belief of being a winner, the values represent the mean proportion of subjects who believe they have rank 1 or 2. The comparisons between treatment T_i (with $i = 1, 2$ or 3) and the baseline treatment T_0 report in italics the absolute difference between the mean values in T_i and T_0 .

Table 2 indicates that overall, subjects exhibit higher relative self-confidence in all treatments compared to T_0 , except in parts 3 and 4 when considering the estimated percentage chance of winning. However, none of these differences are significant (all p -values from t -tests clustered at the village level are above 0.10).

Although we do not find significant differences in absolute or relative self-confidence across the treatments T_0 to T_2 when considering the full sample of subjects, it is still possible that higher beliefs in one's abilities in the memory task lead to a higher rate of tournament entry for the BiB task. This should differ depending on the success or failure in the forced tournament in part 2. Table 3 tests this hypothesis, by displaying the absolute and relative self-confidence measures and the rates of tournament entry in part 4 (BiB task) for the winners and losers of the forced tournament in part 2 considered separately, by treatment. The last row reports the tournament entry rates in part 4 for all subjects pooled together.

Table 3. Self-confidence and tournament entry decision in part 4, by winner status in part 2 and by treatment

Treatment	T0		T1		T2		T3	
Status in part 2	Winner	Loser	Winner	Loser	Winner	Loser	Winner	Loser
<i>Absolute self-confidence (prediction error)</i>								
Mean values	3.06	2.08	2.00	1.83	2.53	2.23	0.75	0.75
Comparison Ti-T0	-	-	-1.06	-0.25	-0.53	0.15	-2.31**	-1.33**
Comparison winner-loser	0.98		0.17		0.30		0.00	
<i>Relative self-confidence measured by belief of being one of the two top scorers</i>								
Mean values	0.33	0.28	0.59	0.25	0.47	0.34	0.58	0.20
Comparison Ti-T0	-	-	0.26**	-0.03	0.14	0.06	0.25*	-0.08
Comparison winner-loser	0.05		0.34**		0.13		0.38**	
<i>Relative self-confidence measured by percent chance of winning</i>								
Mean values	51.54	50.79	64.30	37.48	57.93	46.22	63.03	38.53
Comparison Ti-T0	-	-	12.76**		6.39	-4.57	11.49**	-12.26*
Comparison winner-loser	0.75		26.82**		11.71		24.50**	
<i>Tournament entry rate</i>								
Mean values	0.29	0.27	0.53	0.25	0.59	0.20	0.57	0.11
Comparison Ti-T0	-	-	0.24*	-0.02	0.30*	-0.07	0.28	-0.16**
Comparison winner-loser	0.02		0.28*		0.39**		0.46**	
<i>Tournament entry rate (all players)</i>								
Mean values	0.27		0.34		0.33		0.26	
Comparison Ti-T0	-		0.07		0.06		-0.01	

Notes: In all treatments self-confidence is for the Ball-in-Bucket task. Winner corresponds to the two players in each group who won the forced tournament in part 2, and loser refers to the four other group members. The comparisons between treatment T_i (with $i=1,2$ or 3) and the baseline treatment T_0 report p -values from Mann-Whitney ranksum tests for absolute self-confidence and t -tests clustered at the village level for other outcomes. ** and * indicate significance at the 5% and 10% level, respectively.

Repeating the previous analyses of Tables 1 and 2 for the subsample of winners in the forced tournament in part 2, a significant positive difference in relative self-confidence is found in T1 and T3 compared to T0, regardless of how we measure relative self-confidence. The gap between T1 and T0 is not significantly different from the gap between T3 and T0, regardless of which measure of relative self-confidence is considered ($p=0.936$ for the belief of being one of the two top scorers, and $p=0.866$ for the perceived chance of winning). We also find significant differences between winners and losers in these treatments. Winners in part 2 become more confident in part 4 both within and across tasks, relative to losers. We do not find differences in terms of predicted absolute scores, however.

Comparing T1 with T0, Table 3 also indicates that for the full sample there is no significant increase in the choice of the tournament payment scheme in BiB following feedback on relative performance in the memory task. However, when looking at the

subgroup of winners in the memory task, the picture is slightly different. The tournament entry rate in part 4 is (marginally) significantly higher for the winners in T1 compared to T0, and the gap in competitiveness between winners and losers is significant in all treatments with feedback.¹⁶ Note also that the rate of tournament entry is not significantly higher in T3 than in T0. Supporting conjecture 1, these results indicate that there are spillover effects of success in one domain to another independent domain for those who received good news about their outcome in the forced competition.

To account for differences in individual characteristics of subjects across treatments, we now turn to an econometric analysis to formally test our conjecture. Table 4 reports the marginal effects from regressions in which the dependent variable is either the relative self-confidence in the second task, as measured by the belief of being one of the two top scorers (models (1) and (2)) or by the chance of being a winner (models (3) and (4)), or the decision to enter the tournament in the second task (models (5) and (6)). Models (1), (2), (5) and (6) are Probit and models (3) and (4) are OLS regressions. Standard errors are clustered at the village level to control for local error correlation across households. The independent variables include being a winner in the tournament in part 2, treatment dummies, and interaction terms between being a winner in part 2 and treatment dummies. In even models, we also control for individual characteristics (caste, risk score, age, female, education and log of family income).

Table 4 shows that being a winner in the memory task in T0 does not increase significantly self-confidence and tournament entry in the BiB task, which is not surprising since subjects do not know this information. But learning that one is a winner in T1 and in T3 increases relative self-confidence significantly in part 4, revealing self-confidence spillovers both within- and across-tasks (see models (1) to (4) in Table 4; see also panels A and B in

¹⁶ Importantly, we made sure that there was no difference in tournament entry for either winners or losers between T0 and other treatments in part 3, *i.e.*, before the feedback was given.

Table A2 in Appendix 4 for separate regressions by treatment). As a result, in terms of tournament entry, being a winner in any of the three treatments with feedback (T1 to T3) has a significant positive effect (see models (5) and (6) and panel C in Table A2 in Appendix 4).

Table 4. Determinants of relative self-confidence and tournament entry in the second task (part 4)

Dependent variables	Relative confidence – Belief being one of the 2 top scorers		Relative confidence – % chance of winning		Tournament entry decision	
	(1)	(2)	(3)	(4)	(5)	(6)
Winner in part 2	0.06 (0.07)	0.04 (0.10)	0.75 (4.83)	0.77 (4.39)	0.02 (0.10)	-0.03 (0.11)
Treatment T1	-0.04 (0.13)	-0.03 (0.13)	-13.30*** (4.09)	-10.70*** (3.40)	-0.02 (0.12)	-0.04 (0.12)
Treatment T2	0.08 (0.12)	0.08 (0.13)	-4.57 (5.49)	-3.26 (5.54)	-0.07 (0.09)	-0.07 (0.09)
Treatment T3	-0.08 (0.10)	-0.08 (0.11)	-12.25* (6.12)	-9.38 (5.99)	-0.19** (0.08)	-0.17* (0.09)
Winner in part 2 * T1	0.31** (0.13)	0.30* (0.15)	26.08*** (6.11)	23.14*** (6.31)	0.26* (0.13)	0.32** (0.16)
Winner in part 2 * T2	0.06 (0.15)	0.11 (0.18)	10.97 (8.70)	11.27 (8.22)	0.38*** (0.15)	0.44*** (0.15)
Winner in part 2 * T3	0.34** (0.14)	0.27 (0.17)	23.75*** (6.56)	18.32*** (6.06)	0.51*** (0.15)	0.45** (0.19)
Individual characteristics	No	Yes	No	Yes	No	Yes
Number of observations	360	348	360	348	360	348
Pseudo-R ²	0.060	0.121	-	-	0.100	0.142
R ²	-	-	0.109	0.162	-	-

Notes: Marginal effects are reported. Models (1), (2), (5) and (6) are Probit models; models (3) and (4) are OLS. Individual characteristics include: caste, risk score, age, female, education and log of family income. In models with controls for individual characteristics, 12 observations are missing across different sessions (11 missing values for family income and one missing value for education). All standard errors (in parentheses) are clustered at the village level. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

We have also estimated a joint model in which the tournament choice is treated as endogenous to the two measures of relative self-confidence. In a first step, we regressed linear probability models to estimate the determinants of relative self-confidence in part 4, and in the second step we estimated probit models of the tournament entry decision also in part 4. In the first step, the independent variables are being a winner and treatment indicators (alone and interacted with being a winner). In the second step, the independent variables include the level of self-confidence, as estimated in the first step, and standard individual characteristics, as in Table 4. This estimation strategy assumes that the feedback received in the memory task affects the tournament choice in the BiB task only via its (spillover) impact

on relative self-confidence. The results are reported in Table A3 in Appendix 4. The main takeaway from this table is that relative confidence spillovers across domains are significant and promote competitiveness; they are generated mainly through the act of winning the forced competition in the first task in either of the treatments with feedback. This implies that self-confidence in one task is boosted by receiving positive feedback on success in another, unrelated, task, which supports our first conjecture. Winning the competition in part 2 boosts confidence in part 4 also in T3, which indicates belief updating also within the same domain.

This analysis can be summarized in the following result:

Result 1: There are spillover effects of winning the forced tournament in the first task on self-confidence and on competitiveness in a subsequent unrelated task. This supports conjecture 1.

To test our second conjecture on the asymmetry of spillovers, we now consider whether or not those who lost the forced tournament in part 2 are losing self-confidence and decrease their entry rate in the tournament in part 4, compared to those who did not receive any feedback (T0). Table 3 indicates that losers in T1 report a significantly lower chance to be a winner in part 4 compared to subjects who did not receive any feedback, but they do not differ from them in terms of absolute self-confidence and of beliefs on being among the two top scorers. Accordingly, their competitiveness in part 4 does not differ from that of uninformed subjects. This is very different from what we found for the winners, which contributes to support conjecture 2 on the asymmetry of spillover effects. In contrast, in treatment T3, within-task, losers in part 2 have lower self-confidence and compete significantly less in part 4 than in T0 and compared to winners. The regressions reported in Table 4 confirm that in T1 the effect of feedback on losers is far weaker and less consistent than the effect on winners (the coefficient associated to T1 is significant only on the chance of winning). This leads to the following result:

Result 2: The spillover effects across domains are asymmetric. Bad news about relative ability in the first task has no effect on the perceived chance of winning the competition and on competitiveness in the new task. This provides some support to conjecture 2.

3.2. The Impact of Caste Status and Affirmative Action on Spillovers Across Tasks

To test our last two conjectures, Table 5 reports a similar analysis as in Table 4 but disaggregated by treatment and allowing information about success or failure in the first task to have different effects on self-confidence and competitiveness in the second task across castes. The dependent variables are the belief of being among the two top scorers (models (1) to (4)), the chances of being a winner (models (5) to (8)), and the decision to enter the tournament in the second task (models (9) to (12)). The independent variables include being a GC winner in the forced tournament in part 2, being a SC winner, being a SC loser, with the GC loser as the reference category, and the same individual characteristics as in Table 4.

Our third conjecture was that in the absence of an AA policy, subjects from the low caste who receive positive (conversely, negative) feedback about their relative performance in the memory task are more likely to boost (to decrease, respectively) their self-confidence about the second task than the high-caste subjects. The regressions reported in Table 5 related to treatment T1 support only partially this conjecture. Compared to the GC losers, belonging to the low caste and being a winner in the forced tournament has a positive and significant effect at the 1% level on the belief of being among the two top scorers and on the perceived chance of being a winner in the second task (see models (2) and (6)). In contrast, GC winners and GC losers in T1 share the same beliefs on being one of the two top scorers in the second task (see model (2)). The spillover effect of winning the tournament in the first task on the perceived chance of winning the tournament in the second task is larger for the SC winners than for the GC winners but not significantly so (see model (6), $p=0.53$).

Contrary to conjecture 3, the relative confidence in the second task of the SC losers in the first task does not differ from that of the GC losers. However, their competitiveness in the second task is significantly lower than that of the GC losers. This leads to our third result:

Result 3: Winning the tournament in the first task increases only the low-caste members' beliefs of being a winner in the second, unrelated, task. There are negative spillover effects of losing on the low-caste losers' competitiveness, but not on their self-confidence. Conjecture 3 is only partially supported.

Our last conjecture was that under AA, there is no self-confidence spillover for low-caste winners and high-caste losers and that there might be spillovers in opposite directions for low-caste losers and high-caste winners. The results are mixed. Considering all the subjects regardless of their caste, Table 3 reveals no difference in the absolute and relative self-confidence of both winners and losers in part 4 in T2 compared to T0, while there were significant differences between T1 and T0. This suggests an absence of self-confidence spillovers in T2. On the other hand, winners' competitiveness in the second task in T2 (T1, respectively) is 0.30 (0.24, respectively) percent point higher than in T0 (both significant at the 10% level). Thus, being a winner under AA in T2 does not raise self-confidence in part 4 compared to T0, but it tends to increase subsequent competitiveness even though AA is no longer used. This is confirmed by Table 4: models (1) to (4) show no spillover effect of being a winner in the tournament in the first task on relative self-confidence in the second task in T2; but models (5) and (6) reveal a significant spillover on the winners' competitiveness in T2. In contrast to the other treatments, the spillover effects of success in the memory task do not pass through a boost in self-confidence but directly through a boost in competitiveness.

Table 5. Determinants of relative self-confidence and tournament entry in part 4 (BiB task), by treatment

Treatments	Relative confidence Belief being among the two top scorers in the second task				Relative confidence % chance of winning in the second task				Competitiveness Tournament entry decision in the second task			
	T0	T1	T2	T3	T0	T1	T2	T3	T0	T1	T2	T3
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
<i>Loser in part 2 - GC</i>	<i>Ref.</i>	<i>Ref.</i>	<i>Ref.</i>	<i>Ref.</i>	<i>Ref.</i>	<i>Ref.</i>	<i>Ref.</i>	<i>Ref.</i>	<i>Ref.</i>	<i>Ref.</i>	<i>Ref.</i>	<i>Ref.</i>
Winner in part 2 - GC	0.11 (0.12)	0.20 (0.13)	0.05 (0.21)	0.33 (0.29)	-1.03 (8.95)	22.86** (7.37)	10.36 (12.32)	16.35*** (4.25)	-0.13 (0.08)	0.21* (0.11)	0.36** (0.15)	0.39* (0.20)
Winner in part 2 - SC	0.01 (0.12)	0.39*** (0.07)	0.36** (0.16)	0.42* (0.22)	3.80 (6.77)	30.06*** (6.48)	22.38** (6.41)	16.60* (7.02)	0.01 (0.26)	0.20* (0.12)	0.51*** (0.08)	0.58*** (0.18)
Loser in part 2 - SC	0.07 (0.06)	-0.09 (0.17)	0.13** (0.06)	0.05 (0.13)	4.09 (5.61)	2.22 (7.77)	7.43 (7.42)	-4.92 (4.44)	-0.05 (0.11)	-0.18** (0.08)	0.12 (0.10)	-0.09 (0.08)
Individual characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	80	91	95	82	80	91	95	82	80	91	95	82
Pseudo-R ²	0.093	0.215	0.106	0.159	-	-	-	-	0.127	0.189	0.224	0.228
R ²	-	-	-	-	0.214	0.253	0.242	0.307	-	-	-	-

Notes: Marginal effects are reported. Models (1) to (4) and (9) to (12) are Probit models and models (5) to (8) are OLS regressions. Individual characteristics include: risk score, age, female, education and log of family income. All standard errors (in parentheses) are clustered at the village level. *** and ** indicate significance at the 1% and 5% level, respectively.

Comparing castes in T2 tests conjecture 4 directly. Model (3) in Table 5 indicates that AA boosts the confidence of low-caste members of being among the two top scorers in the second task without AA, relative to high-caste members, but this is observed regardless of their status of winner or loser under AA. Model (7) shows that winning under AA boosts the confidence of the low-caste winners (compared to the high-caste members) on their chance of winning in the second task. Since the low-caste members become more confident, there is no caste difference in competitiveness in the second task in T2, both for winners and for losers, while there was a caste gap in competitiveness in T1 (see models (10) and (11)). This analysis leads to our last result that goes against conjecture 4:

Result 4: There are some positive spillover effects of success under Affirmative Action on self-confidence and competitiveness across tasks. Receiving good news under AA boosts confidence on one's chance of winning in the second task even though AA is no longer used, but this is observed regardless of caste status. Conjecture 4 is not supported.

3.3 Efficiency

A last question is whether the self-confidence spillovers of feedback on relative performance affect efficiency. If we measure efficiency by earnings, we do not find evidence of any effect of the spillovers. The average payoffs in the BiB task are 57.98 points in T0, 67.50 in T1, 61.25 in T2 and 81.19 in T3. The differences between T1 or T2 and T0 are not significant. Only the payoffs in T3 significantly exceed those achieved in T0 ($p=0.020$), probably because in this treatment subjects performed the same task more than once.

Another, more informative, way to look at efficiency consists of examining whether feedback in the memory task led individuals to make better or worst decisions regarding the decision to compete in the BiB task. There are two types of efficiency gains (losses, conversely): when feedback on success in the first task encourages people to compete when they are (when they are not, respectively) among the two most able subjects in the second task, and when feedback on failure in the first task discourages people to compete in the

second task when they are not (when they are, respectively) among the two most able subjects. We examine *ex-post* efficiency by considering the T0 and T1 treatments.

In T1, 77.24% of the less able subjects in the BiB task (*i.e.*, those who were not among the two top-scorers) who received bad news in the memory task rightly decided not to compete in part 4. This is the case for only 50% of the less able subjects who received good news. On the other hand, in T1 54.54% of the most able subjects in the BiB task (*i.e.*, those who were one of the two top-scorers) who received bad news in the memory task rightly decided to compete in part 4. Surprisingly, this is the case for only 33.33% of the most able who received good news. Receiving positive feedback in the first task motivated too many less able subjects to compete in the second task while not helping the most able to compete enough. In contrast, receiving negative feedback in the first task helped less able people to abstain from competing in the second task without discouraging the most able to compete.

Comparing T0 and T1 suggests that, on average and in tendency, the quality of the decision of the less able individuals decreased and that of the most able individuals increased from receiving feedback on the first task, but the differences are not significant. Indeed, in T0, 75% of the less able subjects in the second task abstained from competing in part 4, and 32.14% of the most able chose to compete. In T1, the respective percentages are 68.75% (*t* test, $p=0.453$) and 40.62% (*t* test, $p=0.505$).¹⁷

4. Discussion and Conclusion

We designed an artefactual field experiment to study if individuals who have to decide on whether to compete or not motivate their beliefs by using their relative performance in a previous memory task to form expectations about their chance to succeed in a new and

¹⁷ The conclusions do not change if we consider treatment T2 instead of T1. In T2, among the less able subjects in the BiB task 50% of those who received bad news in the memory task and only 17% of those who received good news rightly decided not to compete. Among the most able subjects in the BiB task only 12.5% of those who received bad news and 21.88% of those who received good news rightly decided to compete. Overall in T2 67.19% of the less able subjects in the second task abstained from competing in part 4, and 34.38% of the most able chose to compete. The differences between T2 and T0 are not significant either.

independent Ball-in-Bucket task. Since the two tasks are independent, as they do not solicit the same type of skills, success or failure in the first task should not affect the self-confidence and competitiveness of rational agents in the second task. We also examined whether these spillovers were more likely for people with a lower status in the society and how an Affirmative Action policy that modifies the objective probabilities of winning in the first task affects self-confidence spillovers across tasks.

Our results are quite remarkable. We find that success in a first task breeds self-confidence and competitiveness across a second unrelated task. Indeed, the individuals who learn that they won the memory tournament become more confident and more willing to compete in the Ball-in-Bucket task, compared to winners who did not receive any feedback. This is different from the results of Huang and Murad (2017) who found evidence of spillover effects on competitiveness but not on confidence. On the other hand, we observe that the individuals who learn that they lost the forced tournament in the memory task believe that they have a lower chance of being one of the two top scorers in the new task compared to the uninformed losers, but this does not affect their relative tournament entry decision. Thus, the spillover effect is asymmetric, with stronger and more consistent evidence for those who succeeded in the first task than for those who failed. Overall, we observe that confidence spillovers across tasks do not differ much from spillovers within the same task, which reveals the existence of motivated beliefs.

We also found that winning the tournament in the first task increases the low-caste members' beliefs of being a winner and their perceived chance of winning in the second, unrelated, task, while it only increases the perceived chance of winning of the high-caste winners. Moreover, receiving good news under Affirmative Action boosts confidence on one's chance of winning in the second task even though the quota policy is no longer in use, but contrary to our expectations, this was observed regardless of caste status. This is very

surprising in the case of low status people since their chance of success is objectively lower in the absence than in the presence of the quota policy.

Overall, these results are consistent with the notion that individuals distort their beliefs to motivate themselves in a competitive environment, although success in one task objectively does not predict success in another, unrelated, task. We cannot exclude that other elements than motivated beliefs may also play a role. For example, the joy of winning in the first task could generate a good mood, which in turn could improve self-perception. But mood could not explain why we find an asymmetric spillover effect after a failure in the first task (such a failure may induce a bad mood, but it does not reduce competitiveness in the second task).

Finally, we found that these confidence spillovers have a limited impact on efficiency. The implications are mixed. On the positive side, using previous success to build one's confidence may possibly help individuals to increase their self-esteem. On the other side, it shows the complexity of designing effective feedback policies for companies that have to manage multi-task work organizations. Indeed, if feedback in one task can help workers to form a more accurate perception of their ability in this task, it may also bias their perception about their ability in other tasks, especially after receiving good news.

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Appendix 1. Instructions for the different treatments

Introduction (Common for All)

Welcome!

Thank you all for taking the time to come today. Today's session will take less than two hours. Before we begin, I want to make some general comments about what we are doing here today and explain the rules that you must follow.

You have each received an anonymous identification number. At some point, you will interact with other participants: you will never know their identity or their choices. Similarly, the other participants will never know your identity and your choices. All your choices and responses are anonymous.

The session consists of several tasks. At the end of the session, one of these tasks will be randomly selected to determine your earnings in this experiment. Therefore, each task may count for determining your earnings. The method we use to determine your earnings varies across tasks. Before each task we will describe in detail how your payment is determined.

Whatever money you earn in the session will be yours to keep and take home. In addition to the money you earn in the session, we will pay you **Rs. 100 for your participation today**. Your earnings will be paid to you in cash and in private at the end of the session.

At the end of the session, you will have to fill out a questionnaire with a list of simple questions. We are about to begin the first task. It is important that you listen as carefully as possible. We will distribute the instructions for the following task at the end of this first part.

If you have any question, please raise your hand and we will answer your questions in private. Please do not ask questions to the other participants or talk about the game with them at any point during today's session. This is very important. Please be sure that you obey this rule.

Instructions for the Baseline Treatment (T0)

We will describe below the instructions for the tasks.

Task 1. Piece rate

For Task 1, you will be asked to memorize and report numbers and then, we will ask you some questions.

We will dictate fifteen numbers between 1 and 100. Each number will be dictated twice. After the completion of the dictation, you will be asked to recall as many numbers as you can and then write them down on the response sheet provided to you within 3 minutes. You do not have to write the numbers down in the order in which they were dictated. Just write down as many numbers as you can recall.

Note that **you are not allowed to write anything while the dictation is going on; otherwise you will be excluded from the session. This is an individual task, so it is not permitted to discuss the numbers with any of the other participants. Doing so will also lead to exclusion from the session.** So you should listen carefully what the numbers are, memorize them and then reproduce as many of these numbers as you can on the response sheet. You cannot write more than 15 numbers (any number that would be reported after the 15th one would not be considered).

We will now play a practice round of this task with only 5 numbers. You will not earn anything from this practice round but please follow the instructions carefully.

--Practice: please listen to the 5 numbers and report them on your reporting sheet--

If Task 1 is the one randomly selected for payment, then you get Rs.10 per number you recall correctly in the 3 minutes. For example, if you recall correctly 2 numbers, you will earn $2 \times 10 = \text{Rs.}$

20; if you recall 10 numbers, you will earn $10 \times 10 = \text{Rs. } 100$. Your payment does not decrease if you report an incorrect number.

We refer to this payment as the **piece rate payment**.

If you have any question, please raise your hand and we will answer your question in private.

--Task 1 will start now. Please listen to the dictated numbers carefully and do not write anything before you are invited to do so. --

-- Now, please write down as many of the dictated numbers as you can recall in the next 3 minutes. --

-- Three minutes are over. Please stop writing immediately. --

Question 1.1

-- Please indicate on your reporting sheet in the box in front of "Question 1.1" how many numbers out of those you have reported you think you have correctly recalled. If this task is selected for payment, you will receive an additional Rs. 50 if your prediction matches your actual score. --

Task 2. Tournament

As in Task 1, after listening to a series of 15 dictated numbers, you will be given 3 minutes to write down as many recalled numbers as possible (in the limit of 15). However for this task your payment depends on your performance relative to that of a group of other participants.

Each group consists of six people, out of which three are from the General Category and three are from the Scheduled Caste category. Thus, you are in a group with five other people present in this session. You will not know who the five other people in your group are. The composition of your group of six remains the same until you are no longer in a group of six.

If Task 2 is the one randomly selected for payment, then your earnings depend on your number of correct recalls compared to that of the five other people in your group. The two group members who correctly recall the most numbers are the winners. They will receive Rs. 30 each per correct recall, while the four other group members receive no payment. So if you are among the two top performers, then you will earn Rs. 30 for each correct number that you recall in this task

You will not be informed of how you did in the tournament relative to others until all four tasks have been completed. If there are ties the winner will be randomly determined.

We refer to this as the **tournament payment**.

If you have any question, please raise your hand and we will answer your question in private.

--Task 2 will start now. Please listen to the dictated numbers carefully and do not write anything before you are invited to do so. --

-- Now, please write down as many of the dictated numbers as you can recall in the next 3 minutes. --

-- Three minutes are over. Please stop writing immediately. --

*-- **Question 2.1.** Please indicate on your reporting sheet in the box in front of "Question 2.1" how many numbers out of those you have reported you think you have correctly recalled. If this task is*

selected for payment, you will receive an additional Rs. 50 if your prediction matches your actual score.

Question 2.2a. Please indicate on your reporting sheet in the box in front of “Question 2.2a” which rank, between 1 and 6 you think you have got in Task 2, compared to the five other group members. A rank of 1 means you think you got the highest number of correct recalls in the group and rank 6 means you think you got the lowest number of correct recalls in the group and similar for ranks between 1 and 6. If this task is selected for payment, you will receive an additional Rs.50 if your guess is correct. –

Question 2.2b. Please indicate on your reporting sheet in the box in front of “Question 2.2b” which rank, between 1 and 3 you think you have got in Task 2, compared to the three other group members of your own caste. A rank of 1 means you think you got the highest number of correct recalls within your own caste in your group and rank 3 means you think you got the lowest number of correct recalls within your caste in the group and similar for ranks between 1 and 3. If this task is selected for payment, you will receive an additional Rs.50 if your guess is correct. –

Question 2.3. Please indicate on your reporting sheet in the box in front of “Question 2.3” what chance is that you will be among the top two scorers in your group of six in this Task. Please indicate any number between 0 and 100, with 0 if you are absolutely sure you are not among the top two scorers in your group of six, 100 if you are absolutely sure that you are among the top two scorers, and some number in between 0 and 100 depending on how sure you are of being among the top two scorers. The higher this number, the more confident you are in being among the top two scorers. You will receive a maximum bonus of Rs.50 and a minimum bonus of 0 for answering this question. The more truthful you are in your report, the higher the bonus will be. In other words, your best interest is in truthfully reporting what you think your chances of being among the top two are. If you are interested in knowing how your bonus is calculated, ask us after the study is over.

Task 3. Choice

As in the previous two tasks, after listening to a series of 15 dictated numbers, you will be given 3 minutes to write down as many recalled numbers as possible. However, before that, you will get to choose which of the two previous payment modes you prefer to apply to your performance in Task 3. You can either choose to be paid according to the *piece rate*, or according to the *tournament*.

If Task 3 is randomly selected for payment, then your earnings for this task are determined as follows.

- If you choose the *piece rate* (i.e. the payment mode used in Task 1), you receive Rs. 10 per number correctly recalled.
- If you choose the *tournament* (i.e. the payment mode used in Task 2), your performance in Task 3 will be evaluated relative to the performance of the other five participants of your group in the Task 2 -Tournament. Remember, out of the six people in each group, three are from General Category and three are from Scheduled Caste category. The Task 2-tournament is the one you just completed. If you correctly recall more numbers than four of your other group members in Task 2, then you receive Rs. 30 for each correctly recalled number. You will receive no earnings for this task if you choose the tournament and are not among the two winners. You will not be informed of how you did in the tournament until the end of the session. If there are ties the winner will be randomly determined.

If you have any question, please raise your hand and we will answer your question in private.

--Task 3 will start now.

Question 3.1. Please indicate on your reporting sheet which payment scheme you prefer to apply to your performance in Task 3. Strike through the option which you would not like to select and circle the option which you would like to select:

Example 1: If you want to be paid according to Piece rate and not according to Tournament, you should enter:

Piece rate

Tournament

Example 2: If you want to be according to Tournament and not according to Piece rate you should enter:

Piece rate

Tournament

Please select your payment option here:

1. *Piece rate*
2. *Tournament*

Now, please listen to the dictated numbers carefully and do not write anything before you are invited to do so. --

-- Now, please write down as many of the dictated numbers as you can recall in the next 3 minutes. --

-- Three minutes are over. Please stop writing immediately. --

--Question 3.2. *Please indicate on your reporting sheet in the box in front of “Question 3.2” how many numbers out of those you have reported you think you have correctly recalled. If this task is selected for payment, you will receive an additional Rs. 50 if your prediction matches your actual score.*

Question 3.3a. *Please indicate on your reporting sheet in the box in front of “Question 3.3a” which rank, between 1 for the highest number of correct recalls to 6 for the lowest number of correct recalls, you think you have got in Task 3, compared to the five other group members in Task 2. If this task is selected for payment, you will receive an additional Rs.50 if your guess is correct. We ask you to answer this question even if you have chosen the piece rate payment mode.*

Question 3.3b. *Please indicate on your reporting sheet in the box in front of “Question 3.3b” which rank, between 1 and 3 you think you have got in Task 2, compared to the three other group members of your own caste. A rank of 1 means you think you got the highest number of correct recalls within your own caste in your group and rank 3 means you think you got the lowest number of correct recalls within your caste in the group and similar for ranks between 1 and 3. If this task is selected for payment, you will receive an additional Rs.50 if your guess is correct. --*

Question 3.4. *Please indicate on your reporting sheet in the box in front of “Question 3.4” what chance is that you will be among the top two scorers in your group of six in this Task. Please indicate any number between 0 and 100, with 0 if you are absolutely sure you are not among the top two scorers in your group of six, 100 if you are absolutely sure that you are among the top two scorers, and some number in between 0 and 100 depending on how sure you are of being among the top two scorers. The higher this number, the more confident you are in being among the top two scorers. You will receive a maximum bonus of Rs.50 and a minimum bonus of 0 for answering this question. The more truthful you are in your report, the higher the bonus will be. In other words, your best interest is in truthfully reporting what you think your chances of being among the top two are. If you are interested in knowing how your bonus is calculated, ask us after the study is over. We ask you to answer this question even if you have chosen the piece rate payment mode. --*

-- We will continue with Task 4 but before that please fill out a short survey. --

Task 4. BiB Choice

For Task 4 you will be asked to throw as many balls as you can into a bucket.

We will give you fifteen balls and a bucket will be placed at a distance of 3.5 meters. You will be asked to throw each of the fifteen balls into the bucket within 3 minutes. You will perform the task privately, one at a time, but in the presence of one of the experimenters, who will note down your performance.

However, before that, you will get to choose which of the two payment modes you prefer to apply to your performance in Task 4. You can either choose to be paid according to the *piece rate*, or according to the *tournament*.

If Task 4 is randomly selected for payment, then your earnings for this task are determined as follows.

- If you choose the *piece rate* (i.e. the payment mode used in Task 1), you receive Rs. 10 per successful throw.
- If you choose the *tournament* (i.e. the payment mode used in Task 2), your performance in Task 4 will be evaluated relative to the performance of the other five participants of your group. Remember, out of the six people in each group, three are from General Category and three are from Scheduled Caste category. If you successfully throw more balls than four of your other group members, then you receive Rs. 30 for each successful throw. You will receive no earnings for this task if you choose the tournament and are not among the two winners. You will not be informed of how you did in the tournament until the end of the session. If there are ties the winner will be randomly determined.

If you have any question, please raise your hand and we will answer your question in private.

--Task 4 will start now.

Question 4.1. Please indicate on your reporting sheet which payment scheme you prefer to apply to your performance in Task 4. Strike through the option which you would not like to select and circle the option which you would like to select:

Example 1: If you want to be paid according to Piece rate and not according to Tournament, you should enter:

Piece rate

~~Tournament~~

Example 2: If you want to be according to Tournament and not according to Piece rate you should enter:

~~Piece rate~~

Tournament

Please select your payment option here:

1. *Piece rate*
2. *Tournament*

--**Question 4.2.** Please indicate on your reporting sheet in the box in front of "Question 4.2" how many balls you think you will have successfully inserted. If this task is selected for payment, you will receive an additional Rs. 50 if your prediction matches your actual score

-- Task 3 will start now. Please prepare yourself to throw each of the 15 balls into the bucket. Your three-minute time starts now. --

-- Three minutes are over. Please stop throwing now and return to your seat. --

Question 4.3. Please indicate on your reporting sheet in the box in front of “Question 4.3” which rank, between 1 for the highest number of successful throws to 6 for the lowest number of successful throws, you think you have got in Task 4, compared to the five other group members in Task 5. If this task is selected for payment, you will receive an additional Rs.50 if your guess is correct. We ask you to answer this question even if you have chosen the piece rate payment mode. –

Question 4.4. Please indicate on your reporting sheet in the box in front of “Question 4.4” what chance is that you will be among the top two scorers in your group of six in this Task. Please indicate any number between 0 and 100, with 0 if you are absolutely sure you are not among the top two scorers in your group of six, 100 if you are absolutely sure that you are among the top two scorers, and some number in between 0 and 100 depending on how sure you are of being among the top two scorers. The higher this number, the more confident you are in being among the top two scorers. You will receive a maximum bonus of Rs.50 and a minimum bonus of 0 for answering this question. The more truthful you are in your report, the higher the bonus will be. In other words, your best interest is in truthfully reporting what you think your chances of being among the top two are. If you are interested in knowing how your bonus is calculated, ask us after the study is over. We ask you to answer this question even if you have chosen the piece rate payment mode. --

Instructions for Treatment 1 (T1)

We will describe below the instructions for the tasks.

Task 1. Piece rate

For Task 1, you will be asked to memorize and report numbers and then, we will ask you some questions.

We will dictate fifteen numbers between 1 and 100. Each number will be dictated twice. After the completion of the dictation, you will be asked to recall as many numbers as you can and then write them down on the response sheet provided to you within 3 minutes. You do not have to write the numbers down in the order in which they were dictated. Just write down as many numbers as you can recall.

Note that **you are not allowed to write anything while the dictation is going on; otherwise you will be excluded from the session. This is an individual task, so it is not permitted to discuss the numbers with any of the other participants. Doing so will also lead to exclusion from the session.** So you should listen carefully what the numbers are, memorize them and then reproduce as many of these numbers as you can on the response sheet. You cannot write more than 15 numbers (any number that would be reported after the 15th one would not be considered).

We will now play a practice round of this task with only 5 numbers. You will not earn anything from this practice round but please follow the instructions carefully.

--Practice: please listen to the 5 numbers and report them on your reporting sheet--

If Task 1 is the one randomly selected for payment, then you get Rs.10 per number you recall correctly in the 3 minutes. For example, if you recall correctly 2 numbers, you will earn $2 \times 10 = \text{Rs. } 20$; if you recall 10 numbers, you will earn $10 \times 10 = \text{Rs. } 100$. Your payment does not decrease if you report an incorrect number.

We refer to this payment as the **piece rate payment**.

If you have any question, please raise your hand and we will answer your question in private.

--Task 1 will start now. Please listen to the dictated numbers carefully and do not write anything before you are invited to do so. --

-- Now, please write down as many of the dictated numbers as you can recall in the next 3 minutes. --

-- Three minutes are over. Please stop writing immediately. --

Question 1.1

-- Please indicate on your reporting sheet in the box in front of "Question 1.1" how many numbers out of those you have reported you think you have correctly recalled. If this task is selected for payment, you will receive an additional Rs. 50 if your prediction matches your actual score. --

Task 2. Tournament

As in Task 1, after listening to a series of 15 dictated numbers, you will be given 3 minutes to write down as many recalled numbers as possible (in the limit of 15). However for this task your payment depends on your performance relative to that of a group of other participants.

Each group consists of six people, out of which three are from the General Category and three are from the Scheduled Caste category. Thus, you are in a group with five other people present in this session. You will not know who the five other people in your group are. The composition of your group of six remains the same until you are no longer in a group of six.

If Task 2 is the one randomly selected for payment, then your earnings depend on your number of correct recalls compared to that of the five other people in your group. The two group members who correctly recall the most numbers are the winners. They will receive Rs. 30 each per correct recall, while the four other group members receive no payment. So if you are among the two top performers, then you will earn Rs. 30 for each correct number that you recall in this task

You will not be informed of how you did in the tournament relative to others until all four tasks have been completed. If there are ties the winner will be randomly determined.

We refer to this as the **tournament payment**.

If you have any question, please raise your hand and we will answer your question in private.

--Task 2 will start now. Please listen to the dictated numbers carefully and do not write anything before you are invited to do so. --

-- Now, please write down as many of the dictated numbers as you can recall in the next 3 minutes. --

-- Three minutes are over. Please stop writing immediately. --

Question 2.1. *Please indicate on your reporting sheet in the box in front of "Question 2.1" how many numbers out of those you have reported you think you have correctly recalled. If this task is selected for payment, you will receive an additional Rs. 50 if your prediction matches your actual score.*

Question 2.2a. *Please indicate on your reporting sheet in the box in front of "Question 2.2a" which rank, between 1 and 6 you think you have got in Task 2, compared to the five other group members. A rank of 1 means you think you got the highest number of correct recalls in the group and rank 6 means you think you got the lowest number of correct recalls in the group and similar for ranks between 1 and 6. If this task is selected for payment, you will receive an additional Rs.50 if your guess*

is correct.

Question 2.2b. Please indicate on your reporting sheet in the box in front of “Question 2.2b” which rank, between 1 and 3 you think you have got in Task 2, compared to the three other group members of your own caste. A rank of 1 means you think you got the highest number of correct recalls within your own caste in your group and rank 3 means you think you got the lowest number of correct recalls within your caste in the group and similar for ranks between 1 and 3. If this task is selected for payment, you will receive an additional Rs.50 if your guess is correct. –

Question 2.3. Please indicate on your reporting sheet in the box in front of “Question 2.3” what chance is that you will be among the top two scorers in your group of six in this Task. Please indicate any number between 0 and 100, with 0 if you are absolutely sure you are not among the top two scorers in your group of six, 100 if you are absolutely sure that you are among the top two scorers, and some number in between 0 and 100 depending on how sure you are of being among the top two scorers. The higher this number, the more confident you are in being among the top two scorers. You will receive a maximum bonus of Rs.50 and a minimum bonus of 0 for answering this question. The more truthful you are in your report, the higher the bonus will be. In other words, your best interest is in truthfully reporting what you think your chances of being among the top two are. If you are interested in knowing how your bonus is calculated, ask us after the study is over.

Task 3. Choice

As in the previous two tasks, after listening to a series of 15 dictated numbers, you will be given 3 minutes to write down as many recalled numbers as possible. However, before that, you will get to choose which of the two previous payment modes you prefer to apply to your performance in Task 3. You can either choose to be paid according to the *piece rate*, or according to the *tournament*.

If Task 3 is randomly selected for payment, then your earnings for this task are determined as follows.

- If you choose the *piece rate* (i.e. the payment mode used in Task 1), you receive Rs. 10 per number correctly recalled.
- If you choose the *tournament* (i.e. the payment mode used in Task 2), your performance in Task 3 will be evaluated relative to the performance of the other five participants of your group in the Task 2 -Tournament. Remember, out of the six people in each group, three are from General Category and three are from Scheduled Caste category. The Task 2-tournament is the one you just completed. If you correctly recall more numbers than four of your other group members in Task 2, then you receive Rs. 30 for each correctly recalled number. You will receive no earnings for this task if you choose the tournament and are not among the two winners. You will not be informed of how you did in the tournament until the end of the session. If there are ties the winner will be randomly determined.

If you have any question, please raise your hand and we will answer your question in private.

--Task 3 will start now.

Question 3.1. Please indicate on your reporting sheet which payment scheme you prefer to apply to your performance in Task 3. Strike through the option which you would not like to select and circle the option which you would like to select:

Example 1: If you want to be paid according to Piece rate and not according to Tournament, you should enter:

Piece rate

~~Tournament~~

Example 2: If you want to be according to Tournament and not according to Piece rate you should enter:

~~Piece rate~~

Tournament

Please select your payment option here:

1. Piece rate
2. Tournament

Now, please listen to the dictated numbers carefully and do not write anything before you are invited to do so. --

-- Now, please write down as many of the dictated numbers as you can recall in the next 3 minutes. --

-- Three minutes are over. Please stop writing immediately. --

--**Question 3.2.** Please indicate on your reporting sheet in the box in front of “Question 3.2” how many numbers out of those you have reported you think you have correctly recalled. If this task is selected for payment, you will receive an additional Rs. 50 if your prediction matches your actual score.

Question 3.3a. Please indicate on your reporting sheet in the box in front of “Question 3.3a” which rank, between 1 for the highest number of correct recalls to 6 for the lowest number of correct recalls, you think you have got in Task 3, compared to the five other group members in Task 2. If this task is selected for payment, you will receive an additional Rs.50 if your guess is correct. We ask you to answer this question even if you have chosen the piece rate payment mode.

Question 3.3b. Please indicate on your reporting sheet in the box in front of “Question 3.3b” which rank, between 1 and 3 you think you have got in Task 2, compared to the three other group members of your own caste. A rank of 1 means you think you got the highest number of correct recalls within your own caste in your group and rank 3 means you think you got the lowest number of correct recalls within your caste in the group and similar for ranks between 1 and 3. If this task is selected for payment, you will receive an additional Rs.50 if your guess is correct. --

Question 3.4. Please indicate on your reporting sheet in the box in front of “Question 3.4” what chance is that you will be among the top two scorers in your group of six in this Task. Please indicate any number between 0 and 100, with 0 if you are absolutely sure you are not among the top two scorers in your group of six, 100 if you are absolutely sure that you are among the top two scorers, and some number in between 0 and 100 depending on how sure you are of being among the top two scorers. The higher this number, the more confident you are in being among the top two scorers. You will receive a maximum bonus of Rs.50 and a minimum bonus of 0 for answering this question. The more truthful you are in your report, the higher the bonus will be. In other words, your best interest is in truthfully reporting what you think your chances of being among the top two are. If you are interested in knowing how your bonus is calculated, ask us after the study is over. We ask you to answer this question even if you have chosen the piece rate payment mode. --

-- We will now collect your response sheet and evaluate if you are among the two winners in your group for Task 2. In the meantime, please fill out a short survey. --

-- We will now privately hand out a feedback slip. The slip has your identity number and announces whether you are a winner or a non-winner. Please keep the announcement confidential. --

Task 4. BiB Choice

For Task 4 you will be asked to throw as many balls as you can into a bucket.

We will give you fifteen balls and a bucket will be placed at a distance of 3.5 meters. You will be asked to throw each of the fifteen balls into the bucket within 3 minutes. You will perform the task privately, one at a time, but in the presence of one of the experimenters, who will note down your performance.

However, before that, you will get to choose which of the two payment modes you prefer to apply to your performance in Task 4. You can either choose to be paid according to the *piece rate*, or according to the *tournament*.

If Task 4 is randomly selected for payment, then your earnings for this task are determined as follows.

- If you choose the *piece rate* (i.e. the payment mode used in Task 1), you receive Rs. 10 per successful throw.
- If you choose the *tournament* (i.e. the payment mode used in Task 2), your performance in Task 4 will be evaluated relative to the performance of the other five participants of your group. Remember, out of the six people in each group, three are from General Category and three are from Scheduled Caste category. If you successfully throw more balls than four of your other group members, then you receive Rs. 30 for each successful throw. You will receive no earnings for this task if you choose the tournament and are not among the two winners. You will not be informed of how you did in the tournament until the end of the session. If there are ties the winner will be randomly determined.

If you have any question, please raise your hand and we will answer your question in private.

--Task 4 will start now.

Question 4.1. Please indicate on your reporting sheet which payment scheme you prefer to apply to your performance in Task 4. Strike through the option which you would not like to select and circle the option which you would like to select:

Example 1: If you want to be paid according to Piece rate and not according to Tournament, you should enter:

Piece rate

~~Tournament~~

Example 2: If you want to be according to Tournament and not according to Piece rate you should enter:

~~Piece rate~~

Tournament

Please select your payment option here:

1. *Piece rate*
2. *Tournament*

--**Question 4.2.** Please indicate on your reporting sheet in the box in front of “Question 4.2” how many balls you think you will have successfully inserted. If this task is selected for payment, you will receive an additional Rs. 50 if your prediction matches your actual score

-- Task 3 will start now. Please prepare yourself to throw each of the 15 balls into the bucket. Your three-minute time starts now. --

-- Three minutes are over. Please stop throwing now and return to your seat. --

Question 4.3. Please indicate on your reporting sheet in the box in front of “Question 4.3” which rank, between 1 for the highest number of successful throws to 6 for the lowest number of successful throws, you think you have got in Task 4, compared to the five other group members in Task 5. If this task is selected for payment, you will receive an additional Rs.50 if your guess is correct. We ask you to answer this question even if you have chosen the piece rate payment mode. –

Question 4.4. Please indicate on your reporting sheet in the box in front of “Question 4.4” what chance is that you will be among the top two scorers in your group of six in this Task. Please indicate

any number between 0 and 100, with 0 if you are absolutely sure you are not among the top two scorers in your group of six, 100 if you are absolutely sure that you are among the top two scorers, and some number in between 0 and 100 depending on how sure you are of being among the top two scorers. The higher this number, the more confident you are in being among the top two scorers. You will receive a maximum bonus of Rs.50 and a minimum bonus of 0 for answering this question. The more truthful you are in your report, the higher the bonus will be. In other words, your best interest is in truthfully reporting what you think your chances of being among the top two are. If you are interested in knowing how your bonus is calculated, ask us after the study is over. We ask you to answer this question even if you have chosen the piece rate payment mode. --

Instructions for Treatment 2 (T2)

We will describe below the instructions for the tasks.

Task 1. Piece rate

For Task 1, you will be asked to memorize and report numbers and then, we will ask you some questions.

We will dictate fifteen numbers between 1 and 100. Each number will be dictated twice. After the completion of the dictation, you will be asked to recall as many numbers as you can and then write them down on the response sheet provided to you within 3 minutes. You do not have to write the numbers down in the order in which they were dictated. Just write down as many numbers as you can recall.

Note that **you are not allowed to write anything while the dictation is going on; otherwise you will be excluded from the session. This is an individual task, so it is not permitted to discuss the numbers with any of the other participants. Doing so will also lead to exclusion from the session.** So you should listen carefully what the numbers are, memorize them and then reproduce as many of these numbers as you can on the response sheet. You cannot write more than 15 numbers (any number that would be reported after the 15th one would not be considered).

We will now play a practice round of this task with only 5 numbers. You will not earn anything from this practice round but please follow the instructions carefully.

--Practice: please listen to the 5 numbers and report them on your reporting sheet--

If Task 1 is the one randomly selected for payment, then you get Rs.10 per number you recall correctly in the 3 minutes. For example, if you recall correctly 2 numbers, you will earn $2 \times 10 = \text{Rs. } 20$; if you recall 10 numbers, you will earn $10 \times 10 = \text{Rs. } 100$. Your payment does not decrease if you report an incorrect number.

We refer to this payment as the **piece rate payment**.

If you have any question, please raise your hand and we will answer your question in private.

--Task 1 will start now. Please listen to the dictated numbers carefully and do not write anything before you are invited to do so. --

-- Now, please write down as many of the dictated numbers as you can recall in the next 3 minutes. --

-- Three minutes are over. Please stop writing immediately. --

Question 1.1

-- Please indicate on your reporting sheet in the box in front of "Question 1.1" how many numbers out of those you have reported you think you have correctly recalled. If this task is selected for payment, you will receive an additional Rs. 50 if your prediction matches your actual score. --

Task 2. Quota-Tournament

As in Task 1, after listening to a series of 15 dictated numbers, you will be given 3 minutes to write down as many recalled numbers as possible (in the limit of 15). However, for this task your payment depends on your performance relative to that of a group of other participants through a method called **Quota-Tournament**.

Before proceeding, we explain the rules of the **Quota-Tournament**.

Each group consists of six people, out of which three are from the General Category and three are from the Scheduled Caste category. Thus, you are in a group with five other people present in this session. You will not know who the five other people in your group are. The composition of your group of six remains the same until you are no longer in a group of six. In Quota-Tournament the winners are determined as follows:

- *If you belong to the Scheduled Caste category:* you are a winner and receive Rs. 30 for each correctly recalled number if you have a better Task 2 - performance than (i) the other two participants from the Scheduled Caste category in your group in Task 2, **or** (ii) at least four members of your group in Task 2. If you are not a winner, then you do not earn anything.
- *If you belong to the General category:* you receive Rs. 30 for each correctly recalled number if you have a better Task 2 - performance than (i) the other two participants from the General category in your group in Task 2, **and** (ii) four members of your group in Task 2. If you are not a winner, then you do not earn anything.

You will not be informed of how you did in the tournament until the end of the session. If there are ties, the winner will be randomly determined.

--Task 2 will start now. Please listen to the dictated numbers carefully and do not write anything before you are invited to do so. --

-- Now, please write down as many of the dictated numbers as you can recall in the next 3 minutes. --

-- Three minutes are over. Please stop writing immediately. --

Question 2.1. Please indicate on your reporting sheet in the box in front of "Question 2.1" how many numbers out of those you have reported you think you have correctly recalled. If this task is selected for payment, you will receive an additional Rs. 50 if your prediction matches your actual score.

Question 2.2a. Please indicate on your reporting sheet in the box in front of "Question 2.2a" which rank, between 1 and 6 you think you have got in Task 2, compared to the five other group members. A rank of 1 means you think you got the highest number of correct recalls in the group and rank 6 means you think you got the lowest number of correct recalls in the group and similar for ranks between 1 and 6. If this task is selected for payment, you will receive an additional Rs.50 if your guess is correct.

Question 2.2b. Please indicate on your reporting sheet in the box in front of "Question 2.2b" which rank, between 1 and 3 you think you have got in Task 2, compared to the three other group members of your own caste. A rank of 1 means you think you got the highest number of correct recalls within your own caste in your group and rank 3 means you think you got the lowest number of correct recalls within your caste in the group and similar for ranks between 1 and 3. If this task is selected for payment, you will receive an additional Rs.50 if your guess is correct. --

Question 2.3. Please indicate on your reporting sheet in the box in front of “Question 2.3” what chance is that you will be among the top two scorers in your group of six in this Task. Please indicate any number between 0 and 100, with 0 if you are absolutely sure you are not among the top two scorers in your group of six, 100 if you are absolutely sure that you are among the top two scorers, and some number in between 0 and 100 depending on how sure you are of being among the top two scorers. The higher this number, the more confident you are in being among the top two scorers. You will receive a maximum bonus of Rs.50 and a minimum bonus of 0 for answering this question. The more truthful you are in your report, the higher the bonus will be. In other words, your best interest is in truthfully reporting what you think your chances of being among the top two are. If you are interested in knowing how your bonus is calculated, ask us after the study is over.

Task 3. Choice

As in the previous two tasks, after listening to a series of 15 dictated numbers, you will be given 3 minutes to write down as many recalled numbers as possible. However, before that, you will get to choose which of the two previous payment modes you prefer to apply to your performance in Task 3. You can either choose to be paid according to the *piece rate*, or according to the *quota-tournament*.

If Task 3 is randomly selected for payment, then your earnings for this task are determined as follows.

- If you choose the *piece rate* (i.e. the payment mode used in Task 1), you receive Rs. 10 per number correctly recalled.
- If you choose the *Quota-tournament*, your performance in Task 3 will be evaluated relative to the performance of the other five participants of your group in the Task 2.
 - * If you belong to the *Scheduled Caste category*: you receive Rs. 30 for each correctly recalled number if you are a winner i.e. you have a better Task 3-performance than (i) the other two participants from the Scheduled Caste category in your group in Task 2, **or** (ii) four members of your group in Task 2. If you are not a winner, then you do not earn anything.
 - * If you belong to the *General category*: you receive Rs. 30 for each correctly recalled number if you are a winner i.e. you have a better Task 3- performance than (i) the other two participants from the General category in your group in Task 2, **and** (ii) four members of your group in Task 2. If you are not a winner, then you do not earn anything.

You will not be informed of how you did in the tournament until the end of the session. If there are ties the winner will be randomly determined.

If you have any question, please raise your hand and we will answer your question in private.

--Task 3 will start now.

Question 3.1. Please indicate on your reporting sheet which payment scheme you prefer to apply to your performance in Task 3. Strike through the option which you would not like to select and circle the option which you would like to select:

Example 1: If you want to be paid according to Piece rate and not according to Tournament, you should enter:

Piece rate
~~Tournament~~

Example 2: If you want to be according to Tournament and not according to Piece rate you should enter:

~~Piece rate~~
Tournament

Please select your payment option here:

1. *Piece rate*

2. Quota-Tournament

Now, please listen to the dictated numbers carefully and do not write anything before you are invited to do so. --

-- Now, please write down as many of the dictated numbers as you can recall in the next 3 minutes. --

-- Three minutes are over. Please stop writing immediately. --

--Question 3.2. Please indicate on your reporting sheet in the box in front of “Question 3.2” how many numbers out of those you have reported you think you have correctly recalled. If this task is selected for payment, you will receive an additional Rs. 50 if your prediction matches your actual score.

Question 3.3a. Please indicate on your reporting sheet in the box in front of “Question 3.3a” which rank, between 1 for the highest number of correct recalls to 6 for the lowest number of correct recalls, you think you have got in Task 3, compared to the five other group members in Task 2. If this task is selected for payment, you will receive an additional Rs.50 if your guess is correct. We ask you to answer this question even if you have chosen the piece rate payment mode.

Question 3.3b. Please indicate on your reporting sheet in the box in front of “Question 3.3b” which rank, between 1 and 3 you think you have got in Task 2, compared to the three other group members of your own caste. A rank of 1 means you think you got the highest number of correct recalls within your own caste in your group and rank 3 means you think you got the lowest number of correct recalls within your caste in the group and similar for ranks between 1 and 3. If this task is selected for payment, you will receive an additional Rs.50 if your guess is correct. --

Question 3.4. Please indicate on your reporting sheet in the box in front of “Question 3.4” what chance is that you will be among the top two scorers in your group of six in this Task. Please indicate any number between 0 and 100, with 0 if you are absolutely sure you are not among the top two scorers in your group of six, 100 if you are absolutely sure that you are among the top two scorers, and some number in between 0 and 100 depending on how sure you are of being among the top two scorers. The higher this number, the more confident you are in being among the top two scorers. You will receive a maximum bonus of Rs.50 and a minimum bonus of 0 for answering this question. The more truthful you are in your report, the higher the bonus will be. In other words, your best interest is in truthfully reporting what you think your chances of being among the top two are. If you are interested in knowing how your bonus is calculated, ask us after the study is over. We ask you to answer this question even if you have chosen the piece rate payment mode. --

-- We will now collect your response sheet and evaluate if you are among the two winners in your group for Task 2. In the meantime, please fill out a short survey. --

-- We will now privately hand out a feedback slip. The slip has your identity number and announces whether you are a winner or a non-winner. Please keep the announcement confidential. --

Task 4. BiB Choice

For Task 4 you will be asked to throw as many balls as you can into a bucket.

We will give you fifteen balls and a bucket will be placed at a distance of 3.5 meters. You will be asked to throw each of the fifteen balls into the bucket within 3 minutes. You will perform the task privately, one at a time, but in the presence of one of the experimenters, who will note down your performance.

However, before that, you will get to choose which of the two payment modes you prefer to apply to your performance in Task 4. You can either choose to be paid according to the *piece rate*, or according to the *tournament*.

If Task 4 is randomly selected for payment, then your earnings for this task are determined as follows.

- If you choose the *piece rate* (i.e. the payment mode used in Task 1), you receive Rs. 10 per successful throw.
- If you choose the *tournament* (note this is different from Quota-Tournament used in Task 2), your performance in Task 4 will be evaluated relative to the performance of the other five participants of your group. Remember, out of the six people in each group, three are from General Category and three are from Scheduled Caste category. If you successfully throw more balls than four of your other group members, then you receive Rs. 30 for each successful throw. You will receive no earnings for this task if you choose the tournament and are not among the two winners. You will not be informed of how you did in the tournament until the end of the session. If there are ties the winner will be randomly determined.

If you have any question, please raise your hand and we will answer your question in private.

--Task 4 will start now.

Question 4.1. Please indicate on your reporting sheet which payment scheme you prefer to apply to your performance in Task 4. Strike through the option which you would not like to select and circle the option which you would like to select:

Example 1: If you want to be paid according to Piece rate and not according to Tournament, you should enter:

Piece rate

~~Tournament~~

Example 2: If you want to be according to Tournament and not according to Piece rate you should enter:

~~Piece rate~~

Tournament

Please select your payment option here:

1. *Piece rate*
2. *Tournament*

Question 4.2. Please indicate on your reporting sheet in the box in front of “Question 4.2” how many balls you think you will have successfully inserted. If this task is selected for payment, you will receive an additional Rs. 50 if your prediction matches your actual score

-- Task 3 will start now. Please prepare yourself to throw each of the 15 balls into the bucket. Your three-minute time starts now. --

-- Three minutes are over. Please stop throwing now and return to your seat. --

Question 4.3. Please indicate on your reporting sheet in the box in front of “Question 4.3” which rank, between 1 for the highest number of successful throws to 6 for the lowest number of successful throws, you think you have got in Task 4, compared to the five other group members in Task 5. If this task is selected for payment, you will receive an additional Rs.50 if your guess is correct. We ask you to answer this question even if you have chosen the piece rate payment mode. –

Question 4.4. Please indicate on your reporting sheet in the box in front of “Question 4.4” what chance is that you will be among the top two scorers in your group of six in this Task. Please indicate any number between 0 and 100, with 0 if you are absolutely sure you are not among the top two scorers in your group of six, 100 if you are absolutely sure that you are among the top two scorers, and some number in between 0 and 100 depending on how sure you are of being among the top two scorers. The higher this number, the more confident you are in being among the top two scorers. You will receive a maximum bonus of Rs.50 and a minimum bonus of 0 for answering this question. The more truthful you are in your report, the higher the bonus will be. In other words, your best interest is

in truthfully reporting what you think your chances of being among the top two are. If you are interested in knowing how your bonus is calculated, ask us after the study is over. We ask you to answer this question even if you have chosen the piece rate payment mode. --

Instruction for Treatment 3 (T3)

We will describe below the instructions for Task 1.

Task 1. Piece rate

For Task 1, you will be asked to throw as many balls as you can into a bucket.

We will give you fifteen balls and a bucket will be placed at a distance of 3.5 meters. You will be asked to throw each of the fifteen balls into the bucket within 3 minutes. You will perform the task privately, one at a time, but in the presence of one of the experimenters, who will note down your performance.

This is an individual task, so it is not permitted to discuss the number of balls you have been able to put in the bucket with any of the other participants. Doing so will also lead to exclusion from the session.

We will now play a practice round of this task with only 5 balls. You will not earn anything from this practice round but please follow the instructions carefully.

--Practice: please throw the 5 balls and the experimenter will note down your score.--

If Task 1 is the one randomly selected for payment, then you get Rs.10 per ball you successfully throw into the bucket. For example, if you successfully throw 2 balls into the bucket, you will earn $2 \times 10 = \text{Rs. } 20$; if you successfully throw 10 balls, you will earn $10 \times 10 = \text{Rs. } 100$. Your payment does not decrease if you are unsuccessful in throwing the ball into the bucket.

We refer to this payment as the **piece rate payment**.

If you have any question, please raise your hand and we will answer your question in private.

Question 1.1

-- Please indicate on your reporting sheet in the box in front of "Question 1.1" how many balls do you think you will successfully insert into the bucket. If this task is selected for payment, you will receive an additional Rs. 50 if your prediction matches your actual score. --

--Task 1 will start now. Please prepare yourself to throw each of the 15 balls into the bucket. Your three-minute time starts now. --

-- Three minutes are over. Please stop throwing now and return to your seat.—

Task 2. Tournament

As in Task 1, you will have 15 balls and you will be given 3 minutes to throw as many balls as you can into the bucket. However for this task your payment depends on your performance relative to that of a group of other participants.

Each group consists of six people, out of which three are from the General Category and three are from the Scheduled Caste category. Thus, you are in a group with five other people present in this

session. You will not know who the five other people in your group are. The composition of your group of six remains the same until you are no longer in a group of six.

If Task 2 is the one randomly selected for payment, then your earnings depend on your score in the ball-in-bucket game compared to that of the five other people in your group. The two group members who can put the highest number of balls in the bucket are the winners. They will receive Rs. 30 each per successful ball, while the four other group members receive no payment. So if you are among the two top performers, then you will earn Rs. 30 for each successful ball that you recall in this task

You will not be informed of how you did in the tournament relative to others until all four tasks have been completed. If there are ties the winner will be randomly determined.

We refer to this as the **tournament payment**.

If you have any question, please raise your hand and we will answer your question in private.

-- **Question 2.1.** Please indicate on your reporting sheet in the box in front of “Question 2.1” how many balls you think you will successfully insert into the bucket. If this task is selected for payment, you will receive an additional Rs. 50 if your prediction matches your actual score.

-- Task 2 will start now. Please prepare yourself to throw each of the 15 balls into the bucket. Your three-minute time starts now. --

-- Three minutes are over. Please stop throwing now and return to your seat. --

Question 2.2. Please indicate on your reporting sheet in the box in front of “Question 2.2” which rank, between 1 and 6 you think you have got in Task 2, compared to the five other group members. A rank of 1 means you think you got the highest number of successful throws in the group and rank 6 means you think you got the lowest number of successful throws in the group and similar for ranks between 1 and 6. If this task is selected for payment, you will receive an additional Rs.50 if your guess is correct. –

Question 2.3. Please indicate on your reporting sheet in the box in front of “Question 2.3” what chance is that you will be among the top two scorers in your group of six in this Task. Please indicate any number between 0 and 100, with 0 if you are absolutely sure you are not among the top two scorers in your group of six, 100 if you are absolutely sure that you are among the top two scorers, and some number in between 0 and 100 depending on how sure you are of being among the top two scorers. The higher this number, the more confident you are in being among the top two scorers. You will receive a maximum bonus of Rs.50 and a minimum bonus of 0 for answering this question. The more truthful you are in your report, the higher the bonus will be. In other words, your best interest is in truthfully reporting what you think your chances of being among the top two are. If you are interested in knowing how your bonus is calculated, ask us after the study is over.

Task 3. Choice

As in the previous two tasks, you will have 15 balls and you will be given 3 minutes to throw as many balls as you can into the bucket. However, before that, you will get to choose which of the two previous payment modes you prefer to apply to your performance in Task 3. You can either choose to be paid according to the *piece rate*, or according to the *tournament*.

If Task 3 is randomly selected for payment, then your earnings for this task are determined as follows.

- If you choose the *piece rate* (i.e. the payment mode used in Task 1), you receive Rs. 10 per successful throw.
- If you choose the *tournament* (i.e. the payment mode used in Task 2), your performance in Task 3 will be evaluated relative to the performance of the other five participants of your group in the Task 2 -Tournament. Remember, out of the six people in each group, three are

from General Category and three are from Scheduled Caste category. The Task 2-tournament is the one you just completed. If you successfully throw more balls than four of your other group members in Task 2, then you receive Rs. 30 for each successful throw. You will receive no earnings for this task if you choose the tournament and are not among the two winners. You will not be informed of how you did in the tournament until the end of the session. If there are ties the winner will be randomly determined.

If you have any question, please raise your hand and we will answer your question in private.

--Task 3 will start now.

Question 3.1. Please indicate on your reporting sheet which payment scheme you prefer to apply to your performance in Task 3. Strike through the option which you would not like to select and circle the option which you would like to select:

Example 1: If you want to be paid according to Piece rate and not according to Tournament, you should enter:

Piece rate

~~Tournament~~

Example 2: If you want to be according to Tournament and not according to Piece rate you should enter:

~~Piece rate~~

Tournament

Please select your payment option here:

1. Piece rate
2. Tournament

Question 3.2. Please indicate on your reporting sheet in the box in front of “Question 3.2” how many balls you think you will successfully insert. If this task is selected for payment, you will receive an additional Rs. 50 if your prediction matches your actual score.

-- Task 3 will start now. Please prepare yourself to throw each of the 15 balls into the bucket. Your three-minute time starts now. --

-- Three minutes are over. Please stop throwing now and return to your seat. --

Question 3.3. Please indicate on your reporting sheet in the box in front of “Question 3.3” which rank, between 1 for the highest number of successful throws to 6 for the lowest number of successful throws, you think you have got in Task 3, compared to the five other group members in Task 2. If this task is selected for payment, you will receive an additional Rs.50 if your guess is correct. We ask you to answer this question even if you have chosen the piece rate payment mode. –

Question 3.4. Please indicate on your reporting sheet in the box in front of “Question 3.4” what chance is that you will be among the top two scorers in your group of six in this Task. Please indicate any number between 0 and 100, with 0 if you are absolutely sure you are not among the top two scorers in your group of six, 100 if you are absolutely sure that you are among the top two scorers, and some number in between 0 and 100 depending on how sure you are of being among the top two scorers. The higher this number, the more confident you are in being among the top two scorers. You will receive a maximum bonus of Rs.50 and a minimum bonus of 0 for answering this question. The more truthful you are in your report, the higher the bonus will be. In other words, your best interest is in truthfully reporting what you think your chances of being among the top two are. If you are interested in knowing how your bonus is calculated, ask us after the study is over. We ask you to answer this question even if you have chosen the piece rate payment mode. --

-- We will now collect your response sheet and evaluate if you are among the two winners in your group for Task 2. In the meantime, please fill out a short survey. --
-- We will now privately hand out a feedback slip. The slip has your identity number and announces whether you are a winner or a non-winner. Please keep the announcement confidential. --

Task 4. Choice

As in the previous tasks, you will have 15 balls and you will be given 3 minutes to throw as many balls as you can into the bucket. However, before that, you will get to choose which of the two previous payment modes you prefer to apply to your performance in Task 4. You can either choose to be paid according to the *piece rate*, or according to the *tournament*.

If Task 4 is randomly selected for payment, then your earnings for this task are determined as follows.

- If you choose the *piece rate* (i.e. the payment mode used in Task 1), you receive Rs. 10 per successful throw.
- If you choose the *tournament* (i.e. the payment mode used in Task 2), your performance in Task 4 will be evaluated relative to the performance of the other five participants of your group. Remember, out of the six people in each group, three are from General Category and three are from Scheduled Caste category. If you successfully throw more balls than four of your other group members, then you receive Rs. 30 for each successful throw. You will receive no earnings for this task if you choose the tournament and are not among the two winners. You will not be informed of how you did in the tournament until the end of the session. If there are ties the winner will be randomly determined.

If you have any question, please raise your hand and we will answer your question in private.

--Task 4 will start now.

Question 4.1. Please indicate on your reporting sheet which payment scheme you prefer to apply to your performance in Task 3. Strike through the option which you would not like to select and circle the option which you would like to select:

Example 1: If you want to be paid according to Piece rate and not according to Tournament, you should enter:

Piece rate

~~Tournament~~

Example 2: If you want to be according to Tournament and not according to Piece rate you should enter:

~~Piece rate~~

Tournament

Please select your payment option here:

1. Piece rate
2. Tournament

--**Question 4.2.** Please indicate on your reporting sheet in the box in front of "Question 4.2" how many balls you think you will successfully insert. If this task is selected for payment, you will receive an additional Rs. 50 if your prediction matches your actual score

-- Task 4 will start now. Please prepare yourself to throw each of the 15 balls into the bucket. Your three-minute time starts now. --

-- Three minutes are over. Please stop throwing now and return to your seat. --

Question 4.3. Please indicate on your reporting sheet in the box in front of "Question 4.3" which rank, between 1 for the highest number of successful throws to 6 for the lowest number of successful

throws, you think you have got in Task 4. If this task is selected for payment, you will receive an additional Rs.50 if your guess is correct. We ask you to answer this question even if you have chosen the piece rate payment mode. –

Question 4.4. Please indicate on your reporting sheet in the box in front of “Question 4.4” what chance is that you will be among the top two scorers in your group of six in this Task. Please indicate any number between 0 and 100, with 0 if you are absolutely sure you are not among the top two scorers in your group of six, 100 if you are absolutely sure that you are among the top two scorers, and some number in between 0 and 100 depending on how sure you are of being among the top two scorers. The higher this number, the more confident you are in being among the top two scorers. You will receive a maximum bonus of Rs.50 and a minimum bonus of 0 for answering this question. The more truthful you are in your report, the higher the bonus will be. In other words, your best interest is in truthfully reporting what you think your chances of being among the top two are. If you are interested in knowing how your bonus is calculated, ask us after the study is over. We ask you to answer this question even if you have chosen the piece rate payment mode. --

Task 5 – Investment Task (Common to all treatments)

At the beginning of this Task you will receive Rs. 100. You are asked to choose how many Rs. (between 0 and 100) you wish to invest in a risky option. The amount that you do not invest is for you to keep.

We will toss a coin at the end of the session.

- If the coin comes up heads, your investment is a success. You earn 3 times the amount invested (plus the amount that you did not invest).
- If the coin comes up tails, your investment is a failure. You earn 0 and lose your investment (you keep only the amount that you did not invest).

Example 1. You invest nothing. The coin flip does not affect your earnings for this part. You get the Rs. 100 for sure.

Example 2. You invest all of the Rs. 100. If the coin comes up heads, you earn Rs. 300; if it comes up tails, you earn nothing and end up with 0 in this part.

Example 3. You invest Rs. 40. If the coin comes up heads, you earn 60 (the amount that you did not invest) + 3 x 40 (the amount you invested) = Rs.180. If the coin lands on tails, you earn Rs. 60 (the amount that you did not invest).

If you have any question, please raise your hand and we will answer your question in private.

Question 5.1 Please indicate on your reporting sheet how much you are willing to invest (between 0 and 100).

Exit Survey (Common for all treatments)

Demographic questionnaire

Please answer the following questions. We remind you that your responses are anonymous.

1. What is your age _____years
2. What is your gender? _ Male / female_____
3. Are you married? ☐|YES ☐| NO
4. Do you have children? ☐| YES ☐| NO
 - a. If yes how many? _____

- b. How many of these children are under age 5? _____
5. Religion: • Hindu • Muslim • Others
6. If you have a religion, do you pray
 _____ several times per day _____ once per day _____ every week _____ rarely
 _____ never
7. Caste: • General • OBC • SC • ST • Others/No Caste
8. Education level:
 a. Class _____ (if passed Class 12 or below)
 b. Bachelors
 c. Masters or above
9. Gross Monthly Family Income (before tax): Rs. _____
10. If you compare your family's economic conditions to the others in your village, your family is (tick as appropriate):
 _____ very poor, _____ poor, _____ average, _____ rich, _____ very rich
11. Employment status:
12. No. of years of employment in total
13. No. of years of employment in current job
14. Does your family own a TV? _____ 1=yes, 2=no
15. Does your family own a motorbike or car _____ 1=yes, 2=no.
16. Does your family own a bicycle? _____ 1=yes, 2=no

Risk attitudes

Please answer the following questions. Are you a person who is fully prepared to take risks or do you try to avoid taking risks in the following situations?

Please tick the circle that describes you the best on the following scale, where the value 0 means: 'not at all willing to take risks' and the value 10 means: 'very willing to take risks'.

17. In general

	0	1	2	3	4	5	6	7	8	9	10	
not at all willing to take risks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	very willing to take risks

18. When it comes to financial matters?

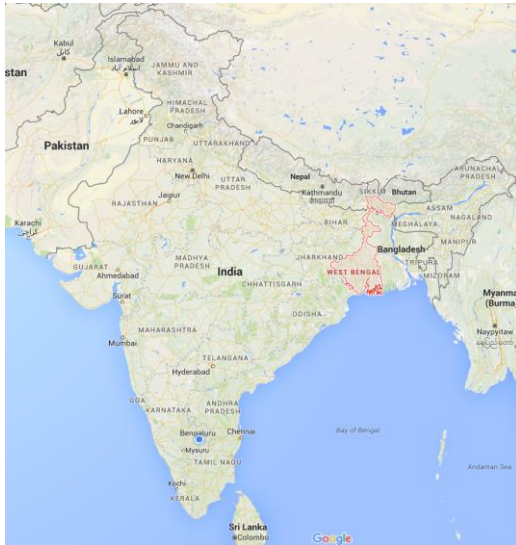
	0	1	2	3	4	5	6	7	8	9	10	
not at all willing to take risks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	very willing to take risks

19. When it comes to health matters?

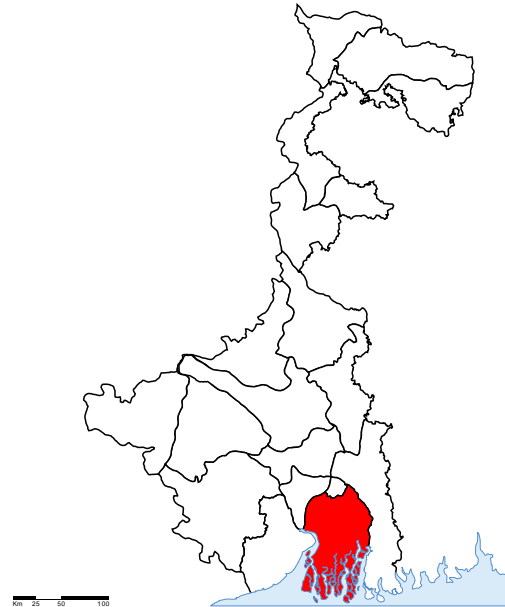
	0	1	2	3	4	5	6	7	8	9	10	
not at all willing to take risks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	very willing to take risks

Appendix 2. Experimental sites: West Bengal and South 24 Paraganas

(a) West Bengal



(b) South 24 Paraganas



(c) Blocks within South 24 Paraganas



(d) Sampled Villages and Wards



Appendix 3. Pictures of some experimental sessions

(a)



(b)



(c)



Appendix 4. Tables

Table A1. Summary statistics on the subject-pool

Demographic Variables	Definitions	T0	T1	T2	T3
Age	Age	18.87	20.27	19.04	22.27**
Female	=1 if gender is female, 0 if male	0.49	0.46	0.41**	0.45
SC	=1 if caste is either OBC, SC, ST, 0 for GC	0.52	0.53	0.53	0.51
Education	Years of education	11.92	12.27	12.28	12.13
LogFamily Income	Log of gross monthly family income	8.75	8.55	8.57	8.29**
Risk attitude	Amount invested in the risk game	43.99	44.48	35.57	41.13

Notes: The Table report mean values for each treatment. ** indicate that the comparison between T_i ($i=1, 2, 3$) and T_0 is significant at the 5% level in t -tests, with errors are clustered at the village level.

Table A2. Determinants of relative self-confidence and tournament entry in part 4, by treatment

A

Depend. variable:	T0		T1		T2		T3	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Belief being one of the 2 top scorers</i>								
Winner in part 2	0.05 (0.07)	0.03 (0.07)	0.36*** (0.09)	0.32*** (0.07)	0.13 (0.14)	0.15 (0.15)	0.37*** (0.12)	0.33** (0.16)
Individual characteristics	No	Yes	No	Yes	No	Yes	No	Yes
Nb observations	84	80	96	91	96	95	84	82
Pseudo-R ²	0.002	0.087	0.095	0.204	0.011	0.010	0.112	0.159

B

Depend. variable:	T0		T1		T2		T3	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>% chance of winning</i>								
Winner in part 2	0.75 (5.11)	-0.64 (5.00)	26.83*** (3.56)	25.18*** (3.26)	11.72 (7.18)	12.96* (6.60)	24.50*** (4.64)	18.90*** (2.05)
Individual characteristics	No	Yes	No	Yes	No	Yes	No	Yes
Nb observations	84	80	96	91	96	95	84	82
R ²	0.001	0.214	0.192	0.252	0.037	0.241	0.194	0.305

C

Depend. variable:	T0		T1		T2		T3	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Tournament entry</i>								
Winner in part 2	0.02 (0.11)	-0.04 (0.11)	0.28*** (0.06)	0.29*** (0.08)	0.39*** (0.11)	0.36*** (0.11)	0.46*** (0.12)	0.48*** (0.14)
Individual characteristics	No	Yes	No	Yes	No	Yes	No	Yes
Number of observations	84	80	96	91	96	95	84	82
Pseudo-R ²	0.001	0.116	0.059	0.185	0.118	0.224	0.209	0.212

Notes: Marginal effects are reported. Models in panels A and C are Probit models and models in panel B are OLS regressions. Individual characteristics include: caste, risk score, age, female, education and log of family income. In models with controls for individual characteristics, 12 observations are missing across different sessions (11 missing values for family income and one missing value for education). All standard errors (in parentheses) are clustered at the village level. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

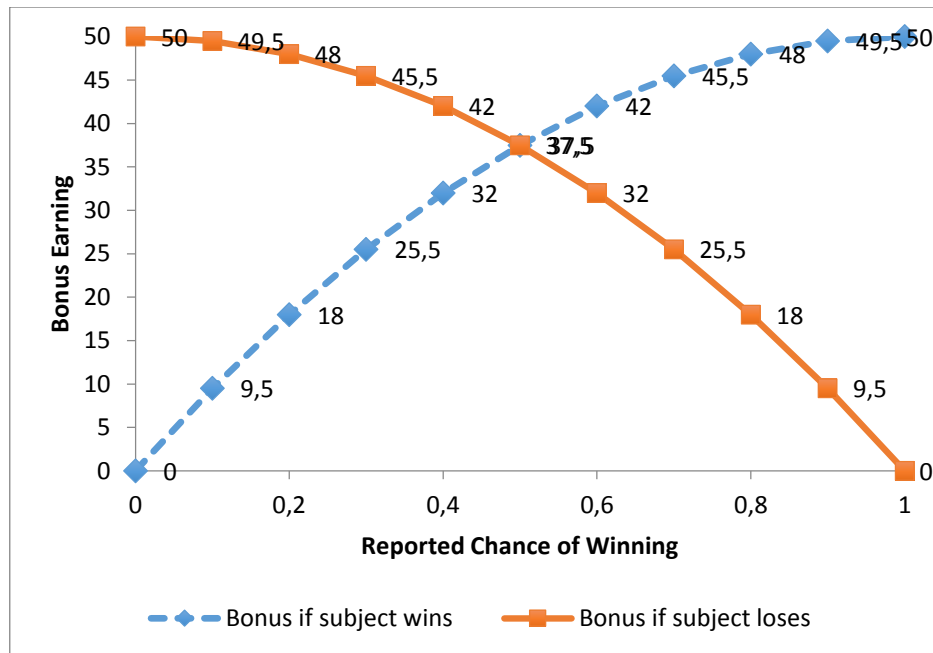
Table A3. Determinants of relative self-confidence and tournament entry in part 4 in the BiB task (two-stage models)

	(1)	(2)	(3)	(4)
<i>Step 2: Dependent variable: Tournament choice in part 4</i>				
Predicted belief on being a winner	0.86*** (0.04)	0.90*** (0.06)	-	-
Predicted % chances of being a winner	-	-	0.01*** (<0.01)	0.02*** (<0.01)
Individual characteristics	No	Yes	No	Yes
<i>Step 1: Dependent variable:</i>	<i>Belief on being one of the two top performers in part 4</i>		<i>% chances of being a winner in part 4</i>	
Winner in part 2	0.03 (0.07)	-0.02 (0.07)	0.55 (4.92)	-3.29 (5.07)
Treatment T1	-0.02 (0.08)	-0.02 (0.08)	-8.06 (5.19)	-5.29 (5.63)
Treatment T2	-0.01 (0.05)	-0.01 (0.05)	-4.75 (4.10)	-3.65 (3.79)
Treatment T3	-0.13*** (0.04)	-0.10 (0.07)	-11.87*** (3.67)	-6.57 (4.21)
Winner in part 2 * T1	0.23*** (0.09)	0.23** (0.10)	20.78*** (6.45)	18.06** (8.95)
Winner in part 2 * T2	0.21* (0.11)	0.23** (0.12)	16.34** (7.10)	16.43** (6.44)
Winner in part 2 * T3	0.35*** (0.10)	0.27** (0.10)	25.29*** (6.11)	18.62*** (7.16)
Number of observations	360	348	360	348
Log pseudo-likelihood	-412.09	-376.24	-1864.11	-1777.24
Prob>chi2	<0.001	<0.001	<0.001	<0.001

Notes: Marginal effects are reported. In step 1, all models are linear probability models. Models (1) and (2) consider relative self-confidence as measured by the belief on being among the two top performers in part 4; models (3) and (4) consider relative self-confidence as measured by the chances of being a winner in part 4. In step 2, tournament choice takes value 1 if the subject chooses tournament in part 4 for the BiB task, and 0 otherwise. The models are Probit models. Individual characteristics include: risk score, age, female, education and log of family income. In models with controls for individual characteristics, 12 observations are missing across different sessions (11 missing values for family income and one missing value for education). All standard errors (in parentheses) are clustered at the village level. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

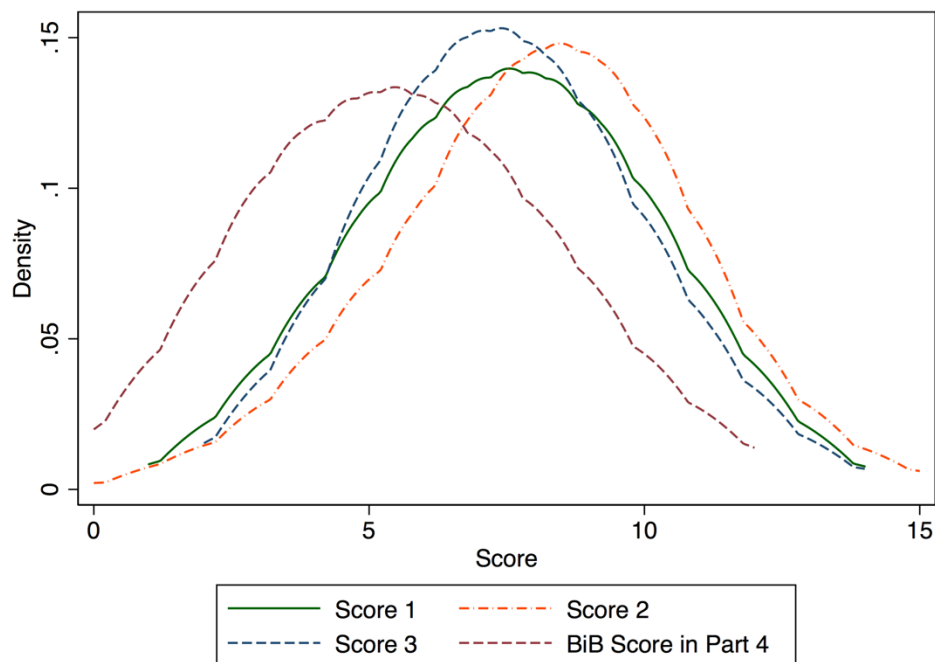
Appendix 5. Figures

Figure A1: Proper scoring schedule for the incentivization of belief elicitation



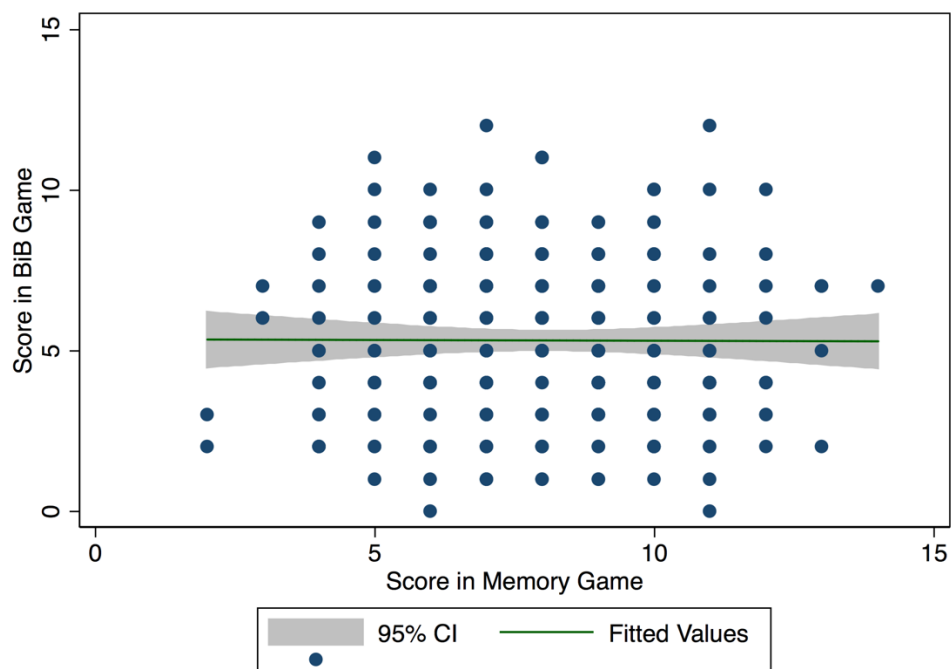
Notes: Subjects reported their beliefs about their chance of winning (being among the two top performers). Depending on whether they were actually among the two top performers or not, they received a bonus according to the scoring schedules plotted above. The amounts indicated are in INR. The x -axis represents the reported belief about the chance of winning and the y -axis represents the amount of the bonus.

Figure A2: Distribution of scores in the Ball-in-Bucket task



Notes: BiB for Ball-in-Bucket task. The figure plots the distribution of the scores obtained in parts 1, 2, 3, and 4, namely Score 1, Score 2, Score 3, and Score 4 in the BiB task. The mean scores are 7.51, 8.13, 7.45 and 5.60, respectively.

Figure A3: Scatter plot of score in the Memory task in part 1 and score in the Ball-in-Bucket task in part 4 (pooled treatments T0, T1 and T2)



Notes: The equation of the fitted line is given below. The numbers in the parentheses below the estimates are the corresponding p -values.

$$\text{Score in BiB Game} = 5.363 - 0.005 * \text{Score in Memory Game}$$

(0.01) (0.945)