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Feedback, spillovers, self-confidence, status, motivated beliefs, experiment

### JEL codes:

C91, J15, M52

# Feedback Spillovers Across Tasks, Self-Confidence and Competitiveness \*

Ritwik Banerjee<sup>†</sup> Nabanita Datta Gupta<sup>‡</sup> and Marie Claire Villeval<sup>§</sup>

July 4, 2020

## Abstract

Does feedback on success in a task increase individuals' beliefs about their chance to succeed in a subsequent, unrelated, task? Does feedback on failure have a symmetric effect? Is the distortion of beliefs, possibly due to motivated beliefs, mistakes in updating or the feeling of having a lucky day, heterogeneous across individuals, in particular according to their status in the society? Conducting an artefactual field experiment in India with participants from different castes, we show that feedback on success in a forced competition in a first task increases winners' self-confidence and competitiveness in the subsequent task. Such feedback spillovers on self-confidence are asymmetric and heterogeneous according to status and more likely for already more confident individuals.

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# 1 Introduction

Educational authorities and business managers allocate considerable effort in designing effective performance appraisal schemes. A vast literature based on both laboratory and field evidence has shown that relative performance feedback has strong effects on students' and employees' confidence and performance, especially when combined with competitive pay schemes. Some effects are positive, due to improved self-perception, encouragement, or social learning (*e.g.*, Azmat and Iriberry (2010); Tran and Zeckhauser (2012); Kuhnen and Tymula (2012); Wozniak et al. (2015)), while others are negative, because of discouragement, disappointment aversion, or excessive risk taking (*e.g.*, Barankay (2012); Gill and Prowse (2014); Buser (2016); Azmat et al. (2019))(for a recent survey see Villeval (2020)). However, while this literature has extensively investigated the impact of relative feedback within the same task, it is almost silent on its possible impact across tasks.<sup>1</sup>

This blind spot may not be surprising if tasks require independent abilities and individuals do not update their beliefs on their ability to succeed in a given task based on the feedback received about their performance in another task. However, if self-confidence is affected by success or failure in another task, feedback may generate externalities that should be accounted for by decision makers in multi-task environments. Indeed, such externalities may lead individuals to reallocate their effort or influence their determination and competitiveness. For example, succeeding at sports is often credited for building self-esteem in children, which helps them perform well in other spheres, such as at school. If externalities are positive, decision makers should be encouraged to more systematically communicate individuals' relative performance to them; but if they are negative, they should be more cautious in terms of relaying such feedback.

In this paper, we explore the existence of feedback spillovers across tasks requiring independent abilities, in terms of self-confidence and competitiveness. There are several reasons for which we suspect that feedback on relative performance in a task may be used to update beliefs about the chances to succeed in another task. For example, because of cognitive limitations, such as attribute substitution for example (Kahneman and Freder-

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<sup>1</sup>Economists have studied behavioral spillovers, such as Cason et al. (2012) and Bednar et al. (2012) who showed that players do not treat games in isolation. Experimentalists are well aware of the importance of controlling for order effects between games in the laboratory for that reason. In contrast, we are interested in feedback spillovers on confidence. Feedback spillovers have been studied by Huck et al. (2011) with feedback about the distribution of the opponent's actions. Instead, we study feedback about one's past performance.

ick, 2002), individuals may mistakenly believe that the two tasks require related abilities. Alternatively, receiving good news may improve mood and the feeling of having a lucky day (a sort of "hot hand" feeling), with implications on future decisions. Another reason could be motivated beliefs. When individuals have imperfect information about their ability, they may distort their beliefs for hedonic reasons such as increasing their self-esteem (Kőszegi, 2006) or for instrumental reasons to motivate themselves to undertake a risky activity or persevere in a costly task (Bénabou and Tirole, 2002; Eisenbach and Schmalz, 2015; Bénabou, 2015). Indeed, in noisy contexts, individuals have been observed to respond differently to ego-relevant than to non-ego relevant information (Grossman and Owens, 2012). Strategies leading to beliefs distortion include information avoidance (Carrillo and Mariotti, 2000; Karlsson et al., 2009; Sweeny et al., 2010; Burks et al., 2013), wishful thinking (Mayraz, 2011), denial of reality (Bénabou and Tirole, 2002), selective updating (Möbius et al., 2014; Eil and Rao, 2011), or selective memory (e.g., Bénabou and Tirole, 2002; Li, 2013; Chew et al., 2018; Saucet and Villeval, 2019; Zimmermann, 2020).<sup>2</sup> Feedback spillovers across tasks could constitute an additional self-enhancement strategy.

Our first contribution is identifying the existence of feedback spillovers across uncorrelated tasks. Such spillovers would run counter to the correlation neglect bias (Enke and Zimmermann, 2019). We study whether feedback on relative performance in a previous task influences individuals' beliefs on their relative performance in another task and, as a result of updating, their future action, namely their competitiveness. Without ignoring the possible effects of feedback spillovers on productivity, we do not focus on them because we are mainly interested in how feedback affects competitiveness through its influence on self-confidence. Higher self-confidence is unambiguously expected to increase competitiveness, while its impact on effort in a tournament is ambiguous. The only other study on feedback spillovers across tasks is the one by Huang and Murad (2020) in accounting research. With a particular focus on gender, they found that feedback spillovers operate on competitive preferences independently of their effects on confidence, through taste-altering mechanisms. Such mechanisms in their study are found to eliminate the gender gap in competitiveness.<sup>3</sup> The two studies can be seen as complementary.

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<sup>2</sup>Signals about one's ability can also be used to persuade or deceive others (Schwardmann and van der Weele, 2016; Ke et al., 2020), or to influence them in competitive settings (Charness et al., 2018). These distortions may lead to overconfidence (Camerer and Lovo, 1999; Barber and Odean, 2001; Hoelzl and Rustichini, 2005; Malmendier and Tate, 2008; Moore and Healy, 2008). In contrast, we consider self-directed belief updating.

<sup>3</sup>The two projects developed independently. Although both investigate confidence and competitiveness,

Our second contribution is investigating whether feedback spillovers across tasks are asymmetric and how such asymmetry influences entry decisions. Does receiving negative feedback spill over to the same extent as receiving good news? Addressing this question contributes to the literature on asymmetric belief updating and overconfidence (Moore and Healy, 2008). While theory suggests that asymmetric updating serves to motivate beliefs in value relevant contexts (Bénabou and Tirole, 2002; Bénabou and Tirole, 2016), there is no consensus in the empirical literature on how people process ego-relevant information. Studies show that people discount bad news (Sharot, 2011), update beliefs in a more Bayesian way after receiving good news than bad news (Garrett and Sharot, 2017), weight more positive information on themselves relative to others (*e.g.*, Eil and Rao (2011)), treat positive signals as more informative (Möbius et al., 2014), and tend to remember their generous decisions better than their selfish decisions (Saucet and Villeval, 2019). However, other studies fail to find asymmetric updating (*e.g.*, Grossman and Owens (2012); Shah et al. (2016); Gotthard-Real (2017); Buser et al. (2018); Barron (2019); Coutts (2019); Schwardmann and van der Weele (2019)) or even find a tendency to overweight negative signals (Ertac (2011)).

Our third contribution is studying whether feedback spillovers across tasks, if any, are heterogeneous across individuals depending on their social status. Indeed, when people have a lower status in the society, they may have noisier signals about their relative value or they may be more sensitive to environmental cues. They may be more anxiety prone and therefore, may get a greater utility from motivating their beliefs to boost their self-esteem and, in turn, to compete against higher-status individuals. Thus, they may be less realistic than higher-status people about the lack of correlation between success in the two tasks. Meanwhile, lower-status individuals may be keener to avoid the disappointment that inflated expectations could bring about in competing; if this is the case, inflated relative self-confidence may not lead to higher competitiveness.

To study feedback spillovers across unrelated tasks on self-confidence and their impact on competitiveness and to test whether status matters in this process, we conducted a

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they differ in several respects. Huang and Murad (2020) explore retrospective competitive preferences: in two periods subjects perform the two tasks for a piece-rate, then they decide whether to submit their performance in the second task to a comparative pay scheme, in groups of four. In contrast, we measure how feedback impacts the future decision to compete, after having experienced both forced pay schemes. Their two tasks are a perceptual task and a mathematical task, while we use a memory task and a game of motor skill. Moreover, while they focus on gender in a lab experiment, we focus on castes in rural India. As explained below, although we also examine whether feedback spillovers are different across gender, one important novelty of our paper is studying how spillovers are conditioned by status in the society.

lab-in-the-field experiment in a highly socially segmented society, India. Caste is an age-old system of rigid social stratification that has resulted in the total exclusion of certain groups from the rights and opportunities for advancement. The Scheduled Castes are among the most marginalized groups. The previous literature has shown evidence of a stereotype threat when caste identity is made salient, generating increased performance gaps in standardized tests (Hoff and Pandey, 2006, 2014) and in relative self-confidence (Banerjee et al., 2018) in favor of the high caste. The caste-engendered social status may thus lead to considerable heterogeneity in the process of belief updating. We recruited 360 participants in 17 villages from South 24 Parganas district of West Bengal. 171 participants were from the General category (higher status category), 189 from the Scheduled Castes and the Scheduled Tribe category (lower status categories).<sup>4</sup> Participants were matched in groups of six, with three participants from the General category and three participants from the other castes. The caste composition of groups was made common knowledge.

The experiment consists of four between-subjects 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 *within* the same task (Banerjee et al., 2018).<sup>5</sup> In the first part, participants performed a memory task under a piece-rate payment scheme. In the second part, they performed the same memory task under a forced tournament scheme in groups of six performers with two winners. In the third part they had to choose the payment scheme to be applied to their performance in this part. They did not receive any feedback on their score in any part. In the fourth part we introduced a new, unrelated, task involving a motor-skill ability: in the Ball-in-Bucket task, participants had to throw a ball in a basket. Like in the third part, before performing the task participants had to choose either to be paid with a piece-rate scheme or to enter a tournament with five other players. In each part, we elicited the participants' beliefs about their absolute and relative performance

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<sup>4</sup>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 the 185 Scheduled Castes members are aggregated with the 4 Scheduled Tribes members.

<sup>5</sup>Only the first three parts of the Baseline treatment are similar to Banerjee et al. (2018). Note that the region where we conducted the experiment is the same as in Banerjee et al. (2018), but the village/townwards – and thus, the participants – are different. From the very beginning of the design of the studies, the two experiments were conceived as two independent projects and the data were collected at different points in time. Our previous study focused on within-task spillovers while the current study is interested in spillovers between independent tasks; the two types of spillovers relate to different benchmarks in terms of Bayesian updating and different cognitive mechanisms.

by using an incentive-compatible mechanism. These two tasks are stylized but they allow us to measure performance precisely and require orthogonal abilities, so that objectively, success in one task does not predict success in the other task.

The Feedback treatment constitutes the core of the experiment. It is similar to the Baseline, except that before making their choice in the fourth part participants received binary feedback on whether they won or lost the forced tournament in the first task 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 task influences self-confidence and competitiveness in another, unrelated, task, and whether such feedback spillovers, if any, are symmetric and heterogeneous. A third treatment, the Feedback-Quota treatment, allows us to test whether feedback spillovers can be eliminated through an exogenous manipulation reinforcing the salience of the differences between the two tasks, thus changing individuals’ perception about the informative value of the first outcome. This treatment changes the objective probability of the lower status participants to win the forced tournament in the memory task (at least one of the two winners must be the best performer among the lower caste participants). Thus, winning or losing under the quota policy may be subjectively perceived as a less informative signal about one’s chance to succeed in the second task where the policy does not apply.<sup>6</sup> Knowing that the rule is no longer in use makes the difference between the settings of the two tasks more salient and should discount the subjective value of the feedback on self-confidence in the second task. On the other hand, it may affect directly preferences, such as the taste for competitiveness.<sup>7</sup> Finally, the Feedback-Same-Task treatment allows us to explore whether feedback spillovers across tasks differ from confidence updating within the same task. It is similar to the Feedback treatment except that participants exclusively performed the Ball-in-Bucket task from part one to part four. In this treatment, learning that they won (lost) the forced tournament in the second part should lead Bayesian players to update their priors on their relative confidence upward (downward).

Our first result shows evidence of feedback spillovers across independent tasks. Al-

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<sup>6</sup>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”) have been established for caste-based job reservations.

<sup>7</sup>For example, some studies have investigated the cross-context impact of reservation policies for females in politics in India. [Ghani et al. \(2014\)](#) showed that political reservations increased females’ empowerment and their willingness to start a new business and [Maitra and Rosenblum \(2017\)](#) identified upstream effects of political reservations at the local level. In contrast, we study within-individual spillovers across independent tasks.



though performance and success in the two tasks are objectively uncorrelated, learning that one has won the forced tournament in the memory task boosts relative self-confidence and, to a lesser extent, competitiveness in the Ball-in-Bucket task. The effect on self-confidence is as strong as when feedback is about success in the same task. As a result, the difference in relative self-confidence and competitiveness in the second task between winners and losers in the first task is significant when feedback is provided, whereas it was not in the Baseline. Our second result is that feedback spillovers are asymmetric. If success breeds self-confidence and competitiveness across tasks, learning that one has failed in the forced tournament reduces the perceived chance of winning in the new task, compared to uninformed losers. In contrast, the belief on being a winner and competitiveness in the Ball-in-Bucket task are not affected by failure in the forced tournament in the first task. Our third result shows the heterogeneity of feedback spillovers across tasks. After a success, low-caste individuals increase their belief of being one of the two top scorers and their confidence in the chance of winning in the second task, but not their competitiveness. After a failure, losers do not adjust downward. As a result, the difference between low-caste winners' and losers' self-confidence becomes significant in the new task. In contrast, high-caste winners do not become more self-confident but they compete more. Finally, when the salience of the differences between the two tasks is reinforced, feedback spillovers on self-confidence tend to vanish. After the quota policy is withdrawn, the main feedback spillover is on competitiveness: high-caste winners under the quota compete significantly more in the new task without the quota.

Different mechanisms could trigger feedback spillovers across tasks. The asymmetry of spillovers tends to reject an explanation exclusively in terms of cognitive mistakes by individuals who mistakenly believe that performances in the two tasks are correlated and make inference from their initial success on their chance to succeed in the second task. Three facts are not consistent with an instrumental motivation of beliefs: feedback spillovers on the whole sample increase self-confidence but affect competitiveness marginally (but this could also mean that this strategy failed in terms of action); feedback spillovers affect more individuals with above-median self-confidence; feedback spillovers are similar for males and females although they differ greatly in terms of confidence and competitiveness. The more likely mechanisms behind such feedback spillovers are emotional and affective. Success in the first task may improve individuals' mood and optimism by inducing the feeling that they are having a "lucky day". Winners may also motivate their beliefs for affective reasons, to boost their self-esteem without the intention of changing their preference for

competition. This would apply particularly to low-caste individuals who become more confident but not more competitive. Finally, the higher competitiveness of those winners who do not change their self-confidence suggests that feedback spillovers may also affect preferences and not only beliefs.

The remainder of this paper is organized as follows. Section 2 develops the experimental design and the procedures. Section 3 introduces our behavioral conjectures. Section 4 presents our findings. Section 5 discusses these results and concludes.

## 2 Design and Procedures

### 2.1 Experimental Design

The experiment consists of four treatments across which we manipulate whether information about success in a forced tournament is revealed or not 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, 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.

#### 2.1.1 The Tasks

Since we are interested in examining whether success in one domain generates a positive spillover in self-confidence and competitiveness in an orthogonal domain, we implement two tasks that demand different skill sets to be performed successfully. In the first three parts of all treatments except the Feedback-Same-Task treatment we use a memory task. Fifteen numbers, randomly drawn between 0 and 100, are called out, 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 in the limit of fifteen. A subject's score is given by the number of correctly recalled numbers.

The second task that is used in the fourth part of all treatments and in all parts of the Feedback-Same-Task treatment 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 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 those necessary for the first task, as tested in Section 4. Moreover, the two tasks are isomorphic, as participants earn the same amount through piece rate or tournament payment schemes for the same number of correct recalls and successful tosses.

### 2.1.2 Baseline Treatment

In the Baseline treatment each session comprises of twelve invited participants, 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 participants. Participants 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 so that there are never more than two 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 participant’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 the competing participant is a winner in part 3. If the participant’s score is among the two highest scores, the participant is a winner, otherwise he earns INR0 in this part.

The participants 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:* Participants 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 enter a tournament for their performance in this part. If the participant 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, participants 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 is important to note that our objective is to compare relative confidence and competitiveness across treatments and not between parts 3 and 4. Indeed, such a between-part comparison would not be informative since we introduced more than one change between part 3 and part 4: the task is different; in the BiB task participants can directly observe their absolute performance when performing the task, while in the memory task they can only form a belief about it; participants have no chance to practice the task under each payment scheme before making their choice;<sup>8</sup> and finally, 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.

*Part 5 – Risk elicitation:* Risk attitudes may influence the choice of a payment scheme. Thus, we elicited the participants’ risk attitudes by using the method of [Gneezy and Potters \(1997\)](#) adapted by [Charness and Gneezy \(2010\)](#).<sup>9</sup>

### 2.1.3 Other Treatments

*Feedback treatment* - This is the core treatment. It replicates the Baseline, except that between part 3 and part 4 participants learn whether they won or lost the forced tournament in part 2. The result is written on a piece of paper and privately handed out to the participants along with the response sheet. After seeing this outcome, participants move

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<sup>8</sup>Decomposing part 4 into three parts (a piece-rate scheme, then a forced tournament, and finally a choice between the two) would have increased the duration of the sessions and would not have been useful since the subjects already experienced both the piece rate scheme and the tournament in the first task. Moreover, as explained above, our objective is not to compare parts 3 and 4. Note also that this decomposition is done in the Feedback-Same-Task treatment.

<sup>9</sup>Participants receive 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.

on to their decision in part 4. Comparing the Feedback and the Baseline treatments allows us to test whether 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. Since by design there are only two winners in the tournament, 67% of the signals are negative.

*Feedback-Quota treatment* - This treatment is similar to the Feedback treatment, except that a quota-based Affirmative Action (AA, henceforth) is introduced in parts 2 and 3. One of the two 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, participants choose between piece rate and a standard tournament without quota. This treatment reinforces the salience of the difference between the two settings and allows us to test whether such policy intervention limits the spillovers and increases their heterogeneity across castes.

*Feedback-Same-Task treatment* - This treatment is designed to test how cross-domain spillovers compare with within-domain spillovers. It is similar to the Feedback treatment except that participants play the Ball-in-Bucket task in all parts. At the end of part 3, participants are informed on whether they were among the winners in part 2 or not. After learning that they won or lost the forced tournament in part 2 Bayesian participants should update their priors on their relative ability in the last part. Therefore, rational spillovers are expected in this treatment. Note that since participants perform the same task repeatedly, absolute performance may capture also learning effects between part 4 and the previous parts. However, this should not affect beliefs about relative performance.

Table 1 summarizes the main characteristics of our experimental design.

#### **2.1.4 Belief Elicitation**

We elicited beliefs to measure their evolution following feedback and identify spillover effects. In the Baseline, Feedback and Feedback-Quota treatments, at the end of each part after performing the task participants 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 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?”.

Table 1: Summary of the Experimental Design

	Baseline	Feedback	Feedback-Quota	Feedback-Same-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 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

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

In the Feedback-Quota treatment, participants 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 the Feedback-Same-Task treatment, participants have 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 other task. Indeed, in the BiB task participants are able to see what their absolute performance is while performing the task.

We incentivized responses to these questions to encourage participants to report their true beliefs without introducing hedging. The incentive scheme has been kept very simple for making it comprehensible to the subject pool.<sup>10</sup>

<sup>10</sup>See instructions in Appendix A.1. For each question in the part selected for payment at the end of the session, we paid participants INR50 if their prediction matched their actual score or rank. For the estimate of the chance of being a winner, they 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. 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 A.1 in Appendix A.5).

## 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. The census data which was used for sampling purposes identifies at the village or ward-of-a-town level. Appendix A.2 displays maps of the sampled villages/wards and Appendix A.3 shows pictures of some of the experimental sites in various public spaces (schools, open spaces, village council offices, etc.). In each village we recruited 12 to 24 subjects with the help of local intelligence to guarantee a balance in the number of GC and SC participants.<sup>11</sup> The study has been conducted in 17 villages and has involved 360 participants (171 GC, 185 SC, and 4 Scheduled Tribe category participants; the ST participants are pooled with the SC participants in the data analysis).<sup>12</sup> Twelve subjects participated in each session. A total of 84, 96, 96 and 84 participants were recruited for the Baseline, Feedback, Feedback-Quota, and Feedback-Same-Task treatments, respectively. Table A1 in Appendix A.4 displays statistics on the subject pool by treatment. The 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. Mean investment is from INR36 to 44 from the INR100 endowment in the risk elicitation task, which indicates a substantial degree of risk aversion.

Upon arrival, participants were randomly assigned a desk and had to read and sign an Informed Consent form (translated to Bengali). Then, they received 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. The BiB task was conducted in a separate place such that tosses were made in isolation. All questions were answered in private. Each session lasted for 75 to 90 minutes. Participants 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).

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<sup>11</sup>To enroll participants, we used the services of an agency. This agency reached out to village councils and obtained permission for carrying out the study. With the help of the local councilors the agency engaged in snowball sampling to recruit the participants. It used posters with the essential details and a letter on the University letterhead specifying the details of the study. Interested participants were enlisted and informed about the date, time and venue of the session.

<sup>12</sup>There are no significant differences between the GC and SC participants in terms of age (mean age is 20.06 and 20.11, respectively), share of females (42% and 48%, resp.), mean years of education ((12.26 and 12.06, resp.), mean family income in log (8.61 and 8.52, resp.), mean investment in the risk game (41.28 and 41.14, resp.). Table A2 in Appendix A.4 confirms the similarity of the two samples for each treatment: the only difference (significant only at the 10% level) is in terms of risk attitudes in the Baseline.

### 3 Predictions

We lay out four sets of hypotheses. In the Feedback-Same-Task treatment Bayesian players should update their beliefs according to the information obtained. In the other treatments, the first hypothesis (Ha0) assumes that people are rational and that they know that succeeding or failing in the forced tournament in the first task has no bearing on ability to succeed in the second task ( $Corr(S, F_{\text{Memo}}, S, F_{\text{BiB}}) = 0$ ). Since it is objectively not a relevant signal on the ability to succeed in the future task, from a Bayesian perspective priors in the second task should not be updated based on the information received.

The alternative hypothesis (Ha1) assumes that winning or losing in the first task is perceived subjectively as a relevant signal on the ability to succeed in the future task ( $Corr(S, F_{\text{Memo}}, S, F_{\text{BiB}}) > 0$ ), and thus players update their priors on their chance to succeed in the second task according to the feedback received. This perception may be unmotivated: individuals may hold mistaken beliefs about the correlation between the abilities requested in the two tasks (and may update their priors as rational Bayesians); or they may understand that the two tasks are uncorrelated but the feedback gives them the feeling of having a lucky day (momentum or "hot hand" sort of effect), which increases their chance of succeeding also in the future task. This perception may instead be motivated: some players may get additional utility by being in denial, *i.e.*, believing that the success status in the first task has bearing on the success status in the second task ( $Corr(S, F_{\text{Memo}}, S, F_{\text{BiB}}) > 0$ ), because it helps them improve their self-perception or motivate their future decision.<sup>13</sup>

**Ha0:** *Feedback on relative performance in the memory task has no effect on self-confidence*

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<sup>13</sup>Bénabou (2015) helps us formalize this. At  $t=0$ , the agent performs the memory task that leads to success or failure,  $\sigma \in \{S, F\}$ . At  $t=1$ , she processes information about her success in this task, updates her prior and decides on her effort  $e$  in the unrelated task. Utility at  $t=1$  is given by  $U_1 = -ce_i + s\delta E_1(U_2)$ , which depends on her cost of effort  $c$  and on her anticipatory utility. At  $t=2$ , she receives the payoff from her effort in the second task,  $U_2$ , where  $U_2 = \theta[\alpha e + (1-\alpha)k]$ . The final payoff depends on the productivity at the second task,  $\theta$ , which can take value  $\theta_S$  or  $\theta_F$ , depending on success or failure in  $t=0$ , such that  $\theta_S - \theta_F > 0$ . A part of the outcome comes from effort while another part comes from an exogenous fixed factor,  $k$ , that could represent status for example and that may also be state-dependent. Suppose  $\sigma = S$ . Let  $\lambda \in [0, 1]$  be the equilibrium probability with which the agent responds with realism (R) and  $(1-\lambda)$  be the probability of self-deception or being in denial (D). If  $q$  is the prior that her outcome in the second task is  $S$  given  $\sigma = S$ , then  $q(\lambda) = q/(q + (1-q)(1-\lambda))$  is the updated posterior. The net gain from adopting the denial strategy is a function of the probability with which the agent responds with realism:  $U_{(0,D)} - U_{(0,R)} = f(\cdot, q(\lambda))$ . Given this structure, Benabou (2015) shows that there exists a unique fixed point which solves for the equilibrium probability of self-deception.



*in the Ball-in-Bucket task because the two tasks require independent abilities.*

*Vs. **Ha1**: Feedback on relative performance in the memory task affects self-confidence in the Ball-in-Bucket task, although the two tasks require independent abilities.*

If Ha0 is rejected by the data, feedback spillovers on self-confidence might generate a higher gap in competitiveness in part 4 between those who got good news and those who got bad news in the Feedback treatment, compared to winners and losers in the Baseline.

If Ha0 is rejected, the next question is whether feedback spillovers in self-confidence are symmetric or not. The second hypothesis (Hb0) postulates that people update both upward and downward their self-confidence in the second task after learning that they won or lost, respectively, the forced tournament in the first task. This might be the case if individuals update in a Bayesian way based on mistaken beliefs about the correlation between the abilities requested in the two tasks. Such individuals should adjust more after receiving good news rather than bad news since the probability of winning the forced tournament is lower than the probability of losing it, but they should adjust in both directions.

In contrast, feedback spillovers may be asymmetric if players give an informative value only to positive feedback. When beliefs are unmotivated, winning the forced tournament may generate the feeling of having a "lucky day", while losing it may not give the feeling of having a "bad day". Indeed, since 67% of news are bad, even being better than the average is not sufficient to win the tournament. When beliefs are motivated, self-deceptive players may consider that only winning is informative but for a different reason. Being in denial after good news increases ego-utility or the motivation to compete for winning the high prize. In contrast, ignoring bad news with (assumed) informational value for the future should boost anticipatory utility. Previous studies have shown that humans discount bad news when updating their beliefs (Sharot, 2011) and tend to overweight positive feedback relative to negative feedback about ego-relevant values (Eil and Rao, 2011; Möbius et al., 2014). But as already mentioned, other studies have found that people update symmetrically (*e.g.*, Grossman and Owens (2012); Coutts (2019); Schwardmann and van der Weele (2019)). Therefore, we state two opposing predictions.

**Hb0**: *Receiving positive feedback on one's success in the memory task increases self-confidence in the Ball-in-Bucket task, while receiving negative feedback reduces it.*

*Vs. **Hb1**: Receiving positive feedback on one's success in the memory task increases self-confidence in the Ball-in-Bucket task, while receiving negative feedback does not influence it.*

If Hb0 is rejected by the data, we expect to observe a higher competitiveness in part 4 of those who learned they won the forced tournament in part 2 in the Feedback treatment compared to uninformed winners in the Baseline, but no difference between those who received bad news and uninformed losers.

Feedback spillovers on self-confidence may be insensitive to individual characteristics. On the contrary, they may be modulated by characteristics such as status in the society. Indeed, low-status individuals may have more noisy beliefs about their relative ability than high-status individuals if they are less used to competing. Alternatively, they may be more sensitive to the feeling of having a lucky day after learning that they won when forced to compete with high-status opponents. Finally, they may be more prone to motivated denial because this increases their self-esteem or because winning in competition against high-status opponents bring them a higher net utility compared to high-status players.<sup>14</sup> In our setting, caste indicates status in the society. Low-caste individuals have been for centuries evaluated as being inferior to high-caste individuals of the same ability. Thus, we postulate that they have a greater gain in utility from being more confident and from being successful in the future competition than high-caste individuals. This leads to two opposing predictions.

**Hc0:** *Feedback spillovers on self-confidence are not modulated by individuals' status.*

*Vs. Hc1: Feedback spillovers on self-confidence are modulated by individuals' status. Low-caste members are more prone to denial than high-caste members.*

If Hc0 is rejected by the data, we expect that informed winners from the low caste are more likely to enter the tournament in part 4 in the Feedback treatment compared to uninformed winners in the Baseline. Such difference is expected to be smaller for high-caste individuals. Note, however, that if they have a more fragile self-esteem and are keener to avoid the disappointment that inflated expectations could bring about in competing, lower status individuals may inflate their self-confidence but decide not to compete.

Finally, we consider the effect of an exogenous manipulation of the salience of the difference between the two tasks. Hd0 predicts that the presence of a quota should have no effect

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<sup>14</sup>In the model sketched in footnote 13, the player's utility perceived at  $t=2$  is given by  $U_2 = \theta[\alpha e + (1 - \alpha)k]$ . The exogenous fixed factor or "sunk" capital,  $k$ , represents some initial endowment that is more valuable in the  $S$ -success- state. It can be related to status for example: people with a lower status may value more being in the  $S$  state than people with a higher status. In this setting, Benabou (2015) shows that  $\partial(U_{0,D} - U_{0,R})/\partial k > 0$ : the larger is  $k$ , the greater will be the net gain from denial over realism.

on feedback spillovers. Alternatively, Hd1 predicts that the quota should influence them. A reason is that, compared to the other treatments with feedback, winning (losing) under the quota tournament in the first task for a low-caste (high-caste, respectively) member may be perceived as less informative about one’s ability. As a result, players may discount the informative value of the feedback about success or failure.

**Hd0:** *The quota has no effect on feedback spillovers on self-confidence across tasks.*

*Vs. Hd1:* *The quota reduces feedback spillovers on self-confidence across tasks.*

If Hd0 is accepted, the impact of feedback spillovers on tournament entry should be the same as in the Feedback treatment. If it is rejected, feedback spillovers may still affect tournament entry but not through a change in self-confidence. Note that all these predictions assume that the spillovers affect beliefs on relative ability and, as a result, may impact competitiveness as a result. We do not exclude, however, that they may change preferences directly by affecting competitiveness without changing self-confidence. We come back to this point in the results section.

## 4 Results

We first report preliminary checks showing that average ability and self-confidence are comparable across treatments and that ability in the first task is silent on ability in the second task. Then, we study feedback spillovers and their asymmetry. Next, we consider status and increased salience. We conclude with an analysis in terms of efficiency.

### 4.1 Preliminary Checks

Prior to analyzing feedback spillovers, we need to check whether the initial score, absolute self-confidence and relative self-confidence are comparable across treatments before we introduce any feedback. Table A3 in Appendix A.4 shows that there is no significant difference in the mean score in part 1 between the Feedback treatment and the Baseline. The mean score in part 1 in the Feedback-Quota treatment and in the BiB task in the Feedback-Same-Task treatment is significantly lower than in the memory game in the

Baseline.<sup>15</sup> Table A3 also reveals widespread overconfidence in all treatments, as prediction errors in absolute confidence are in all cases positive. The difference in prediction errors with the Baseline is significant only in parts 3 and 4 in the Feedback-Same-Task treatment, probably because participants have been able to observe how well they perform in this task since part 1. Table A4 in Appendix A.4 examines participants' relative self-confidence across parts and tasks, measured either on the belief that the participant will be among the two top scorers in the group (mean proportion of participants who hold this belief), or on the estimated percentage chance of being a winner. Overall, participants do not exhibit significantly higher relative self-confidence in any treatment compared to the Baseline (all  $p$ -values from  $t$ -tests clustered at the village level are above 0.10).

Next, we check that performance in the memory task is uncorrelated with performance in the Ball-in-Bucket task. This correlation between the scores in the memory and the BiB tasks is essentially zero. Figure A.3 in Appendix A.5 displays a scatter plot of scores in the memory task in part 1 (all treatments pooled except the Feedback-Same-Task treatment) and in the BiB task in part 4. This figure shows no evidence of a correlation between the scores in the two tasks. We also estimated for the Baseline treatment (*i.e.*, when no feedback is displayed) an OLS regression model in which the dependent variable is the score in the BiB task in part 4 and the independent variables include the score in the memory task in part 1 and socio-demographic controls (caste, risk score, gender, age, education and log of family income). This score variable is far from being significant ( $p=0.494$ ). Therefore, ability in the first task cannot predict performance in the second one.

As a complement, we checked that winners in the forced tournament in the first task (part 2) do not score higher than losers when both perform the second task in part 4 in the Baseline treatment (two-sided rank-sum Mann Whitney tests, Baseline:  $p=0.815$ ), whereas winners in the forced tournament score higher than losers in the last part in the Feedback-Same-Task treatment ( $p=0.006$ ). Similarly, they are not more likely than losers to get one of the two best scores when performing the second task in part 4 (probit model with controls for individual characteristics,  $p=0.746$ ). Therefore, we are confident that objectively, success in the memory task does not predict success in the Ball-in-Bucket task.

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<sup>15</sup>Figure A.2 in Appendix A.5 depicts the distribution of scores in the memory task and in the ball tasks. The BiB task has lower mean and wider variance than the memory task in any part.

## 4.2 Feedback Spillovers on Self-Confidence Across Tasks

To test our hypothesis Ha0, we now examine whether learning that they have won the forced tournament in the memory task influences participants’ self-confidence in the BiB task. To that aim, we focus on the comparison between the Feedback and the Baseline treatments. Table 2 displays the absolute and relative self-confidence measures and the rates of tournament entry in part 4 in the BiB task for the winners and losers of the forced tournament in the memory task performed in part 2, by treatment.

Table 2: *Self-Confidence and Tournament Entry in Part 4, by Winner Status in Part 2 and by Treatment*

Treatment	Baseline		Feedback		Feedback-Quota		Feedback-Same-Task	
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
T <sub>i</sub> vs. Baseline	-	-	-1.06	-0.25	-0.53	0.15	-2.31**	-1.33**
<i>Relative self-confidence (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
T <sub>i</sub> vs. Baseline	-	-	0.26**	-0.03	0.14	0.06	0.25*	-0.08
<i>Relative self-confidence (percent chance of winning)</i>								
Mean values	51.54	50.79	64.30	37.48	57.93	46.22	63.03	38.53
T <sub>i</sub> vs. Baseline	-	-	12.76**	-13.31	6.39	-4.57**	11.49*	-12.26**
<i>Tournament entry rate</i>								
Mean values	0.29	0.27	0.53	0.25	0.59	0.20	0.57	0.11
T <sub>i</sub> vs. Baseline	-	-	0.24*	-0.02	0.30*	-0.07	0.28	-0.16**

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<sub>i</sub> (with  $i$  =Feedback, Feedback-Quota, Feedback-Same-Task) and the Baseline treatment report  $p$ -values from Mann-Whitney ranksum tests for absolute self-confidence and  $t$ -tests clustered at the village level for other outcomes. \*  $p < 0.10$  \*\*  $p < 0.05$ .

Table 2 shows a significant positive difference in relative self-confidence in the Feedback treatment compared to the Baseline for the winners in the forced tournament in part 2, regardless of how we measure relative self-confidence. The difference between the Feedback treatment and the Baseline is not significantly different from the difference between the Feedback-Same-Task treatment and the Baseline, 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). The tournament entry rate in part 4 is only

marginally significantly higher for the winners in the Feedback treatment compared to the Baseline.<sup>16</sup> This is a striking finding because from a Bayesian perspective, the feedback is objectively informative for updating priors in the Feedback-Same-Task treatment, but not in the Feedback treatment where the two tasks are unrelated.

Figure 1 displays the average difference in relative self-confidence and tournament entry in the BiB task between winners and losers in the forced tournament in part 2, by treatment. As expected, we find no difference between winners and losers in the Baseline, where people are not informed on their success, and a significant difference in the Feedback-Same-Task treatment where feedback is truly informative. By contrast, the significant differences between winners and losers in the Feedback treatment (at the 5% level for relative confidence, at the 10% level for tournament entry) are striking. Winners show a higher relative confidence in part 4 both within and across tasks, relative to losers.

To account for differences in individual characteristics across treatments, we now turn to an econometric analysis to formally test prediction Ha0. Table 3 reports the marginal effects from regressions in which the dependent variable is either relative self-confidence in the BiB task in part 4, as measured by the belief of being one of the two top scorers (models (1) and (2)) or by the perceived chance of being a winner (models (3) and (4)), or the decision to enter the tournament in the BiB task (models (5) and (6)). Models (1), (2), (5) and (6) are linear probability models 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 forced tournament in part 2, treatment dummies, and being a winner in part 2 interacted with treatment. In even models, we control for socio-demographics (score in part 1, caste, risk score, age, female, education and log of family income). All regressions also control for the proportion of females in the session, as this proportion varies between 33% and 67%; since it is observable by the participants, it might have influenced their beliefs and decisions (in fact, it did not).

Table 3 shows that being a winner in the memory task in the Baseline (thus, not knowing it) does not affect significantly self-confidence and tournament entry in the BiB task. But learning that one is a winner in the Feedback and in the Feedback-Same-Task treatments

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<sup>16</sup>Note that there was no significant difference in tournament entry for either winners or losers between the Baseline and the other treatments in part 3, *i.e.*, before feedback was given. Note also that the correlation between tournament entry in the first and the second tasks is significant, regardless of whether subjects are informed of being a winner or not. In Chi2 tests, the coefficient is 5.89 ( $p = 0.015$ ) in the Baseline, 4.65 ( $p = 0.031$ ) in the Feedback treatment, 13.34 ( $p < 0.001$ ) in the Feedback-Quota treatment, and 8.88 ( $p = 0.003$ ) in the Feedback-Same-Task treatment.

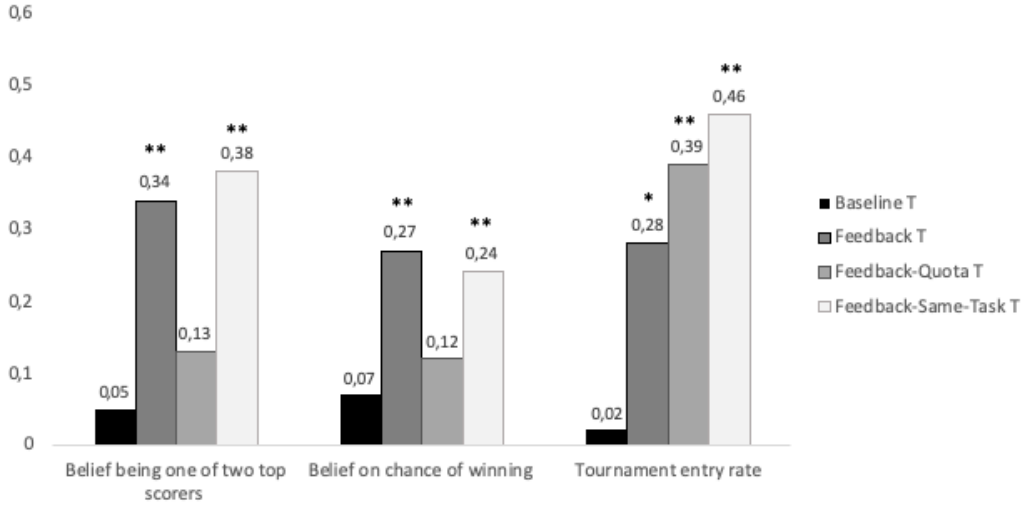


Figure 1: Average difference in relative self-confidence and entry rate in Part 4 between winners and losers in part 2, by treatment

Notes: The figure displays the average difference between values reported in part 4 by winners and losers in part 2. Beliefs about the percent chance of winning have been rescaled by 1/100 for display in the figure (for example, 0.27 means that the average difference between winners and losers is 27%).  $t$ -tests with errors clustered at the village level. \*  $p < 0.10$ , \*\*  $p < 0.05$ .

has a net positive and significant effect on self-confidence in part 4 (models (1) to (4); see also the first two panels of Table A5 in Appendix A.4 for separate regressions by treatment). This reveals feedback spillovers on self-confidence both within- and across-tasks. While this is consistent with rational updating of priors in the Feedback-Same-Task treatment, this is striking in the Feedback treatment. Being a winner in any treatment with feedback has also a positive effect on tournament entry (see models (5) and (6) in Table 3, and Table A5 in Appendix A.4). We have also estimated a joint model in which the tournament choice is treated as endogenous to the two measures of relative self-confidence.<sup>17</sup> The main takeaway from Table A6 in Appendix A.4 is that feedback spillovers across domains are significant and promote competitiveness for winners in the forced competition in part 2.

Overall, this analysis rejects the null hypothesis Ha0 and supports Ha1. We state our

<sup>17</sup>In a first step, we used linear probability models to estimate the relative self-confidence in part 4, with being a winner and treatment indicators (alone and interacted with being a winner) as the independent variables. In the second step, we estimated probit models of the tournament entry decision in part 4 in which the independent variables include the estimated level of self-confidence from the first step, and standard individual characteristics, as in Table 3.

Table 3: Determinants of Relative Self-Confidence and Tournament Entry in the Second Task (Part 4)

Dep. Variable	Relative confidence Belief being one of the 2 top scorers		Relative confidence % chance of winning		Tournament entry decision	
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Loser in part 2</i>	<i>Ref.</i>	<i>Ref.</i>	<i>Ref.</i>	<i>Ref.</i>	<i>Ref.</i>	<i>Ref.</i>
Winner in part 2	0.05 (0.07)	0.03 (0.08)	0.75 (4.84)	-0.02 (4.51)	0.01 (0.10)	-0.02 (0.11)
Feedback treatment	-0.04 (0.12)	-0.02 (0.11)	-13.70*** (4.09)	-10.35*** (3.28)	-0.02 (0.12)	-0.03 (0.13)
Feedback-Quota treatment	0.05 (0.12)	0.07 (0.11)	-5.65 (5.68)	-2.44 (5.56)	-0.08 (0.10)	-0.06 (0.12)
Feedback-Same-Task treatment	-0.08 (0.11)	-0.04 (0.09)	-12.72* (6.56)	-6.90 (5.99)	-0.17* (0.08)	-0.16 (0.12)
Winner part 2 * Feedback T	0.31** (0.12)	0.28** (0.12)	26.08*** (6.12)	23.40*** (6.40)	0.26** (0.11)	0.28** (0.13)
Winner part 2 * Feedback-Quota T	0.07 (0.15)	0.10 (0.15)	10.97 (8.71)	10.70 (7.87)	0.37** (0.14)	0.40** (0.14)
Winner part 2 * Feedback-Same-Task T	0.32** (0.14)	0.24 (0.14)	23.75*** (6.57)	18.22*** (5.86)	0.45** (0.16)	0.37* (0.19)
SC	-	0.05* (0.03)	-	3.57* (1.93)	-	-0.00 (0.04)
Female	-	-0.21*** (0.05)	-	-11.98*** (2.52)	-	-0.16*** (0.05)
Other individual characteristics	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>
Nb observations	360	348	360	348	360	348
$R^2$	0.079	0.158	0.110	0.194	0.124	0.170

*Notes:* Marginal effects are reported. All standard errors in parentheses are clustered at the village level. Models (1), (2), (5) and (6) are linear probability models; models (3) and (4) are OLS. Other individual characteristics include: score in part 1, risk score, age, education and log of family income. The regressions control for the proportion of females in the session. 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). \*  $p < 0.10$  \*\*  $p < 0.05$  \*\*\*  $p < 0.01$ .

first result as follows:

**Result 1:** *There are spillover effects of success in the forced competition in one task on relative self-confidence in a subsequent, unrelated, task, and then on competitiveness.*

Note that this analysis is silent on whether such feedback spillovers also act as a booster of performance. We also tested the impact of winning the forced competition in part 2 on performance in part 4 by means of regressions similar to those reported in Table 3. We



found no significant effect of feedback on performance across tasks, regardless of whether the piece-rate or the tournament has been chosen in part 4. We acknowledge that a cleaner test would have requested an additional part with a forced tournament in the BiB task.

### 4.3 The Asymmetry of Feedback Spillovers Across Tasks

We now test hypothesis Hb0. We have already identified that receiving positive feedback on one’s success in the first task increases self-confidence in the second task. We now test whether those who lost the forced tournament in part 2 are less self-confident and thus, have a lower entry rate in the tournament in part 4 than losers who did not receive any feedback (Baseline). Based on Mann-Whitney rank-sum tests, Table 2 indicates that losers in the Feedback treatment do not differ in terms of absolute or relative self-confidence and entry rate from losers in the Baseline. By contrast and not surprisingly, in the Feedback-Same-Task treatment losers in part 2 have lower self-confidence and compete significantly less in part 4 than in the Baseline and compared to winners in the same treatment.

Controlling or not for individual characteristics, the regressions reported in Table 3 confirm the lack of significant differences in the belief of being one of the two top scorers and in tournament entry in part 4 between losers in the Feedback treatment and losers in the Baseline. By contrast, models (3) and (4) show a significant negative coefficient for the perceived chance of winning. Overall, the effect of feedback on losers is weaker and less consistent than the effect on winners, rejecting Hb0. This leads to the following result:

**Result 2:** *Feedback spillovers across domains are asymmetric. While receiving good news about relative ability in the first task increases self-confidence, receiving bad news reduces the perceived chance of winning but not the belief of being among the two top scorers in the new task nor tournament entry.*

### 4.4 The Impact of Status and Salience on Feedback Spillovers

Hc0 predicts that feedback spillovers are not modulated by individuals’ status and Hd0 predicts that a policy intervention, such as Affirmative Action, has no effect on feedback spillovers. In this section we test these two hypotheses successively by examining whether low-caste participants react to feedback like high-caste participants.

As a preliminary, we compare SC and GC participants in terms of performance and self-confidence under the two forced payment schemes, and their first tournament entry decision

to measure their initial differences. Mann-Whitney rank-sum tests show that SC and GC participants hardly differ in any treatment in terms of scores and prediction errors on their absolute performance in parts 1 and 2, except that SC participants have a more accurate perception than GC participants in part 2 in the Feedback treatment ( $p=0.031$ ). SC and GC participants do not differ in terms of relative self-confidence and competitiveness in parts 2 and 3 in any treatment, except that SC participants are more competitive than GC participants in the Feedback-Quota treatment (t-test with clustering at the village level,  $p=0.026$ ). Kolmogorov-Smirnov tests comparing the distributions of beliefs about absolute or relative performance do not show any significant difference.<sup>18</sup> Thus, overall, the data shows no evidence of a stereotype against the SC participants for the memory task or in favor of them in the Ball-in-Bucket task. SC participants are not less self-confident than GC participants in any task and they are not less competitive. There is no evidence of more noisy priors of the SC participants compared to the GC participants.

Regarding whether status modulates feedback spillovers, we first display in figure 2 the average difference in relative self-confidence and tournament entry rate in the BiB task in part 4 between winners and losers in the forced tournament in part 2, by treatment and by caste. It confirms that in the Baseline there is no significant difference between winners and losers in any caste. Comparing the two panels shows that the differences between winners and losers are always larger for SC than for GC participants. In both Feedback and Feedback-Same-Task treatments, SC winners and losers form significantly different beliefs about being one of two scorers and have different entry rates in the tournament, while no difference is found among the GC participants. Finally, the gap between winners and losers in terms of perceived chance of winning is significant in both castes.

Next, Table 4 reports a similar analysis as Table 3, but allows information about success or failure in the forced tournament in part 2 to have different effects across castes on the belief of being among the two top scorers (models (1) and (2)), the perceived chances of being a winner (models (3) to (4)), and the decision to enter the tournament (models (5) to (6)) in the BiB task. The independent variables include being a winner or a loser

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<sup>18</sup>This analysis is basically supported by Table A7 in Appendix A.4 that reports regressions with controls for standard socio-demographic variables. These regressions show no significant gap in self-confidence between SC and GC participants in parts 1 and 2, regardless of the task. SC participants do not compete less than the GC participants in any treatment and they compete more (significant at the 5% level) when they benefit from the quota policy. SC participants outperform GC participants in part 1 in the Baseline and Feedback treatments (significant at the 1% level) but they underperform in the two other treatments (significant at the 5% level), but differences disappear in part 2. Scores of both groups are significantly lower (at the 1% level) in the Feedback-Same-Task treatment than in the Baseline but only in part 1.

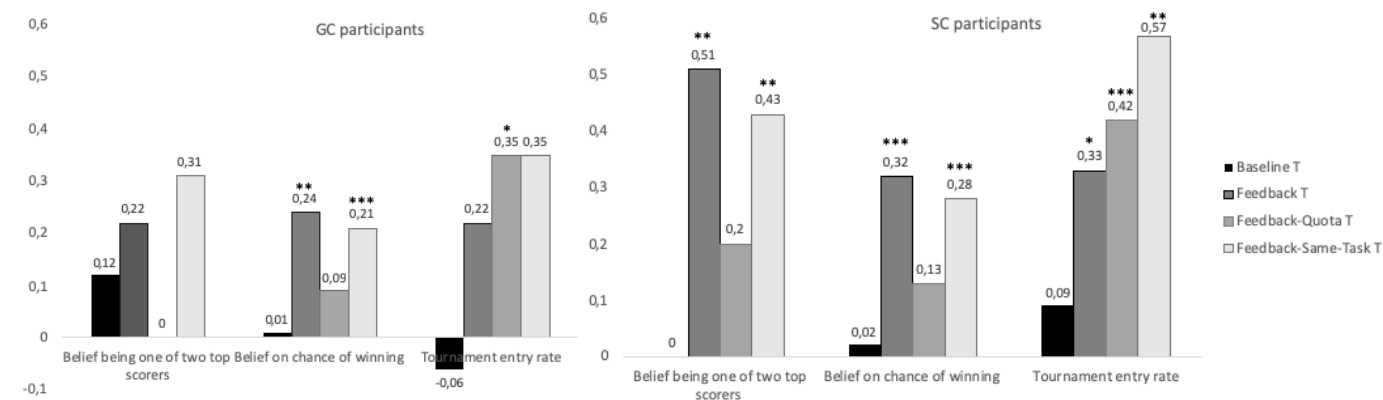


Figure 2: Average Difference Between Winners and Losers in Relative Self-Confidence and Entry Rate in Part 4, by Treatment and Caste

Notes: The two panels, one for each caste, display the average difference between reported values and entry decision in part 4 by winners and losers in part 2. Beliefs about the chance of winning have been rescaled by 1/100 for display (for example, 0.24 means that the average difference between winners and losers is 24%).  $t$ -tests with errors clustered at the village level. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

from each caste in the Baseline and in either the Feedback treatment (uneven models) or the Feedback-Quota treatment (even models), and the same controls as in Table 3. The reference category is being a GC loser in the Baseline.

Table 4 shows that there is no difference between losers and winners in any caste when people are not informed on their success in the forced tournament. In the Feedback treatment, by contrast, feedback spillovers follow slightly different patterns across castes, which rejects our hypothesis Hc0. Lower status SC winners have a significantly higher self-confidence than any sub-group in the Baseline, regardless of how we measure it (models (1) and (3)), but they do not compete more (model (5)). Higher status GC winners do not hold higher beliefs on being one of the top scorers than GC losers but they perceive a higher chance of winning and they compete marginally more. The asymmetry of feedback spillovers is observed for both castes, as both SC and GC losers in the Feedback treatment do not differ from those in the Baseline. This leads to our third result:

**Result 3:** *Positive feedback increases low-caste winners' self-confidence but not their competitiveness in the second, unrelated, task. It increases high-caste winners' perceived chance of winning but not their belief of being a top scorer.*

Table 4: Determinants of Relative Self-Confidence and Tournament Entry in the Second Task (Part 4), by Winning Status, Caste and Treatment

Dep. Variable	Relative confidence Belief being one of the 2 top scorers		Relative confidence % chance of winning		Tournament entry decision	
	F/B (1)	F-Q/B (2)	F/B (3)	F-Q/B (4)	F/B (5)	F-Q/B (6)
<i>Loser * GC * Baseline</i>	<i>Ref.</i>	<i>Ref.</i>	<i>Ref.</i>	<i>Ref.</i>	<i>Ref.</i>	<i>Ref.</i>
Loser * SC	0.04 (0.06)	0.03 (0.05)	0.23 (4.96)	2.16 (5.81)	-0.07 (0.10)	-0.04 (0.10)
Winner * GC	0.08 (0.12)	0.08 (0.13)	-4.64 (7.59)	-3.04 (8.21)	-0.12 (0.13)	-0.10 (0.11)
Winner * SC	0.01 (0.11)	-0.04 (0.09)	0.43 (6.10)	1.01 (5.72)	0.01 (0.24)	-0.01 (0.25)
Treatment	0.05 (0.16)	0.06 (0.12)	-12.12* (6.68)	-4.81 (8.20)	-0.03 (0.14)	-0.07 (0.11)
Loser * SC * Treatment	-0.12 (0.17)	0.10 (0.09)	1.97 (9.63)	7.85 (9.64)	-0.03 (0.11)	0.13 (0.14)
Winner * GC * Treatment	0.11 (0.21)	-0.08 (0.22)	26.14** (10.93)	9.49 (15.41)	0.34* (0.17)	0.47** (0.17)
Winner * SC * Treatment	0.32** (0.12)	0.34* (0.16)	27.00** (11.40)	18.18* (8.71)	0.20 (0.27)	0.44 (0.26)
Controls	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
Nb observations	171	175	171	175	171	175
$R^2$	0.197	0.145	0.225	0.202	0.158	0.195

Notes: Marginal effects are reported and standard errors are clustered at the village level. Models (1), (2), (5) and (6) are linear probability models; models (3) and (4) are OLS. F for Feedback treatment and F-Q for Feedback-Quota treatment. Treatment refers to either Feedback (uneven models) or Feedback-Quota (even models). Regressions control for the individual's score in part 1 and socio-demographic characteristics (caste, risk score, gender, age, education and log of family income). They also control for the proportion of females in the session. 12 observations are missing across different sessions (11 missing values for family income and one missing value for education). \*  $p < 0.10$  \*\*  $p < 0.05$  \*\*\*  $p < 0.01$ .

Our last hypothesis Hd0 is that a common knowledge manipulation of the chances of success of some competitors in the tournament through a quota does not affect feedback spillovers. We reject this hypothesis because Table 2 reveals no difference in self-confidence in part 4 of winners in part 2 in the Feedback-Quota treatment compared to the Baseline, while there were significant differences between the Feedback treatment and the Baseline (see also figure 1). This is confirmed by Table 3 (models (1) to (4)). Allowing for different spillovers across castes, Table 4 shows that the feedback spillovers on self-confidence observed in the Feedback treatment for the low-caste winners lose significance in the Feedback-Quota treatment (they are significant only at the 10% level, see models

(2) and (4)). For the high-caste participants, learning that one was a winner despite the quota policy does not boost self-confidence compared to the Baseline but it increases their competitiveness significantly (model (6))(see also models (5) and (6) in Table 3). This suggests that feedback spillovers may sometimes affect directly competitiveness and that the nature of feedback spillovers may change with the manipulation, as summarized in the following result:

**Result 4:** *An exogenous manipulation of the chances of success of some competitors weakens feedback spillovers on self-confidence, showing that the perceived informative value of the outcome of the forced tournament in the first task is now discounted. Feedback spillovers tend to move from self-confidence to competitiveness.*

Although this sub-section is centered on the sensitiveness of feedback spillovers to caste status, we complement the analysis by examining other sources of heterogeneity. Since we observe a gender gap in confidence and competitiveness (see Table 3), we have studied the sensitiveness of feedback spillovers to gender status. Table A8 in Appendix A.4 shows that in the Baseline both female winners and female losers of the forced tournament in part 2 are less confident in terms of chances of winning and competitive than male losers. But in the Feedback treatment, learning that one is a winner in the forced competition has a similar positive and significant spillover on both females' and males' perceived chance of winning. Feedback has an additional effect on males' perceived chance of being one of the two top scorers and competitiveness, but not on females' (for females increase in entry is only significant at the 10% level). Thus, in contrast to Huang and Murad (2020) we do not find that feedback spillovers eliminate the gender gap in competitiveness.

We also explored whether spillovers are modulated by individuals' confidence in the first task. We replicate the regression analysis reported in Table 3 allowing spillover effects to differ according to whether individuals reported above median beliefs about their chance of winning the forced tournament in part 2, or not. Table A9 in Appendix A.4 shows that in the Baseline having above or below median confidence in the first task does not affect confidence and competitiveness in the second task. But in the Feedback treatment learning that one is a winner in the forced competition increases significantly self-confidence (both the belief of being a top scorer and the perceived chance of winning) and competitiveness of the participants whose confidence in the first task was above median.

## 4.5 Efficiency

We finally examine how feedback spillovers affect efficiency, by studying whether they lead individuals to make better or worst decisions regarding the decision to compete in the BiB task.<sup>19</sup> There are two types of *ex post* 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.

In the Feedback treatment, 77.24% of the participants who were not among the two top-scorers in the BiB task and who received bad news in the memory task rightly decided not to compete in part 4. This is the case for only 50% of less able participants who received good news. Receiving good news in the first task motivated too many less able participants to compete in the second task.<sup>20</sup> Indeed, in the Feedback treatment 54.54% of the top scorers in the BiB task who received bad news in the memory task rightly decided to compete in part 4, but only 33.33% of the most able who received good news. Comparing the Baseline and the Feedback treatment suggests that, on average and in tendency, the quality of the decisions of the informed participants who were not among the two top-scorers in part 4 from receiving feedback on the first task decreased, while that of the top scorers increased, but the difference is not significant. Indeed, in the Baseline 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 the Feedback treatment, the respective percentages are 68.75% (*t* test,  $p=0.453$ ) and 40.62% (*t* test,  $p=0.505$ ).<sup>21</sup> A complementary simulation exercise also concludes that the feedback has no bearing on efficiency.<sup>22</sup>

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<sup>19</sup>Alternatively, when we measure efficiency by earnings we find no evidence of an impact of the spillovers. The average payoffs in the BiB task are 57.98 points in the Baseline, 67.50 in the Feedback treatment, 61.25 in the Feedback-Quota treatment, and 81.19 in the Feedback-Same-Task treatment. Only the payoffs achieved in the Feedback-Same-Task treatment significantly exceed those achieved in the Baseline ( $p=0.020$ ), probably because in this treatment subjects performed the same task more than once.

<sup>20</sup>In fact, winners in the first task do not perform better in the second task than losers in both the Baseline (*t*-test,  $p=0.906$ ) and the Feedback treatment ( $p=0.155$ ).

<sup>21</sup>The conclusions do not change if we consider the Feedback-Quota treatment instead of the Feedback treatment. In the Feedback-Quota treatment, among the less able subjects in the BiB task 50% of those who received bad news and only 17% of those who received good news rightly decided not to compete. Among the top scorers 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 the Feedback-Quota treatment 67.19% of the less able subjects in the BiB task abstained from competing in part 4, and 34.38% of the most able chose to compete. The differences between the Feedback-Quota treatment and the Baseline are not significant.

<sup>22</sup>We simulated for each participant of the Baseline and the Feedback treatments 1000 groups of five

## 5 Discussion and Conclusion

In this paper we investigated the externalities generated by relative performance feedback in a task on individuals' self-confidence and competitiveness in another task when the probabilities of success in the two tasks are objectively uncorrelated. Our artefactual field experiment delivers four remarkable findings.

First, success in a first task breeds self-confidence and competitiveness in a second unrelated task, to the same extent as people updating their priors after performing the same task repeatedly. Second, feedback spillovers are asymmetric, in line with studies finding that people weight more good than bad ego-relevant news. While receiving good news increases self-confidence, learning that one has lost a tournament reduces the perceived chance of winning but affects neither the belief of being among the two top scorers, nor competitiveness in the new task. Third, status modulates feedback spillovers. Good news increases low-caste winners' confidence in the second task but not their competitiveness, while it increases high-caste winners' perceived chance of winning but not their belief of being a top scorer. Note that we may underestimate the effect of status since our low-caste participants are probably of better standing than the average of the caste (their average income and education levels do not differ from the average of high-caste participants). Finally, feedback spillovers on confidence tend to disappear when the differences between the settings of the tasks are made more salient. Manipulating the chances of winning of some competitors in the first task and then, removing the quota in the second task discounts the perceived informative value of success on the subjective chance of succeeding in the second task.

More treatments would be needed to identify precisely the mechanism(s) behind such feedback spillovers across tasks, and our design only allows us to make suggestions about the mechanism(s) at play. A first mechanism could be that individuals mistakenly believe that performances in the two tasks are objectively correlated, and they update their priors in the new task by genuinely inferring from their success in the first task. However, the observed asymmetry of spillovers does not support an explanation in terms of unmotivated cognitive mistakes, since if they believed that abilities in the two tasks were related individuals should update downward after a failure. A second, somewhat opposing, explanation is

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and calculated the empirical likelihood of them winning the tournament. Then, using these probabilities, we calculated the difference in expected payoffs under the tournament or the piece rate and their actual payoff under their chosen scheme. Finally, we compared this efficiency measure across the Baseline and the Feedback treatments, which leads us to reject that they are different ( $t$  test,  $p=0.40$ ).

based on motivated beliefs driven by instrumental motives. Individuals understand that the two tasks are uncorrelated but they inflate their self-confidence in the second task to motivate themselves to compete. This motivation may also have been reinforced by success in the first task if the latter induced an upward revision of aspirations. Our first two results are consistent with such an explanation, but not the analysis of the heterogeneity of feedback spillovers. Indeed, spillovers are associated more with males who were already more competitive and confident than females in the first task. They characterize also winners with a level of self-confidence above the median in the first task but not winners whose confidence was median or below median. Thus, there is no evidence that they identify with people who need more motivation to compete in the future. To test directly the role of strategic motivated beliefs, an extension could be adding treatments that would mute this channel. For example, success in the tournament in the second task would not be determined by the participant's relative performance but by the relative performance of another participant who would have obtained the same outcome in the forced competition (similar to [Coutts \(2019\)](#) for example). Or, participants would not have to choose their payment scheme in the last part but would have to report their beliefs about their relative performance after performing the task (but before receiving any relative feedback).

More likely mechanisms behind feedback spillovers across tasks are emotional or hedonic. The joy of winning in the first task may improve individuals' mood or induce the feeling that they are having a "lucky day". Both could increase their optimism and possibly, but not necessarily, their competitiveness. Alternatively, winners may be looking actively for information that generates a higher anticipatory utility by boosting their self-esteem without any strategic motive related to the decision to compete. This might explain that learning about one's success in the first task increases the self-confidence of lower status participants without making them more competitive (low-caste winners and female winners). Both motivated (hedonic) and unmotivated (emotional) motives are compatible with our findings, including the asymmetry of spillovers. To test directly the role of the feeling of having a lucky day, an extension could be a treatment in which success in the first task would not be determined by the participant's relative performance but by a random lottery task. This could generate the same feeling of a lucky day but in a value-neutral context for ego.

The feedback spillovers we have isolated operate through self-confidence, whereas [Huang and Murad \(2020\)](#) identified a taste-based channel operating directly on competitiveness, especially for females, but not through beliefs. Such taste-based spillovers could be driven



by the experience of having received positive feedback that would generate appetite for more such feedback and thus, the willingness to compete more. In our study, the only case where competitiveness is affected without a change in beliefs is in the Feedback-Quota treatment for the high-caste winners. However, we would not interpret this as a change in preferences, but more as a counter-reaction to the quota advantaging lower-caste members.

Our study is silent on the persistence of feedback spillovers over time. This dimension should be explored in the future. It might be also interesting to test whether experience matters, since in our design participants were not able to test their ability in the second task under each payment scheme before deciding whether to compete. Exploring these dimensions is important to derive useful policy implications. Our current results already invite education authorities and business managers to pay attention to the externalities of feedback policies on students' and workers' self-esteem and motivation across activities. Since we find mainly positive externalities on self-confidence, without any harm on efficiency or on less successful individuals (at least in a context where only a minority of competitors can win), they should be encouraged to communicate more systematically such successes to individuals. Yet, they should be aware that such spillovers are heterogeneous and more likely to affect individuals who are already more confident.

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## A Appendix

### A.1 Instructions

## **Instructions for the different treatments**

### Introduction (Common to 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.

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### **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 the Feedback Treatment**

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 the Feedback-Quota Treatment

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 the Feedback-Same-Task Treatment**

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  $2 \times 10 =$  Rs. 20; if you successfully throw 10 balls, you will earn  $10 \times 10 =$  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 to 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. \_\_\_\_\_



## A.2 Experimental sites: West Bengal and South 24 Paraganas

(a) West Bengal



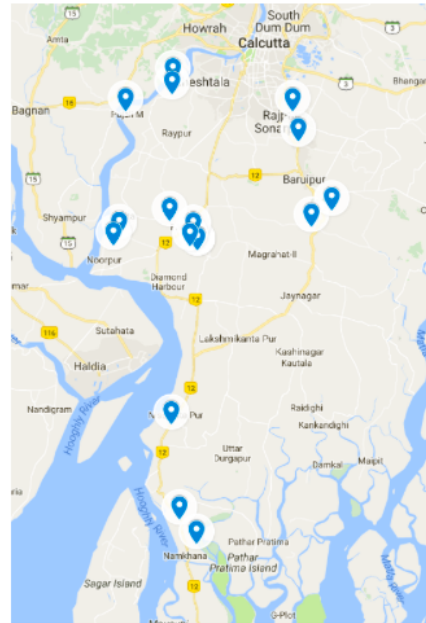
(b) South 24 Paraganas



(c) Blocks within South 24 Paraganas



(d) Sampled Villages and Wards



### A.3 Pictures of Experimental Sessions



## A.4 Appendix Tables

*Table A1: Summary statistics on the subject-pool, by treatment*

Socio-demographics	Definition	Baseline	Feed.	Feed. Quota	Feed. Same-Task
Age	Age	18.87	20.27	19.04	22.27**
Female	1 if female, 0 otherwise	0.49	0.46	0.41**	0.45
SC	1 if caste is 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
Log Family 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 reports mean values for each treatment. \*\* indicate that the comparison between  $T_i$  ( $i$ =Feedback, Feedback-Quota, Feedback-Same-Task) and the Baseline is significant at the 5% level in  $t$ -tests, with errors clustered at the village level.

*Table A2: Summary statistics on the subject-pool, by caste and treatment*

Socio-demographics <i>Caste</i>	Baseline		Feedback		Feedback-Quota		Feedback-Same-Task	
	GC	SC	GC	SC	GC	SC	GC	SC
Age	19.12	18.64	20.62	19.96	18.96	19.11	21.56	22.95
Female	0.45	0.52	0.40	0.51	0.38	0.43	0.44	0.46
Education	12.05	11.80	12.31	12.31	12.29	12.25	12.36	11.90
Log Family Income	8.85	8.65	8.65	8.46	8.52	8.63	8.45	8.31
Risk attitude	46.50	41.70*	42.44	46.27	37.56	33.82	39.02	43.14

*Notes:* The table reports mean values for each caste in each treatment.  $t$ -tests compare the values for SC and GC subjects in each treatment, with errors clustered at the village level.\*  $p < 0.10$ .

Table A3: Score in Part 1 and Prediction Errors in Absolute Self-Confidence, by Part and Treatment

Treatment	Baseline	Feedback	Feedback-Quota	Feedback-Same-Task
Score in part 1	8.54	8.01	7.76	5.64
$T_i$ vs. Baseline	-	-0.53	-0.78**	-2.90**
<i>Absolute self-confidence — Prediction error</i>				
Part 1	1.42	1.43	1.40	1.47
$T_i$ vs. Baseline	-	0.01	-0.02	0.05
Part 2	1.36	1.33	1.39	1.31
$T_i$ vs. Baseline	-	-0.03	0.03	-0.05
Part 3	1.38	1.49	1.38	0.62
$T_i$ vs. Baseline	-	0.11	0.00	-0.76**
Part 4	2.42	1.87	2.35	0.75
$T_i$ vs. Baseline	-	-0.55	-0.07	-1.58**

Notes: The table displays mean scores in part 1 (for the memory task in the Baseline, Feedback and Feedback-Quota treatments and for the Ball-in-Bucket task in the Feedback-Same-Task treatment) 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 the Baseline, Feedback and Feedback-Quota treatments (alternatively, the number of balls subjects think they will toss in the bucket in the Feedback-Same-Task treatment). Prediction errors are the mean differences between beliefs and the actual numbers of correct recalls or 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. The table also reports the level of significance of two-sided Mann-Whitney ranksum tests comparing each treatment  $T_i$  (with  $i$ =Feedback, Feedback-Quota or Feedback-Same-Task treatment) to the Baseline, each subject contributing one independent observation. \*\*  $p < 0.05$ .

Table A4: Relative Self-Confidence, by Part and Treatment

Treatment	Baseline	Feedback	Feedback-Quota	Feedback-Same-Task
<i>Relative self-confidence (belief of being one of the two top scorers)</i>				
Part 2	0.32	0.36	0.39	0.43
<i>T<sub>i</sub> vs. Baseline</i>	-	<i>0.04</i>	<i>0.07</i>	<i>0.11</i>
Part 3	0.24	0.26	0.35	0.29
<i>T<sub>i</sub> vs. Baseline</i>	-	<i>0.02</i>	<i>0.11</i>	<i>0.05</i>
Part 4	0.30	0.37	0.40	0.34
<i>T<sub>i</sub> vs. Baseline</i>	-	<i>0.07</i>	<i>0.10</i>	<i>0.04</i>
<i>Relative self-confidence (percent chance of winning)</i>				
Part 2	56.10	57.04	58.96	59.05
<i>T<sub>i</sub> vs. Baseline</i>	-	<i>0.94</i>	<i>2.86</i>	<i>2.95</i>
Part 3	56.51	55.83	52.61	50.38
<i>T<sub>i</sub> vs. Baseline</i>	-	<i>-0.68</i>	<i>-3.90</i>	<i>-6.13</i>
Part 4	51.04	44.99	47.63	46.71
<i>T<sub>i</sub> vs. Baseline</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<sub>i</sub> (with i =Feedback, Feedback-Quota or Feedback-Same-Task treatment) and the Baseline treatment report in italics the absolute difference between the mean values in T<sub>i</sub> and the Baseline.



Table A5: Determinants of Relative Self-Confidence and Tournament Entry in Part 4, by Treatment

Dep. variables	Baseline		Feedback		Feedback-Quota		Feedback-Same-Task	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Being one of the two top scorers</i>								
Winner part 2	0.05 (0.07)	-0.03 (0.09)	0.36*** (0.09)	0.30*** (0.08)	0.13 (0.14)	0.11 (0.15)	0.37** (0.13)	0.92** (0.42)
Indiv. charact.	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>
Nb observations	84	80	96	91	96	95	84	82
R <sup>2</sup>	0.011	0.142	0.172	0.279	0.016	0.138	0.144	0.161
<i>% chance of winning</i>								
Winner part 2	0.75 (5.14)	-4.23 (4.96)	26.83*** (3.58)	25.09*** (3.13)	11.72 (7.21)	11.34 (6.48)	24.50*** (4.67)	19.24*** (2.40)
Indiv. charact.	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>
Nb observations	84	80	96	91	96	95	84	82
R <sup>2</sup>	0.010	0.273	0.206	0.256	0.052	0.268	0.194	0.307
<i>Tournament entry</i>								
Winner part 2	0.02 (0.11)	0.01 (0.15)	0.28*** (0.06)	0.25*** (0.06)	0.39** (0.11)	0.28** (0.10)	0.46** (0.13)	0.45** (0.14)
Indiv. charact.	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>
Nb observations	84	80	96	91	96	95	84	82
R <sup>2</sup>	0.001	0.167	0.097	0.220	0.165	0.297	0.254	0.255

Notes: Marginal effects are reported and standard errors (in parentheses) are clustered at the village level. The first panel is about relative self-confidence, as measured by the belief on being among the two top performers in part 4. The second panel is also about relative self-confidence but measured by the perceived chance of being a winner in part 4. In the third panel, tournament choice takes value 1 if the subject chooses tournament in part 4 in the BiB task, and 0 otherwise. The models of panels 1 and 3 are linear probability models, those of panel 2 are OLS. Individual characteristics include: score in part 1, risk score, caste, gender, age, education and log of family income. The regressions control for the proportion of females in the session. 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). \*  $p < 0.10$  \*\*  $p < 0.05$  \*\*\*  $p < 0.01$ .

Table A6: 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	0.30*** (0.06)	0.28*** (0.09)	-	-
Predicted % chances being a winner	-	-	0.01*** ( $< 0.01$ )	0.01*** ( $< 0.01$ )
Controls	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>
<i>Step 1: Dependent variable:</i>				
	<i>Belief being one of the 2 top scorers in part 4</i>		<i>% chance being a winner in part 4</i>	
Winner in part 2	0.02 (0.07)	-0.02 (0.07)	-0.36 (5.04)	-3.30 (5.11)
Feedback T	-0.03 (0.08)	-0.02 (0.08)	-7.79 (5.62)	-5.08 (6.23)
Feedback-Quota T	-0.02 (0.06)	-0.01 (0.06)	-4.59 (4.40)	-3.48 (4.36)
Feedback-Same-Task T	-0.11* (0.06)	-0.10 (0.07)	-9.23** (3.87)	-6.72 (4.40)
Winner * Feedback T	0.23*** (0.09)	0.22** (0.10)	20.76*** (7.25)	17.85* (9.80)
Winner * Feedback-Quota T	0.20* (0.11)	0.23** (0.10)	15.84** (6.74)	16.47** (6.56)
Winner * Feedback-Same-Task T	0.34*** (0.10)	0.27** (0.12)	24.40*** (5.99)	18.42** (7.85)
Nb observations	360	348	360	348
Log pseudo-likelihood	-410.78	-375.59	-1862.09	-1776.98
Prob $>\chi^2$	$< 0.001$	$< 0.001$	$< 0.001$	$< 0.001$

*Notes:* Marginal effects are reported and standard errors (in parentheses) are clustered at the village level. 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. When included, controls represent the individual's score in part 1 and socio-demographic characteristics (caste, risk score, gender, age, education and log of family income). All regressions control for the proportion of females in the session. 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). \*  $p < 0.10$  \*\*  $p < 0.05$  \*\*\*  $p < 0.01$ .

Table A7: Determinants of the Scores, Absolute and Relative Self-Confidence in Parts 1 and 2 and Tournament Entry in Part 3

Dep. Variable	Part 1		Part 2			Part 3	
	Score (1)	Absolute confidence (2)	Score (3)	Absolute confidence (4)	Relative confid.1 (5)	Relative confid.2 (6)	Tourn. entry (7)
GC * Baseline T.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Feedback T.	-0.43 (0.32)	-0.03 (0.38)	-0.58 (0.50)	0.30 (0.55)	0.04 (0.11)	0.51 (3.76)	0.10 (0.08)
Feedback-Quota T.	-0.11 (0.69)	0.06 (0.31)	0.22 (0.29)	0.29 (0.40)	-0.07 (0.11)	-3.25 (4.95)	-0.01 (0.10)
Feedback-Same-Task T.	-2.44*** (0.39)	-0.17 (0.61)	-0.95* (0.46)	-0.24 (0.44)	0.16 (0.12)	6.15 (4.94)	0.08 (0.11)
SC * Feedback T	-0.18 (0.34)	-0.06 (0.50)	0.04 (0.76)	-0.67 (0.85)	-0.02 (0.16)	0.25 (5.19)	-0.07 (0.13)
SC * Feedback-Quota T	-1.26*** (0.37)	-0.34 (0.64)	0.25 (0.50)	-0.30 (0.85)	0.24 (0.16)	13.45** (5.85)	0.27** (0.10)
SC * Feed.-Same-Task T	-0.93** (0.35)	-0.65 (0.81)	-0.94* (0.52)	0.22 (0.69)	0.02 (0.16)	4.55 (7.77)	0.03 (0.11)
SC	0.47*** (0.12)	0.20 (0.31)	0.13 (0.35)	-0.02 (0.60)	-0.08 (0.12)	-5.65 (4.28)	-0.04 (0.06)
Female	-0.73*** (0.22)	-0.29 (0.20)	-0.34 (0.27)	-0.17 (0.21)	-0.20*** (0.05)	-12.73*** (2.05)	-0.15*** (0.05)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Nb observations	348	348	348	348	348	348	348
R <sup>2</sup>	0.250	0.232	0.402	0.033	0.140	0.205	0.118

Notes: Marginal effects are reported and standard errors in parentheses are clustered at the village level. All models except models (5) and (7) are OLS models. Models (5) and (7) are linear probability models. Models (1) and (2) are for part 1, models (3) to (6) are for part 2, and model (7) is for part 3. Relative confid. 1 represents the belief of being one of the two top scorers. Relative confid. 2 represents the percentage chance of being a winner. The other controls include: risk score, age, education and log of family income and in models (3) to (7) the individual's score in part 1. All the regressions control also for the proportion of females in the session. 12 observations are missing across different sessions (11 missing values for family income and one missing value for education). \*  $p < 0.10$  \*\*  $p < 0.05$  \*\*\*  $p < 0.01$ .

Table A8: Determinants of Relative Self-Confidence and Tournament Entry in the Second Task (Part 4), by Gender

Dep. Variable	Relative confidence Belief being one of the 2 top scorers		Relative confidence % chance of winning		Tournament entry decision	
	F/B (1)	F-Q/B (2)	F/B (3)	F-Q/B (4)	F/B (5)	F-Q/B (6)
<i>Loser * Male * Baseline</i>	<i>Ref.</i>	<i>Ref.</i>	<i>Ref.</i>	<i>Ref.</i>	<i>Ref.</i>	<i>Ref.</i>
Loser * Female	-0.20 (0.17)	-0.22 (0.16)	-20.87** (8.88)	-23.41** (9.80)	-0.31* (0.16)	-0.32** (0.13)
Winner * Male	0.04 (0.12)	0.03 (0.10)	-8.24 (5.23)	-9.05* (4.61)	-0.05 (0.13)	-0.08 (0.12)
Winner * Female	-0.19 (0.17)	-0.25 (0.18)	-16.27** (6.34)	-15.44** (6.82)	-0.31** (0.12)	-0.32** (0.12)
Treatment	-0.01 (0.14)	0.08 (0.15)	-18.02** (6.88)	-7.80 (7.37)	-0.15 (0.18)	-0.11 (0.18)
Loser * Female * Treatment	-0.00 (0.14)	0.06 (0.19)	13.47 (10.02)	14.08 (14.28)	0.21 (0.19)	0.24 (0.16)
Winner * Male * Treatment	0.30** (0.13)	0.17 (0.20)	32.18*** (8.87)	21.73** (9.49)	0.41** (0.16)	0.51** (0.22)
Winner * Female * Treatment	0.23 (0.26)	0.11 (0.23)	30.45** (11.94)	10.72 (11.70)	0.37* (0.17)	0.50** (0.15)
Controls	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
Nb observations	171	175	171	175	171	175
$R^2$	0.191	0.122	0.231	0.194	0.160	0.199

Notes: Marginal effects are reported and standard errors in parentheses are clustered at the village level. Models (1), (2), (5) and (6) are linear probability models; models (3) and (4) are OLS. F for Feedback treatment and F-Q for Feedback-Quota treatment. Treatment refers to either Feedback treatment (uneven models) or Feedback-Quota treatment (even models). The regressions control for the individual's score in part 1 and socio-demographic characteristics (caste, risk score, age, education and log of family income). They also control for the proportion of females in the session. \*  $p < 0.10$  \*\*  $p < 0.05$  \*\*\*  $p < 0.01$ .

Table A9: Determinants of Relative Self-Confidence and Tournament Entry in the Second Task (Part 4), by Level of Self-Confidence in the First Task (Part 2)

Dep. Variable	Relative confidence Belief being one of the 2 top scorers		Relative confidence % chance of winning		Tournament entry decision	
	F/B (1)	F-Q/B (2)	F/B (3)	F-Q/B (4)	F/B (5)	F-Q/B (6)
<i>Loser * Below * Baseline</i>	<i>Ref.</i>	<i>Ref.</i>	<i>Ref.</i>	<i>Ref.</i>	<i>Ref.</i>	<i>Ref.</i>
Loser * Above	0.22 (0.15)	0.21 (0.16)	23.66* (12.56)	21.16 (13.19)	0.36 (0.20)	0.37 (0.21)
Winner * Below	0.21 (0.15)	0.17 (0.16)	11.27 (8.58)	10.08 (8.58)	0.15 (0.16)	0.13 (0.15)
Winner * Above	0.08 (0.14)	0.07 (0.11)	5.24 (12.64)	6.45 (11.08)	0.15 (0.14)	0.13 (0.10)
Treatment	0.02 (0.10)	0.19 (0.13)	-6.93 (5.63)	5.00 (9.94)	0.02 (0.17)	0.09 (0.15)
Loser * Above * Treatment	-0.03 (0.24)	-0.20 (0.22)	-7.61 (15.69)	-15.03 (16.52)	-0.14 (0.26)	-0.22 (0.23)
Winner * Below * Treatment	-0.05 (0.23)	-0.09 (0.23)	4.34 (10.15)	-3.68 (11.27)	-0.01 (0.23)	0.16 (0.20)
Winner * Above * Treatment	0.44*** (0.10)	0.03 (0.22)	32.79** (13.80)	6.59 (14.26)	0.36** (0.13)	0.35** (0.13)
Controls	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
Nb observations	171	175	171	175	171	175
$R^2$	0.187	0.079	0.263	0.160	0.167	0.194

Notes: Marginal effects are reported and standard errors (in parentheses) are clustered at the village level. Models (1), (2), (5) and (6) are linear probability models; models (3) and (4) are OLS. F for Feedback treatment and F-Q for Feedback-Quota treatment. Treatment refers to either Feedback treatment (uneven models) or Feedback-Quota treatment (even models). "Above" takes value 1 if the participant reported an above median belief on the chance of winning the forced tournament in part 2 (task 1) and 0 otherwise; "Below" takes value 1 if the participant reported a median or below median belief. The regressions control for the individual's score in part 1 and socio-demographic characteristics (caste, risk score, gender, age, education and log of family income). They also control for the proportion of females in the session. \*  $p < 0.10$  \*\*  $p < 0.05$  \*\*\*  $p < 0.01$ .

## A.5 Appendix Figures

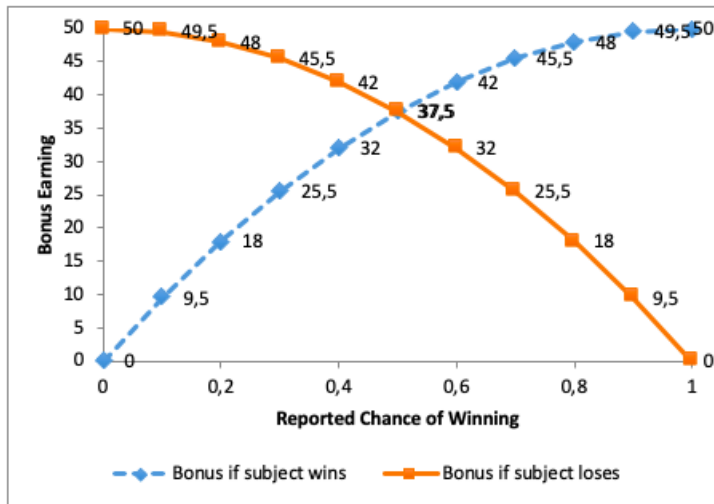


Figure A.1: Proper Scoring Schedule for the Incentivization of Belief Elicitation

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 perceived chance of winning and the y-axis represents the amount of the bonus.

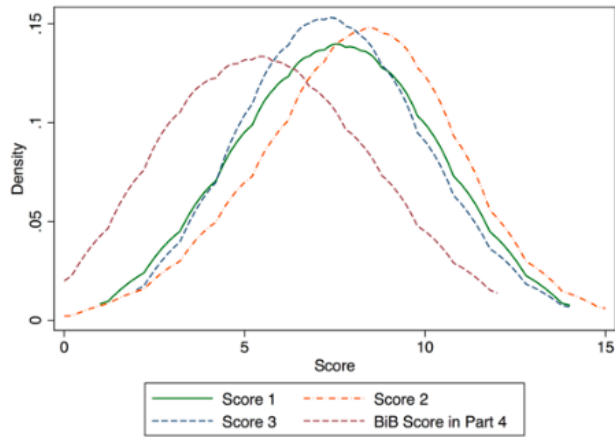


Figure A.2: Distribution of scores in the Ball-in-Bucket task

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.

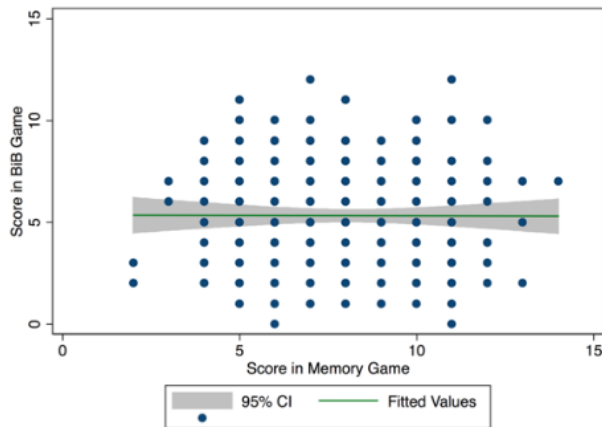


Figure A.3: Scatter plot of score in the Memory task in part 1 and score in the Ball-in-Bucket task in part 4 (pooled treatments Baseline, Feedback, and Feedback-Quota)

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)