ONLINE APPENDIX

SECTION 1: INSTRUCTIONS FOR T4

1. Introduction

This is an experiment in decision making. The instructions are simple – if you follow them carefully and make good decisions, you could earn a considerable amount of money which will be paid to you immediately following this experiment. Please do not look at the decisions of others or talk while the experiment is underway.

The participants in this experiment will participate in a total of 10 decision rounds. In each round, the computer will randomly and anonymously match the participants into groups of 4 players: 1 Player A, 2 Player Bs and 1 Player C. This matching procedure will be repeated every round, and your role may change in each round. As will be described in detail below, your decisions and the decisions of other players will affect your earnings and vice versa.

2. Players' Points

Points will be generated by the computer at the end of each decision round and are based on the players' decisions, which are detailed in Section 3 below.

$$\underline{\textit{Player A's Points}} = \frac{Player\ B1's\ Reported\ Number + Player\ B2's\ Reported\ Number}{2} - Decision\ Cost$$

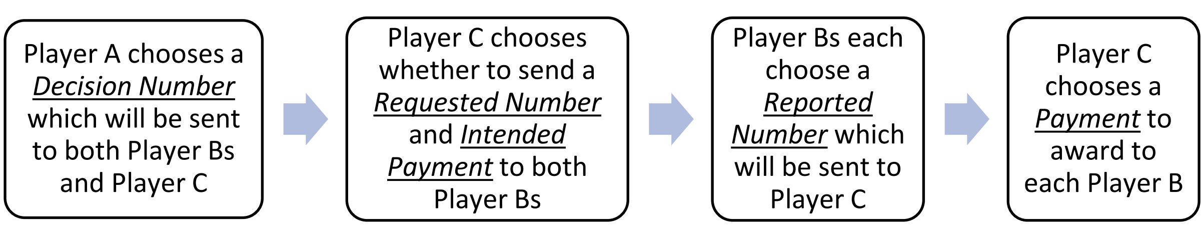
$$\underline{\textit{Player B's Points}}^{*} = 400 + 2 \times Payment - Reported\ Number\ Cost$$

Note that if the Player Bs choose **different Reported Numbers, the Player B whose Reported Number is closest to Player A's Decision Number receives 25 additional points, while the Player B whose Reported Number is furthest from Player A's Decision Number incurs an additional cost of 25 points.*

$$\underline{\textit{Player C's Points}} = 2500 - \frac{Player\ B1's\ Reported\ Number + Player\ B2's\ Reported\ Number}{2} - Player\ B1's\ Payment - Player\ B2's\ Payment$$

3. Moves and Decisions

Move Sequence



Step 1: Player A's Move

Please refer to the "Decision Cost Table". Player A's task in each round is to select a Decision Number, which ranges from 400 to 1600 in intervals of 50 (i.e. Player A can choose 400, 450, …, 1600). Associated with each Decision Number is a Decision Cost. Note that Player A's Decision Cost is minimized when Player A chooses a lower Decision Number. However, as detailed in Step 3, a higher Decision Number may lead Player B to choose a higher Reported Number, which would increase Player A's point earnings.

Step 2: Player C's Move

Upon receiving Player A's Decision Number, Player C chooses whether to submit a Requested Number and Intended Payment to both Player Bs. Player C's Requested Number and Intended Payment may influence Player B's Reported Number, which would affect Player C's payoffs. The Requested Number ranges from 400 to 1600 in intervals of 50. The Intended Payment ranges from 0 to 500 in intervals of 1 (i.e. Player C can choose 0, 1, 2, …, 500). If Player C chooses to send a Requested Number and Intended Payment, the values chosen by Player C will automatically be inserted into the following message, which will be sent to both Player Bs:

"If you help me out by choosing a Reported Number of [Requested Number], I will give you a payment of [Intended Payment]"

Step 3: Player Bs' Move

Please refer to the "Reported Number Cost Grid". Player B's task is to submit a Reported Number which ranges from 400 to 1600 in intervals of 50. The Player Bs will incur a Reported Number Cost when selecting a Reported Number that differs from Player A's Decision Number. Player Bs' Reported Numbers and Reported Number Costs will be shown to Player C. Specifically, the Reported Number Cost is shown below.

$$\text{Reported Number Cost} = 750 * \left(\frac{\text{Decision Number} - \text{Reported Number}}{\text{Decision Number}}\right)^2$$

While the Reported Number Cost is minimized when Player B chooses a Reported Number equal to Player A's Decision Number, Player B is free to choose any Reported Number. A higher Reported Number will increase Player A's point earnings and decrease Player C's point earnings. As detailed in Step 4, Player B's Reported Number may influence the Payment Player C sends to Player B.

Note that the Player B whose Reported Number is the *most different* from Player A's Decision Number will incur a cost of 25 points, while the Player B whose Reported Number is the *least different* will be given an award of 25 points. If the Reported Numbers of both Player Bs are *equally different* from Player A's Decision Number, then neither Player B will incur this additional cost/award of 25 points.

Step 4: Player C's Move

Upon observing both Player Bs' Reported Numbers and Reported Number Costs, Player C incurs a cost which is equal to the *average* of the Reported Numbers. Player C's task is to award a Payment to each Player B. Player C may choose a different (or the same) Payment for each Player B. The Payments chosen by Player C range from 0 to 500 in intervals of 1. Player C's Payments need not equal the value of Player C's Intended Payment, but they may – this is up to Player C. Player C's point earnings will be reduced by the sum of Player C's chosen Payments. The Payments also increase Player B's point earnings by two times the payment amount chosen by Player C.

4. Cash Earnings

We will then repeat the same procedure for 9 more rounds. We will then sum your point earnings across the 10 rounds. We will then multiply these point earnings by 0.002 to obtain your Cash Earnings.

Are there any questions?

DECISION COST TABLE (PLAYER A)

Decision Number (Chosen By Player A)	Decision Cost (Incurred By Player A)
400	61.5
450	77.9
500	96.2
550	116.3
600	138.5
650	162.5
700	188.5
750	216.3
800	246.2
850	277.9
900	311.5
950	347.1
1000	384.6
1050	424.0
1100	465.4
1150	508.7
1200	553.8
1250	601.0
1300	650.0
1350	701.0
1400	753.8
1450	808.7
1500	865.4
1550	924.0
1600	984.6

REPORTED NUMBER COST GRID (PLAYER B)

Player B's Reported Number

Player A's Decision Number

	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600
400	0	12	47	105	188	293	422	574	750	949	1172	1418	1688	1980	2297	2637	3000	3387	3797	4230	4688	5168	5672	6199	6750
450	9	0	9	37	83	148	231	333	454	593	750	926	1120	1333	1565	1815	2083	2370	2676	3000	3343	3704	4083	4481	4898
500	30	8	0	8	30	68	120	188	270	368	480	608	750	908	1080	1268	1470	1688	1920	2168	2430	2708	3000	3308	3630
550	56	25	6	0	6	25	56	99	155	223	304	397	502	620	750	893	1048	1215	1395	1587	1791	2008	2238	2479	2733
600	83	47	21	5	0	5	21	47	83	130	188	255	333	422	521	630	750	880	1021	1172	1333	1505	1688	1880	2083
650	111	71	40	18	4	0	4	18	40	71	111	160	217	284	359	444	537	639	750	870	999	1136	1283	1438	1602
700	138	96	61	34	15	4	0	4	15	34	61	96	138	188	245	310	383	463	551	647	750	861	980	1106	1240
750	163	120	83	53	30	13	3	0	3	13	30	53	83	120	163	213	270	333	403	480	563	653	750	853	963
800	188	144	105	73	47	26	12	3	0	3	12	26	47	73	105	144	188	237	293	354	422	495	574	659	750
850	210	166	127	93	65	42	23	10	3	0	3	10	23	42	65	93	127	166	210	260	314	374	439	509	584
900	231	188	148	113	83	58	37	21	9	2	0	2	9	21	37	58	83	113	148	188	231	280	333	391	454
950	251	208	168	133	102	75	52	33	19	8	2	0	2	8	19	33	52	75	102	133	168	208	251	299	351
1000	270	227	188	152	120	92	68	47	30	17	8	2	0	2	8	17	30	47	68	92	120	152	188	227	270
1050	287	245	206	170	138	109	83	61	43	27	15	7	2	0	2	7	15	27	43	61	83	109	138	170	206
1100	304	262	223	188	155	126	99	76	56	39	25	14	6	2	0	2	6	14	25	39	56	76	99	126	155
1150	319	278	240	204	172	142	115	91	69	51	35	23	13	6	1	0	1	6	13	23	35	51	69	91	115
1200	333	293	255	220	188	158	130	105	83	64	47	33	21	12	5	1	0	1	5	12	21	33	47	64	83
1250	347	307	270	235	203	173	145	120	97	77	59	43	30	19	11	5	1	0	1	5	11	19	30	43	59
1300	359	321	284	250	217	188	160	134	111	90	71	54	40	28	18	10	4	1	0	1	4	10	18	28	40
1350	371	333	297	263	231	202	174	148	124	103	83	66	50	37	26	16	9	4	1	0	1	4	9	16	26
1400	383	345	310	276	245	215	188	162	138	116	96	77	61	47	34	24	15	9	4	1	0	1	4	9	15
1450	393	357	322	289	258	228	201	175	151	128	108	89	72	57	44	32	22	14	8	4	1	0	1	4	8
1500	403	368	333	301	270	241	213	188	163	141	120	101	83	68	53	41	30	21	13	8	3	1	0	1	3
1550	413	378	344	312	282	253	226	200	176	153	132	112	94	78	63	50	38	28	20	12	7	3	1	0	1
1600	422	387	354	323	293	264	237	212	188	165	144	124	105	89	73	59	47	36	26	18	12	7	3	1	0

SECTION 2: LEARNING EFFECTS AND ADDITIONAL DATA ANALYSES

A2.1 Testing for Learning Effects in Experiment 1

Players' Decisions over Time. As mentioned in Section 4, the players' decisions are largely consistent across the first and second halves of the data. Table A1 below displays the data in these two halves, with significant differences bolded.

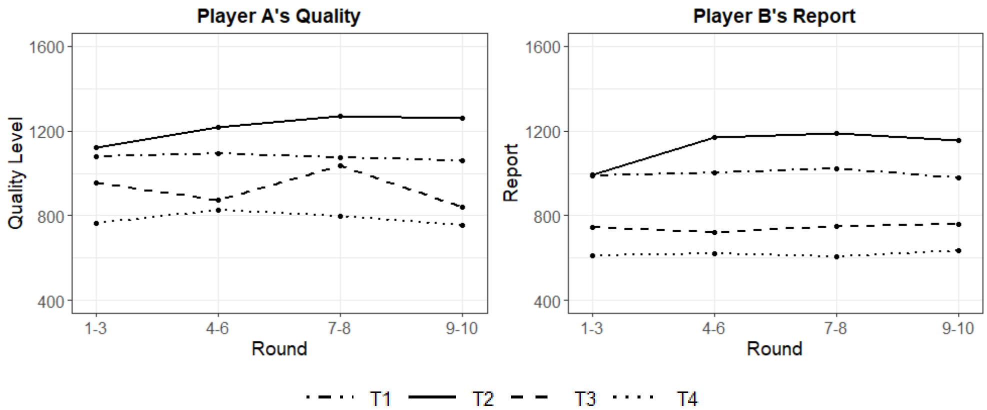
Table A1: Decision Averages for Each Half of the Data

	Player A's Product Quality Levels, $q \in [400, 1600]$		**Player B's Reported Numbers, $\tilde{q} \in [400, 1600]$**		**Player C's Total Payment; T1/T3: $P \in [0, 500]$ & T2/T4: $P \in [0, 1000]$**	
	Rounds 1-5 Mean	Rounds 6-10 Mean	Rounds 1-5 Mean	Rounds 6-10 Mean	Rounds 1-5 Mean	Rounds 6-10 Mean
T1: Single Reviewer	1078	1077	1005	989	53	53
T2: Competition	1156	1259	**1055**	**1179**	55	31
T3: Requests & Single Reviewer	934	912	718	765	**140**	**92**
T4: Requests & Competition	767	807	612	624	179	145
Self-Interested Prediction	1300	1300	1300	1300	0	0

Next, we perform a similar analysis at a more granular level by splitting the data into four blocks (Rounds 1-3, Rounds 4-6, Rounds 7-8 and Rounds 9-10). Figure A1 depicts Player A's quality level and Player B's report across rounds. When we test for differences across the four blocks, the results are quite consistent with those when we compare data halves. Significant differences in decisions arise in only three cases: 1) In T2, Player B's report is lower in the first three periods, compared to the other rounds (all p's < 0.05). Despite this, Player B's report in T2 is never directionally lower than in the other 3 treatments. 2) In T3, Player A's quality level is higher in rounds 7-8, compared to rounds 4-6 and 9-10 (both p's < 0.05). However, there is no clear directional trend over time. 3) In T3, Player C's mean bonus payment is lower in the last 2 rounds compared to rounds 1-3 and 4-6 (both p's < 0.05).[1] Overall, the rank order of decisions across treatments is very stable, suggesting that there are no major learning effects in our data.

[1] We find a similar result if we only test the last round versus rounds 1-9 (p=0.000). However, this terminal round effect could be due to the specific matching in that round, and it does not necessarily imply that subjects are deliberately gaming the last period. Importantly, we find no evidence that the lower bonuses across rounds in T3 lead to higher quality levels by Player A and more objective reports by Player B over time. Finally, when we allow for repeated group matching for two periods (see Section 5.2 of the paper), we find no difference between Player C's bonus payments in the first and second periods of matching. This is notable, as the second period of matching can be thought of as a "last round" of sorts.

Figure A1: Players' Mean Decisions over Rounds



Player C's Reciprocity from Favorable Reporting. Next, we examine whether Player C's reciprocity towards Player B changed over time. To examine this, we split the data into two halves and regress Player C's bonus payment on the difference between Player A's quality level and Player B's report.[2] The results are shown in Table A2. In T1, T2 and T4, Player C's reciprocity from favorable reporting does not differ between the first and second halves of the data (all p's > 0.1). In T3, we find Player C's bonus payment for a given level of underreporting is lower in the second half (p=0.030). However, even in these last 5 rounds, Player C's reciprocity in T3 is still higher than in T1 (p=0.033).

Table A2: Regression of Player C's Bonus Payment on the Difference between Player A's Quality and Player B's Report for Each Data Half, Conditional on Player B Underreporting

OLS Regression: $P = b_1(q - \tilde{q})$	**T1: Single Reviewer**		**T2: Competition**†		**T3: Requests & Single Reviewer**		**T4: Requests & Competition**	
	Rounds 1-5	Rounds 6-10	Rounds 1-5	Rounds 6-10	Rounds 1-5	Rounds 6-10	Rounds 1-5	Rounds 6-10
b_1	0.11** (0.05)+	0.19** (0.07)	0.13 (0.07)	0.11 (0.09)	0.44** (0.05)	0.32** (0.04)	0.32** (0.04)	0.26** (0.03)
R^2	0.208	0.216	0.133	0.200	0.757	0.574	0.397	0.723
Number of Clusters	26	30	25	23	24	27	35	35

+ Standard errors are shown in the parentheses.
† Average reports and payments are used in T2 and T4 to avoid over-representing observations.
** Significant at the 5% level

Comparison Effect by Player C. Finally, we check for evidence of the comparison effect in T4 over time. To begin, note that reviewer reports by Player Bs differ 61% of the time in the first half and 70% in the second half, and the proportions are not significantly different (p=0.373). In the first 5 rounds, whenever

[2] The results are similar even when we divide the data into four blocks.

reports differ, the average bonus for the lower report is 98, contrasting with the bonus of 63 for the reviewer with the higher report (p=0.000). The comparison effect is consistent in the second half of the data, with the average bonus for the lower report being 99, compared to the bonus of 45 for the reviewer with the higher report (p=0.001). Between the two halves of the data, we find no difference in the payments for the higher report (p=0.223) nor for the lower report (p=0.960).

Last, we ran OLS regressions of the difference in payments on the difference in reports between the two halves of data when at least one reviewer underreports. Table A3 displays the regression results. In the first five rounds, a reviewer's report that is 100 points higher (and less favorable) than her counterpart's leads to a bonus that is, on average, 10 points lower, compared to the bonus received by the reviewer with the lower report (p=0.003). In the second half of the T4 data, a 100 point higher report leads to a 14 point lower payment, on average (p=0.003). The estimated coefficients do not differ between halves of the data (p=0.468). In sum, the data suggest that the comparison effect is operative and stable across rounds.

Table A3: Regression of the Difference in Bonus Payments on the Difference in Reports in T4 for Each Data Half

OLS Regression: $P_{B1} - P_{B2} = b_1(\tilde{q}_{B1} - \tilde{q}_{B2})$	**Rounds 1-5**	**Rounds 6-10**
$\boldsymbol{b_1}$	-0.10** (0.03)$^{+}$	-0.14** (0.04)
R^2	0.299	0.251
Number of Clusters	37	36

$^{+}$ Standard errors are shown in the parentheses.
** Significant at the 5% level.

A2.2 Additional Data Analysis – Experiment 1

Table A4: Results of Proportion Tests – Within and Across Treatments

Proportion Tests of the Differences within Treatments				
Player B reports	T1: Single Reviewer	T2: Reviewer Competition	T3: Requests and Single Reviewer	T4: Requests and Reviewer Competition
Under vs Objective	53 vs 34**	48 vs 49	55 vs 25**	68 vs 20**
Under vs Over	53 vs 13**	48 vs 4**	55 vs 20**	68 vs 12**
Objective vs Over	34 vs 13**	49 vs 4**	25 vs 20	20 vs 12**

Proportion Tests of the Differences across Treatments						
Player B reports	T1 vs T2	T1 vs T3	T1 vs T4	T2 vs T3	T2 vs T4	T3 vs T4
Underreporting	53 vs 48	53 vs 55	53 vs 68**	48 vs 55	48 vs 68**	55 vs 68
Overreporting	13 vs 4**	13 vs 20	13 vs 12	4 vs 20**	4 vs 12**	20 vs 12
Objective Reporting	34 vs 49**	34 vs 25	34 vs 20**	49 vs 25**	49 vs 20**	25 vs 20

**Significant at the 5% level.

A2.3 Additional Data Analysis – Experiment 3 with Repeated Matching

Here we detail the results of T3-R and T4-R, the treatments where players are matched for two consecutive rounds.

T3-R: Repeated COI Game with Requests. To begin, Player C sends a request for favorable reports 86% of the time. Player A's mean quality level is lower at 938 in contrast to the self-interested prediction of 1300 (p=0.000). Similarly, Player B's report, at a mean level of 753, is much lower than 1300 (p=0.000). Comparing quality with reports, we find that underreporting is observed 58% of the time and using a paired t-test, we confirm that $\tilde{q}$ is lower than q (p=0.000). Finally, Player C awards an average bonus payment of 89, which is much higher than P = 0 (p=0.000). Together, the results of the repeated game are consistent with our predictions of a COI problem due to reciprocity from favorable reporting (H1).

T4-R: Repeated COI Game with Requests and Reviewer Competition. Here, Player C sends out requests and intended payments 96% of the time. Mean levels of quality and reports, are at 779 and 619, respectively. Both are significantly lower than 1300 (p's = 0.000), as our reciprocity model predicts. Next, reviewers underreport Player A's product quality level 60% of the time. Moreover, the average underreporting (i.e., q minus $\tilde{q}$) is 160, and we confirm that $\tilde{q}$ is lower than q (p=0.000). Player C's total payment to the two Player Bs is 157, on average, which is also significantly higher than the prediction of P = 0 (p=0.000). As such, decisions in T4-R also show the COI problem predicted in H1.

Testing H4: Effect of Informal Agreements and Reviewer Competition. Our theory predicts that in the presence of implicit contracts, reviewer competition has a deleterious effect on quality levels. The results support this prediction for the two-period repeated game. Specifically, when we compare T4-R with the single-reviewer T3-R treatment, we find both lower quality levels (q: 779 vs 938, p=0.004) and lower reports ($\tilde{q}$: 619 vs 753, p=0.002). Player C also awards higher bonuses in T4-R than in T3-R.

Reciprocity from Favorable Reporting. Recall that if there is reciprocity from favorable reporting in our repeated game, then Player B may report lower than Player A's quality level in anticipation of receiving a payment from Player C in return. Table A5 below shows that the majority of reviewers underreport quality in both T3-R and T4-R.

Table A5: Percentage Frequency of Under, Over and Objective Reporting in Experiment 3

	T3-R: Requests and Single Reviewer	**T4-R: Requests and Reviewer Competition**
Underreporting	***58%***	***60%***
Overreporting	12%	14%
Objective Reporting	30%	26%

+Percentages in bold and italics indicate the modal choice across treatments.

Next, we consider the relationship between Player B's favorable reporting and Player C's bonus payments when subjects are matched for two consecutive periods. To do so we run OLS regressions of Player C's bonus payment on the difference between Player A's quality and Player B's report. Table A6 shows the results of this regression for T3-R and T4-R. These findings are discussed in Section 5.2 of the main text and provide evidence of reciprocity from favorable reporting.

Table A6: Regression of Player C's Payment on the Difference between Player A's Quality and Player B's Report, Conditional on Player B Underreporting in Experiment 3

OLS Regression: $P = b_1(q - \tilde{q})$	**T3-R: Requests & Single Reviewer**	**T4-R: Requests & Competition**†
$\boldsymbol{b_1}$	0.29**	0.34**
	(0.04)+	(0.05)
R^2	0.460	0.637
Number of Clusters	34	29

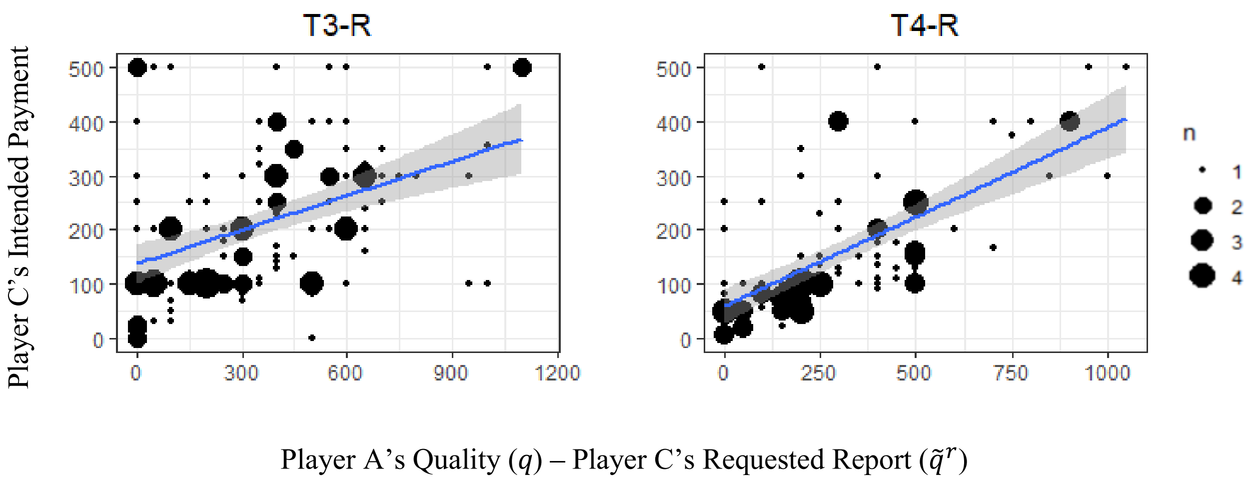
+ Standard errors are shown in the parentheses

† Average reports and payments are used in T4-R to avoid over-representing observations

** Significant at the 5% level

Intended Payments and Requested Level of Underreporting. Here we examine Player C's informal requests in T3-R and T4-R. Player C made an informal agreement request 86% and 96% of the time in T3-R and T4-R, respectively. Unsurprisingly, the mean requested report $\tilde{q}^r$ (T3-R: 629; T4-R: 509) is lower than Player A's quality q (T3-R: 938; T4-R: 779) in each treatment (both p's = 0.000). Next, the positive slopes of the best fit lines in Figure A2 show that expectedly, requests for greater underreporting (i.e., $q - \tilde{q}^r$) by Player C are accompanied by higher intended payments in the repeated game. The slopes are 0.19 and 0.24 for T3-R and T4-R, respectively (both p's < 0.05).

Figure A2: Intended Payments versus Requested Level of Underreporting ($q - \tilde{q}^r$)



Comparison Effect in T4-R. This is discussed in Section 5.2 of the main paper.

SECTION 3: COI GAME – BOTH PLAYERS A AND C CHOOSE QUALITY

Suppose now that both Players A and C produce products, and Player B now reviews both products, but only Player C can offer a bonus. In the first stage, both Players A and C choose qualities (q_A, q_C). In the second stage, all players observe qualities and Player B chooses report levels for both Players A and C ($\tilde{q}_A, \tilde{q}_C$). Finally, in the third stage, Player C chooses a bonus, P, for Player B. The payoff functions for the players are given as follows:

(1) $$\pi_A(q_A, \tilde{q}_A, \tilde{q}_C) = L_A + \tilde{q}_A - \tilde{q}_C - \frac{1}{2k} q_A{}^2;$$

(2) $$\pi_B(q_A, q_C, \tilde{q}_A, \tilde{q}_C, P) = T + d \cdot P - \frac{1}{2} m \left(\frac{q_A - \tilde{q}_A}{q_A}\right)^2 - \frac{1}{2} m \left(\frac{q_C - \tilde{q}_C}{q_C}\right)^2;$$

(3) $$\pi_C(\, q_C, \tilde{q}_A, \tilde{q}_C, P) = L_C + \tilde{q}_C - \tilde{q}_A - \frac{1}{2k} q_C{}^2 - P.$$

Player A's payoffs are equal to a fixed amount, L_A, plus Player B's reported difference between Player A and Player C's quality, minus his quality cost. Similarly, Player C's payoffs are equal to a fixed amount, L_C, plus Player B's reported difference between Player C and Player A's quality, minus his quality costs and less any bonus, *P*, that is paid to Player B. Player B's payoff is equal to a fixed amount, *T*, and any bonus payment, $d \cdot P$, awarded by Player C less the misreporting costs associated with misreporting Player A's quality and Player C's quality, respectively.

As in our original game, we assume that Player C is driven by reciprocity in the last stage. Suppose now that Player C's bonus depends on both $\tilde{q}_A$ and $\tilde{q}_C$. One can think of $P = P_U + P_O$, where P_U is the reward for underreporting Player A's quality and P_O is the reward for overreporting Player C's quality. Then Player C's utility function is given as:

(4) $$U_C(q_A, q_C, \tilde{q}_A, \tilde{q}_C, P_U, P_O) = L_C + \tilde{q}_C - \tilde{q}_A - \frac{1}{2k} q_C{}^2 - P_U - P_O - \theta(P_{CBU} - P_U)_+ - \theta(P_{CBO} - P_O)_+.$$

Assume that Player C is sufficiently guilt averse so that $\theta > 1$, then Player C is willing to award a bonus in the amount of $P_{CBU} = \alpha(q_A - \tilde{q}_A)$, if $\tilde{q}_A \leq q_A$, which occurs when Player B underreports Player A's quality; otherwise it equals 0. Likewise, Player C awards $P_{CBO} = \alpha(\tilde{q}_C - q_C)$, if $\tilde{q}_C \geq q_C$, which occurs when Player B overreports Player C's quality; otherwise it equals 0.

We solve the game by backward induction. At stage 3, Player C solves

(5) $$\max_{P_U, P_O} L_C + \tilde{q}_C - \tilde{q}_A - \frac{1}{2k} q_C{}^2 - P_U - P_O - \theta(P_{CBU} - P_U)_+ - \theta(P_{CBO} - P_O)_+.$$

Since we assume that $\theta > 1$, the bonus awarded for Player B underreporting Player A's quality is $P_U = \alpha(q_A - \tilde{q}_A)_+$ and the bonus awarded for overreporting Player C's quality is $P_O = \alpha(\tilde{q}_C - q_C)_+$. Given this, in stage 2, Player B solves

(6) $$\max_{\tilde{q}_A, \tilde{q}_C} T + d \cdot (\alpha(q_A - \tilde{q}_A)_+ + \alpha(\tilde{q}_C - q_C)_+) - \frac{1}{2} m \left(\frac{q_A - \tilde{q}_A}{q_A}\right)^2 - \frac{1}{2} m \left(\frac{q_C - \tilde{q}_C}{q_C}\right)^2.$$

Player B has no incentive to favor Player A by overreporting Player A's quality or by underreporting Player C's quality given her payoff function. Hence, we can focus solely on the cases in which Player B underreports Player A's quality $\tilde{q}_A < q_A$ and Player B overreports Player C's quality $\tilde{q}_C > q_C$. Taking the first order condition, we find that Player B's optimal report choices constitute an interior solution to the maximization problem, which is $\tilde{q}_A = q_A - \frac{\alpha d}{m} q_A^2$ and $\tilde{q}_C = q_C + \frac{\alpha d}{m} q_C^2$. Based on this, in stage 1, Player A solves

(7) $$\max_{q_A} L_A + q_A - \frac{\alpha d}{m} q_A^2 - (q_C + \frac{\alpha d}{m} q_C^2) - \frac{1}{2k} {q_A}^2.$$

And at the same time, Player C solves:

(8) $$\max_{q_C} L_C + q_C + \frac{\alpha d}{m} q_C^2 - \left(q_A - \frac{\alpha d}{m} q_A^2\right) - \frac{1}{2k} {q_C}^2 - \frac{\alpha^2 d}{m} q_C^2 - \frac{\alpha^2 d}{m} q_A^2.$$

Taking the first order conditions, Player A's optimal choice of $q_A = \frac{1}{\frac{1}{k} + \frac{2\alpha d}{m}} < 1/k$ and Player C's optimal choice of $q_C = \frac{1}{\frac{1}{k} + \frac{2\alpha^2 d}{m} - \frac{2\alpha d}{m}} > 1/k$. In sum, we find that Player A's quality is lower than the self-interested prediction and Player C's quality is higher than the self-interested prediction. Player B underreports Player A's quality and overreports Player C's quality. Finally, Player C rewards Player B's underreporting of Player A's quality and overreporting of Player C's quality. Further note that this prediction is consistent with our original model.

Here we provide a brief discussion about how the model predictions change when we relax some assumptions. Details are available upon request from the authors. First, we assumed that Player C's quality is common knowledge. However, we can show that the above predictions hold even if Player C's quality is unknown to Player B in the game. Second, we assumed that only Player C is able to award a bonus to Player B. Alternatively, we can consider a game where both Players A and C are able to award a bonus to Player B. In this model, Player B's decision to bias her reports to be favorable for either Player A or Player C depends on the intensity of reciprocity for Player A (α_A) and Player C (α_C), respectively. When Player C's reciprocity is stronger than Player A's ($\alpha_C > \alpha_A$), Player B infers that Player C's bonus award will be larger than Player A's and biases her report in favor of Player C. Note that our original game also predicts that Player B will bias reports in favor of Player C.