The Dynamics of Motivated Beliefs
Online Appendix

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Appendix A - Robustness of Belief Dynamics

Appendix A.1 - Direct versus 15 minutes

Table A.1 compares belief adjustments for the two subconditions of *ConfidenceDirect*. No differences are detectable. The same pattern is obtained in other specifications, for instance when using alternative classifications of positive and negative feedback.

Table A.1: Belief Adjustment - Direct Versus 15 minutes Later

	Positive Information		Negative Information		Diff-in-diff	
	(1)	(2)	(3)	(4)	(5)	(6)
1 if 1month	1.347	-1.263	1.694	2.452	1.347	-1.075
	(3.200)	(2.677)	(3.378)	(3.156)	(3.199)	(2.626)
1 if negative information					3.214	2.262
					(3.219)	(3.416)
1 if 1 month negative information					.347	3.636
					(4.653)	(4.158)
rank		.0139		-.930		-.748
		(.593)		(.902)		(.511)
predicted belief adjustment		.623		.365		.453
		(.100)		(.104)		(.070)
Constant	10.178	-.120	13.391	11.486	10.178	5.707
	(2.347)	(2.435)	(2.202)	(6.087)	(2.346)	(2.653)
Observations	85	84	93	93	178	177
(R^2)	0.0021	0.4251	0.0027	0.1667	0.0146	0.2652

OLS estimates, robust standard errors in parantheses. Belief adjustments are defined as posterior - prior. We normalize by multiplying adjustments following negative feedback by (-1). Positive and negative information is defined as follows: positive = at least 2 out of the 3 comparisons with the randomly selected group members are positive; negative = 0 or 1 of the comparisons with the randomly selected group members are positive. Rank refers to subject's rank in their group, predicted belief adjustment is defined as the belief adjustment if subjects would follow Bayes' rule.

Appendix A.2 - Rank Fixed Effects

In Table A.2, we provide estimates of belief adjustments, controlling for rank fixed effects. All our results are robust to these specifications.

Table A.2: Belief Adjustment - Direct Versus One Month Later, Rank FE

	Positive Information		Negative Information		Diff-in-diff	
	(1)	(2)	(3)	(4)	(5)	(6)
1 if 1month	.417	1.437	-10.538	-10.937	.138	.639
	(3.431)	(2.902)	(2.743)	(2.665)	(3.111)	(2.878)
1 if negative information					3.677	2.192
					(3.405)	(3.140)
1 if 1 month negative info					-10.805	-12.131
					(4.372)	(4.038)
predicted belief adjustment		.682		.220		.415
		(.092)		(.071)		(.058)
rank fixed effects	✓	✓	✓	✓	✓	✓
Constant	10.767	-2.006	14.295	9.162	10.766	2.820
	(2.073)	(2.466)	(1.622)	(2.294)	(2.161)	(2.292)
Observations	138	137	148	148	286	285

OLS estimates, robust standard errors in parantheses. Belief adjustments are defined as posterior - prior. We normalize by multiplying adjustments following negative feedback by (-1). Positive and negative information is defined as follows: positive = at least 2 out of the 3 comparisons with the randomly selected group members are positive; negative = 0 or 1 of the comparisons with the randomly selected group members are positive. We control for rank fixed effects where rank refers to subject's rank in their group. Predicted belief adjustment is defined as the belief adjustment if subjects would follow Bayes' rule.

Appendix A.3 - IQ Test Performance Fixed Effects

In Table 3, we provide estimates of belief adjustments, controlling for IQ test performance fixed effects. In Table 4, we provide estimates of belief adjustments, controlling for a set of IQ test score dummies as well as a set of IQ test score dummies interacted with treatment (direct versus one month later). All our results are robust to these specifications.

Table 3: Belief Adjustment - Direct Versus One Month Later, Score FE

	Positive Information		Negative Information		Diff-in-diff	
	(1)	(2)	(3)	(4)	(5)	(6)
1 if 1month	-.259	.533	-10.658	-11.027	.163	.554
	(3.247)	(2.759)	(2.627)	(2.540)	(2.981)	(2.772)
1 if negative information					3.223	1.210
					(2.860)	(2.675)
1 if 1 month negative info					-10.447	-11.456
					(4.185)	(3.888)
predicted belief adjustment		.631		.224		.377
		(.087)		(.068)		(.056)
score fixed effects	✓	✓	✓	✓	✓	✓
Constant	11.027	-.716	14.339	9.107	10.923	4.041
	(2.002)	(2.363)	(1.585)	(2.199)	(1.940)	(2.086)
Observations	138	137	148	148	286	285

OLS estimates, robust standard errors in parantheses. Belief adjustments are defined as posterior - prior. We normalize by multiplying adjustments following negative feedback by (-1). Positive and negative information is defined as follows: positive = at least 2 out of the 3 comparisons with the randomly selected group members are positive; negative = 0 or 1 of the comparisons with the randomly selected group members are positive. We control for score fixed effects, where score captures subjects' overall score in Raven test. Predicted belief adjustment is defined as the belief adjustment if subjects would follow Bayes' rule.

Table 4: Belief Adjustment - Direct Versus One Month Later, Score Interacted with Treatment

	Diff-in-diff	
	(1)	(2)
1 if 1month	12.069	11.386
	(7.153)	(8.959)
1 if negative information	5.960	3.468
	(2.943)	(2.732)
1 if 1 month negative information	-17.069	-16.730
	(5.231)	(5.137)
predicted belief adjustment		.362
		(.059)
score dummies	✓	✓
score dummies interacted with treatment	✓	✓
Constant	17.040	-4.812
	(5.286)	(4.378)
Observations	286	285
(R^2)	0.1153	0.2360

OLS estimates, robust standard errors in parantheses. Belief adjustments are defined as posterior - prior. We normalize by multiplying adjustments following negative feedback by (-1). Positive and negative information is defined as follows: positive = at least 2 out of the 3 comparisons with the randomly selected group members are positive; negative = 0 or 1 of the comparisons with the randomly selected group members are positive. We control for a set of IQ test score dummies as well as a set of IQ test score dummies interacted with a treatment dummy. IQ test score captures subjects' overall score in Raven test, predicted belief adjustment is defined as the belief adjustment if subjects would follow Bayes' rule.

Appendix A.4 - Alternative Definitions of Positive/Negative Feedback

In Table 5, we classify feedback by defining 3 positive comparisons as positive feedback and 3 negative comparisons as negative feedback. In Table 6 we classify feedback according to Bayes' rule, where feedback that should move subjects' beliefs upwards relative to their prior is classified as positive, feedback that should move beliefs downwards is classified as negative. All specifications qualitatively confirm the pattern described in Result 1.

Table 5: Belief Adjustment - Direct Versus One Month Later

	Positive Information		Negative Information		Diff-in-diff	
	(1)	(2)	(3)	(4)	(5)	(6)
1 if 1month	.447	.855	-15.895	-16.923	.447	.137
	(3.919)	(2.930)	(2.840)	(3.113)	(3.917)	(3.067)
1 if negative information					5.284	7.631
					(3.401)	(6.612)
1 if 1 month negative information					-16.343	-16.571
					(4.839)	(4.254)
rank		-.288		-1.825		-1.161
		(.872)		(1.294)		(.880)
predicted belief adjustment		.640		.121		.384
		(.069)		(.097)		(.070)
Constant	15.511	-.580	20.795	31.651	15.511	8.473
	(2.483)	(2.708)	(2.324)	(11.841)	(2.481)	(3.203)
Observations	69	69	74	74	143	143
(R^2)	0.0002	0.4591	0.2649	0.3262	0.1331	0.3188

OLS estimates, robust standard errors in parantheses. Belief adjustments are defined as posterior - prior. We normalize by multiplying adjustments following negative feedback by (-1). Rank refers to subject's rank in their group, predicted belief adjustment is defined as the belief adjustment if subjects would follow Bayes' rule.

Table 6: Belief Adjustment - Direct Versus One Month Later

	Positive Information		Negative Information		Diff-in-diff	
	(1)	(2)	(3)	(4)	(5)	(6)
1 if 1month	-.468	1.739	-11.020	-11.351	-.468	.249
	(4.066)	(3.541)	(2.551)	(2.538)	(4.064)	(3.733)
1 if negative information					1.521	.753
					(2.562)	(3.111)
1 if 1 month negative information					-10.552	-11.620
					(4.799)	(4.555)
rank		1.535		-.896		-.280
		(.869)		(.759)		(.532)
predicted belief adjustment		.714		.293		.414
		(.096)		(.090)		(.063)
Constant	13.319	-8.424	14.840	13.67	13.319	5.008
	(1.851)	(4.204)	(1.772)	(5.478)	(1.850)	(2.585)
Observations	116	115	131	131	247	246
(R^2)	0.0001	0.2465	0.1161	0.2070	0.0537	0.1910

OLS estimates, robust standard errors in parantheses. Belief adjustments are defined as posterior - prior. We normalize by multiplying adjustments following negative feedback by (-1). Rank refers to subject's rank in their group, predicted belief adjustment is defined as the belief adjustment if subjects would follow Bayes' rule.

Appendix A.5 - Posterior Beliefs

Table 7: Posterior Beliefs - Direct Versus One Month Later

	Positive Information		Negative Information		Diff-in-diff	
	(1)	(2)	(3)	(4)	(5)	(6)
1 if 1month	-.127	-.682	8.072	7.264	-.127	-1.099
	(3.518)	(3.543)	(3.331)	(3.278)	(3.517)	(3.548)
1 if negative information					-33.313	-25.640
					(3.071)	(3.970)
1 if 1 month negative information					8.199	8.593
					(4.845)	(4.801)
rank		-1.099		-2.687		-1.922
		(.894)		(.885)		(.626)
Constant	79.259	83.215	45.946	66.347	79.259	86.179
	(2.040)	(3.532)	(2.295)	(5.600)	(2.039)	(2.875)
Observations	138	138	148	148	286	286
(R^2)	0.0000	0.3081	0.0349	0.0932	0.3710	0.3914

OLS estimates, robust standard errors in parantheses. Positive and negative information is defined as follows: positive = at least 2 out of the 3 comparisons with the randomly selected group members are positive; negative = 0 or 1 of the comparisons with the randomly selected group members are positive. Rank refers to subject's rank in their group, predicted belief adjustment is defined as the belief adjustment if subjects would follow Bayes' rule.

Appendix A.6 - Updating in the Short-Run

While not the focus of our paper, in this Appendix we provide a glimpse into short-run updating in our experiment. For this purpose, we consider the subcondition of *ConfidenceDirect* where beliefs were measured *directly* after the feedback. The literature has in particular identified two phenomena related to short-run updating, conservatism (see Möbius et al., 2013) and asymmetry (see Eil and Rao, 2011 and Möbius et al., 2013). With respect to the latter, recently, the evidence has been more mixed, and several papers did not find an asymmetry (see, e.g., Barron, 2016, Coutts, 2016, Schwardmann and van der Weele, 2017).

We do find evidence consistent with conservatism. Overall, people do not update enough, compared to the bayesian benchmark. On average people should (according to Bayes' rule) adjust their beliefs by about 20 percentage points, due to the feedback. The actual normalized belief adjustment is only 11.8 percentage points. The correlation coefficient between belief adjustment and bayesian prediction of belief adjustment is 0.459.

To get at asymmetry, we analyze how closely belief adjustments follow the bayesian prediction, separately for positive and negative feedback. Table 8 provides regression analysis when regressing belief adjustment on the bayesian prediction. Column (1) focuses on positive feedback, column (2) on negative, and column (3) provides the diff-in-diff. While the coefficient for the bayesian prediction is larger for positive feedback compared to negative feedback, the diff-in-diff reveals no significant difference between the two coefficients.

Taken together, we do find evidence for conservatism. We also find some asymmetry in short-run updating, though not statistically significant.

Table 8: Belief Adjustment in the Short-Run

	Dependent variable: Belief Adjustment		
	Positive Information	Negative Information	Diff-in-diff
	(1)	(2)	(3)
predicted belief adjustment	.520	.306	.520
	(.168)	(.111)	(.168)
1 if negative information			4.294
			(3.776)
predicted belief adjustment if negative information			-.213
			(.201)
Constant	1.636	5.930	1.636
	(1.672)	(3.385)	(2.968)
Observations	45	46	91
(R^2)	0.2738	0.1527	0.2244

OLS estimates, robust standard errors in parantheses. Belief adjustments are defined as posterior - prior. We normalize by multiplying adjustments following negative feedback by (-1). Positive and negative information is defined as follows: positive = at least 2 out of the 3 comparisons with the randomly selected group members are positive; negative = 0 or 1 of the comparisons with the randomly selected group members are positive. Rank refers to subject's rank in their group, predicted belief adjustment is defined as the belief adjustment if subjects would follow Bayes' rule.

Appendix A.7 - No Feedback Condition

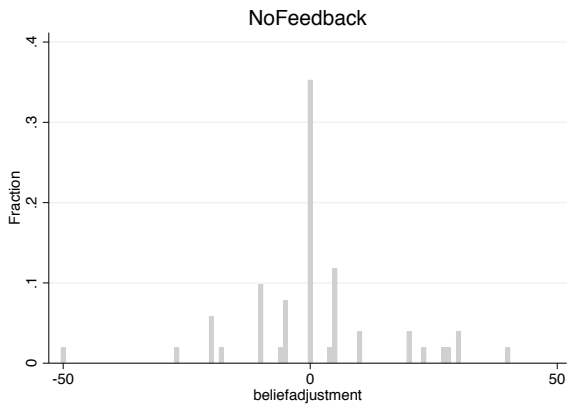

Figure 1: Histogram of Belief Adjustments in the *ConfidenceNoFeedback* condition. Belief adjustments are censored at +/- 50.

Figure 1 shows a histogram of belief adjustments in the *ConfidenceNoFeedback* treatment. As can be inferred, absent feedback, a large fraction of subjects do not change their beliefs at all over the course of one month. For those that do change, there is a remarkable symmetry, and no systematic pattern can be observed. 31% of subjects adjusted their beliefs downwards and 33% adjusted their beliefs upwards. The mean of belief adjustments is

0.22, with a standard deviation of 17.83.

Appendix A.8 - Figures Bayesian Posteriors

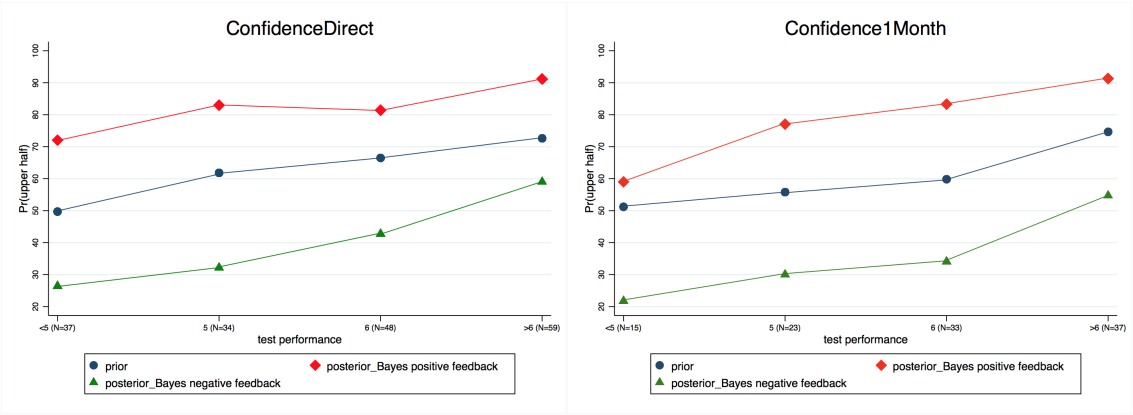

Figure 2: The figure shows means of prior beliefs as well as predicted posterior beliefs (according to Bayes' rule), separately for positive and negative feedback, for different groups of IQ test performance. The left panel shows results for *ConfidenceDirect* the right panel for *Confidence1month* (right panel). Test performance is grouped in four categories, < 5 matrices solved correctly, 5 matrices solved correctly, 6 matrices solved correctly, > 6 matrices solved correctly.

Appendix B - Robustness of Selective Recall

Appendix B.1 - Rank Fixed Effects

Table B.1 and Table B.2 replicate the main result from section 3, controlling for rank fixed effects.

Table B.1: Recall Accuracy, Rank FE

	Recall Accuracy	
	(1)	(2)
1 if negative information	-.399	-.397
	(.116)	(.115)
predicted belief adjustment		-.004
		(.002)
rank fixed effects	✓	✓
Constant	.903	.990
	(.074)	(.088)
Observations	118	118

Results are from a linear probability model of the likelihood to correctly recall the feedback. Robust standard errors in parantheses. Positive and negative information is defined as follows: positive = at least 2 out of the 3 comparisons with the randomly selected group members are positive; negative = 0 or 1 of the comparisons with the randomly selected group members are positive. We control for rank fixed effects where rank refers to subject's rank in their group. Predicted belief adjustment is defined as the belief adjustment if subjects would follow Bayes' rule.

Table B.2: Recall Accuracy - "I don't recall", Rank FE

	"I don't recall"	
	(1)	(2)
1 if negative information	.186	.182
	(.096)	(.092)
predicted belief adjustment		.006
		(0.002)
rank fixed effects	✓	✓
Constant	.052	-.076
	(.061)	(.070)
Observations	118	118

Results are from a linear probability model of the likelihood to state "I don't recall". Robust standard errors in parantheses. Positive and negative information is defined as follows: positive = at least 2 out of the 3 comparisons with the randomly selected group members are positive; negative = 0 or 1 of the comparisons with the randomly selected group members are positive. We control for rank fixed effects where rank refers to subject's rank in their group. Predicted belief adjustment is defined as the belief adjustment if subjects would follow Bayes' rule.

Appendix B.2 - IQ Test Performance Fixed Effects

Table B.3 and Table B.4 replicate the main result from section 3, controlling for IQ test score fixed effects.

Table B.3: Recall Accuracy, Score FE

	Recall Accuracy	
	(1)	(2)
1 if negative information	-.474	-.447
	(.090)	(.090)
predicted belief adjustment		-.005
		(.002)
score fixed effects	✓	✓
Constant	.944	1.027
	(.062)	(.074)
Observations	118	118

Results are from a linear probability model of the likelihood to correctly recall the feedback. Robust standard errors in parantheses. Positive and negative information is defined as follows: positive = at least 2 out of the 3 comparisons with the randomly selected group members are positive; negative = 0 or 1 of the comparisons with the randomly selected group members are positive. We control for score fixed effects where score refers to subject's overall score in the Raven test. Predicted belief adjustment is defined as the belief adjustment if subjects would follow Bayes' rule.

Table B.4: Recall Accuracy - "I don't recall", Score FE

	"I don't recall"	
	(1)	(2)
1 if negative information	.203	.165
	(.076)	(.074)
predicted belief adjustment		.006
		(.002)
score fixed effects	✓	✓
Constant	.043	-.072
	(.053)	(.060)
Observations	118	118

Results are from a linear probability model of the likelihood to state "I don't recall". Robust standard errors in parantheses. Positive and negative information is defined as follows: positive = at least 2 out of the 3 comparisons with the randomly selected group members are positive; negative = 0 or 1 of the comparisons with the randomly selected group members are positive. We control for score fixed effects where score refers to subject's overall score in the Raven test. Predicted belief adjustment is defined as the belief adjustment if subjects would follow Bayes' rule.

Appendix B.3 - Alternative Definitions of Positive/Negative Feedback

In Table B.5, we classify feedback by defining 3 positive comparisons as positive feedback and 3 negative comparisons as negative feedback. In Table B.6 we classify feedback according to Bayes' rule, where feedback that should move subjects' beliefs upwards relative to their prior is classified as positive, feedback that should move beliefs downwards is classified as negative.

Table B.5: Recall Accuracy

	Dependent variable:			
	Recall Accuracy		*"I don't recall"*	
	(1)	(2)	(3)	(4)
1 if negative information	-.607	-.851	.345	.493
	(.083)	(.207)	(.084)	(.189)
rank		.049		-.033
		(.036)		(.030)
predicted belief adjustment		-.003		.004
		(.003)		(.003)
Constant	.964	.895	.036	.028
	(.036)	(.081)	(.036)	(.079)
Observations	70	70	70	70
(R^2)	0.3686	0.4004	0.1556	0.1948

Results are from a linear probability model. Robust standard errors in parantheses. Rank refers to subject's rank in their group, predicted belief adjustment is defined as the belief adjustment if subjects would follow Bayes' rule.

Table B.6: Recall Accuracy

	Dependent variable:			
	Recall Accuracy		*"I don't recall"*	
	(1)	(2)	(3)	(4)
1 if negative information	-.400	-.341	.245	.202
	(.081)	(.116)	(.070)	(.075)
rank		-.005		.002
		(.022)		(.015)
predicted belief adjustment		-.006		.005
		(.003)		(.003)
Constant	.909	1.057	.045	-.076
	(.044)	(.099)	(.032)	(.075)
Observations	99	99	99	99
(R^2)	0.1837	0.2292	0.1000	0.1495

Results are from a linear probability model. Robust standard errors in parantheses. Rank refers to subject's rank in their group, predicted belief adjustment is defined as the belief adjustment if subjects would follow Bayes' rule.

Appendix B.4 - Direction of Recall Bias

We analyze whether those subjects that do not state "I don't recall", misremember the feedback in a systematic way, depending on the feedback they obtained. For that purpose, we simply compute the difference between the number of positive comparisons subjects recalled, and the actual number of positive comparisons they were informed about one month before. We conservatively code subjects that stated "I don't recall" as accurately remembering, i.e., as having a difference of 0.

Table B.7: Recall Deviation

	Dependent variable: *Recall Deviation*	
	(1)	(2)
1 if negative information	.247	.332
	(.078)	(.109)
rank		-.023
		(.019)
predicted belief adjustment		.001
		(.003)
Constant	.019	.079
	(.032)	(.082)
Observations	118	118
(R^2)	0.0708	0.0811

Results are from a linear probability model of the difference between recalled and actual feedback. Specifically, we compute the difference between remembered number of positive comparisons and the actual number. Subjects that stated "I don't recall" are coded as difference of 0. Robust standard errors in parantheses. Positive and negative information is defined as follows: positive = at least 2 out of the 3 comparisons with the randomly selected group members are positive; negative = 0 or 1 of the comparisons with the randomly selected group members are positive. Rank refers to subject's rank in their group, predicted belief adjustment is defined as the belief adjustment if subjects would follow Bayes' rule.

Appendix B.5 - Placebo Condition

45 subjects participated in the placebo condition. The task was to recall which of four 3-digit numbers subjects had previously seen on a list of 20 numbers. Subjects were shown a list of 20 3-digit numbers for approximately one minute. Afterwards, the list was removed, and after an additional minute, subjects were shown four 3-digit numbers, out of which exactly one was part of the list of 20 numbers. Subjects were asked which of the four 3-digit numbers they had previously seen on a list of 20 numbers. Subjects were paid 2 euros if they answered correctly, and also had the option to state "I don't recall". Instructions, and in particular the explanation of the incentive structure were otherwise identical to treatment *Recall*.

From the 45 participants, 25 correctly solved the recall task. Importantly, only one subject selected the payoff-dominated "I don't recall" option.

Appendix B.6 - Alternative Interpretation

Table B.8: Recall Accuracy for Different Subgroups

	Dependent variable: Recall Accuracy					
	All observations		*prior < 60%*		*prior < 50%*	
	(1)	(2)	(3)	(4)	(5)	(6)
1 if negative information	-.407	-.404	-.307	-.366	-.246	-.379
	(.075)	(.111)	(.112)	(.151)	(.144)	(.179)
rank		-.001		.015		.036
		(.019)		(.029)		(.038)
Constant	.907	.911	.895	.835	.846	.688
	(.040)	(.073)	(.072)	(.149)	(.103)	(.222)
Observations	118	118	53	53	38	38
(R^2)	0.1914	0.1914	0.1025	0.1064	0.0631	0.0832

Results are from a linear probability model of the likelihood to correctly recall the feedback in treatment *Recall*. Columns (1) and (2) contain all subjects. Columns (3) and (4) only use subjects that stated a prior of ranking in the upper of the group below 60%. Columns (5) and (6) further reduce the sample size and focus on subjects that stated a prior below 50%. Robust standard errors in parantheses. Positive and negative information is defined as follows: positive = at least 2 out of the 3 comparisons with the randomly selected group members are positive; negative = 0 or 1 of the comparisons with the randomly selected group members are positive. Rank refers to subject's rank in their group.

Appendix C

Appendix C.1 - Robustness of Announcement Results

All results are robust to adding controls and to using alternative classifications of positive and negative feedback In Table C.1, we show results when we classify feedback by defining 3 positive comparisons as positive feedback and 3 negative comparisons as negative feedback. In Table C.2 we classify feedback according to Bayes' rule.

Table C.1: Belief Adjustment - Announcement Versus One Month Later

	Positive Information		Negative Information		Diff-in-diff	
	(1)	(2)	(3)	(4)	(5)	(6)
1 if announcement	-1.753	-1.993	15.191	15.902	-1.753	-1.806
	(4.080)	(3.135)	(5.254)	(5.311)	(4.087)	(3.218)
1 if negative information					-11.058	-16.515
					(3.455)	(6.434)
1 if 1 month negative information					16.944	17.082
					(6.648)	(6.309)
rank		1.186		-.867		.158
		(1.360)		(1.169)		(.969)
predicted belief adjustment		.524		0.081		0.380
		(.087)		(.135)		(.079)
Constant	15.958	0.158	4.9	8.707	15.958	5.969
	(3.037)	(3.566)	(1.643)	(10.247)	(3.041)	(3.412)
Observations	63	63	52	52	115	115
(R^2)	0.0028	0.3903	0.1738	0.1840	0.1000	0.2431

OLS estimates, robust standard errors in parantheses. Belief adjustments are defined as posterior - prior. We normalize by multiplying adjustments following negative feedback by (-1). Rank refers to subject's rank in their group, predicted belief adjustment is defined as the belief adjustment if subjects would follow Bayes' rule.

Table C.2: Belief Adjustment - Announcement Versus One Month Later

	Positive Information		Negative Information		Diff-in-diff	
	(1)	(2)	(3)	(4)	(5)	(6)
1 if announcement	3.449	.654	13.021	13.410	3.449	2.015
	(4.520)	(4.279)	(3.685)	(3.765)	(4.521)	(4.301)
1 if negative information					-9.031	-10.975
					(4.068)	(5.271)
1 if 1 month negative information					9.572	11.922
					(5.832)	(5.774)
rank		1.430		-.722		-.091
		(.966)		(.848)		(.643)
predicted belief adjustment		.556		.192		.319
		(.135)		(.113)		(.085)
Constant	12.851	-3.106	3.82	3.835	12.851	6.593
	(3.627)	(6.068)	(1.841)	(7.494)	(3.627)	(4.492)
Observations	97	97	94	94	191	191
(R^2)	0.0062	0.1411	0.1257	0.1503	0.0671	0.1275

OLS estimates, robust standard errors in parantheses. Belief adjustments are defined as posterior - prior. We normalize by multiplying adjustments following negative feedback by (-1). Rank refers to subject's rank in their group, predicted belief adjustment is defined as the belief adjustment if subjects would follow Bayes' rule.

Appendix C.2 - Tournament Announcement

The tournament announcement condition was similar to *Announcement*, with the key difference being that now we announced at the first lab meeting that in 1 month, subjects would need to decide whether they want to participate in a tournament or not. Subjects were informed that they would compete against another randomly selected member of their group and that they would win the tournament if their rank in the group was higher than that of their competitor. Subjects were not given any further details about the tournament, but it was emphasized that the more accurate their beliefs about their rank in the group are, the better they will be able to make the tournament entry choice.[1]

Similar to the announcement of the belief elicitation task in *Announcement*, the tournament was announced during the first session after subjects had received the feedback. In addition, subjects were reminded in a letter they received at the end of the first session. All other aspects of the design were identical to *Announcement*. 58 subjects participated in the tournament announcement condition, and there was no attrition at all, i.e., all subjects that showed-up to the first also showed up to the second experimental session. The experiments were conducted in January and February 2016 at the BonnEconLab. Subjects were mostly students from the University of Bonn and were recruited using the online recruitment system hroot (Bock, Baetge and Nicklisch, 2014). The experiments were computerized using the experimental software z-tree (Fischbacher, 2007) and the online survey tool Qualtrics.

Table C.3 shows the main results. In the table we compare belief adjustments after 1 month between treatment *TournamentAnnouncement* and treatment *Confidence1month*. Columns (1) and (2) reveal that the announcement of a tournament has no significant effect on belief adjustments after positive feedback. Belief adjustments after negative feedback, however, are substantially affected. While beliefs in treatment *Confidence1month* reflected negative negative only to a small degree, beliefs in *TournamentAnnouncement* are substantially adjusted, leading to a sizeable and significant treatment difference (see columns (3) and (4) of Table C.3). Columns (5) and (6) show the results of a difference-in-difference estimation on (i) a treatment dummy, (ii) a feedback dummy, and (iii) an interaction term equal to one if subjects were in the *Confidence1month* treatment and obtained negative information. The coefficient of the interaction term is positive and significant, confirming findings from columns (1)-(4). All results are robust to adding controls and to using alternative classifications of positive and negative feedback In Table C.4, we show results when we classify feedback by defining 3 positive comparisons as positive feedback and 3 negative comparisons as negative feedback. In Table C.5 we classify feedback according to Bayes'

[1]The actual tournament entry decision took place at the end of second lab session. We elicited subjects valuation to participate in the tournament using a simple price list format. In the tournament, subjects received 5 euros if they ranked higher than the randomly chosen other group member. In the price list, subjects could choose between receiving a fixed amount or participating in the tournament. The fixed amount varied from choice to choice and increased in 20 cents increments from 0.20 euros to 3.00 euros.

rule.

Table C.3: Belief Adjustment - Tournament Versus One Month Later

	Positive Information		Negative Information		Diff-in-diff	
	(1)	(2)	(3)	(4)	(5)	(6)
1 if tournament announcement	-3.335	-4.835	16.648	16.703	-3.335	-3.888
	(4.654)	(4.631)	(5.398)	(5.297)	(4.651)	(4.535)
1 if negative information					-7.277	-10.460
					(3.725)	(5.419)
1 if 1 month negative information					19.982	21.067
					(7.128)	(7.029)
rank		1.295		.1925		.334
		(.976)		(1.093)		(.762)
predicted belief adjustment		.556		.058		.251
		(.095)		(.141)		(.093)
Constant	11.113	-2.732	3.836	1.000	11.113	6.611
	(3.200)	(4.530)	(1.909)	(9.216)	(3.199)	(3.466)
Observations	80	80	86	86	166	166
(R^2)	0.0055	0.1738	0.1367	0.1398	0.0744	0.1154

OLS estimates, robust standard errors in parantheses. Belief adjustments are defined as posterior - prior. We normalize by multiplying adjustments following negative feedback by (-1). Positive and negative information is defined as follows: positive = at least 2 out of the 3 comparisons with the randomly selected group members are positive; negative = 0 or 1 of the comparisons with the randomly selected group members are positive. Rank refers to subject's rank in their group, predicted belief adjustment is defined as the belief adjustment if subjects would follow Bayes' rule.

Table C.4: Linear Estimates of Belief Adjustment - Tournament Versus One Month Later

	Positive Information		Negative Information		Diff-in-diff	
	(1)	(2)	(3)	(4)	(5)	(6)
1 if tournament announcement	-5.420	-4.480	22.453	22.600	-5.420	-5.276
	(4.827)	(4.106)	(7.442)	(7.467)	(4.810)	(4.445)
1 if negative information					-11.058	-9.751
					(3.478)	(6.345)
1 if 1 month negative information					27.873	29.676
					(8.878)	(8.567)
rank		-2.207		-.436		-.670
		(.989)		(1.333)		(.918)
predicted belief adjustment		.515		-.029		.214
		(.083)		(.233)		(.135)
Constant	15.958	7.463	4.900	9.422	15.958	11.898
	(3.072)	(2.944)	(1.646)	(15.795)	(3.062)	(4.534)
Observations	37	37	47	47	84	84
(R^2)	0.0326	0.4329	0.2444	0.2459	0.1913	0.2316

OLS estimates, robust standard errors in parantheses. Belief adjustments are defined as posterior - prior. We normalize by multiplying adjustments following negative feedback by (-1). Rank refers to subject's rank in their group, predicted belief adjustment is defined as the belief adjustment if subjects would follow Bayes' rule.

Table C.5: Belief Adjustment - Tournament Versus One Month Later

	Positive Information		Negative Information		Diff-in-diff	
	(1)	(2)	(3)	(4)	(5)	(6)
1 if tournament announcement	-4.101	-5.380	12.106	13.062	-4.101	-4.445
	(5.233)	(5.365)	(4.991)	(4.944)	(5.230)	(5.149)
1 if negative information					-9.031	-11.142
					(4.080)	(5.998)
1 if 1 month negative information					16.207	17.509
					(7.231)	(7.029)
rank		1.127		-.783		-.099
		(1.272)		(.981)		(.837)
predicted belief adjustment		.566		.229		.347
		(.129)		(.135)		(.096)
Constant	12.851	-2.341	3.820	3.244	12.851	6.047
	(3.641)	(6.394)	(1.845)	(9.300)	(3.639)	(4.854)
Observations	71	71	77	77	148	148
(R^2)	0.0073	0.1391	0.0983	0.1398	0.0516	0.1227

OLS estimates, robust standard errors in parantheses. Belief adjustments are defined as posterior - prior. We normalize by multiplying adjustments following negative feedback by (-1). Rank refers to subject's rank in their group, predicted belief adjustment is defined as the belief adjustment if subjects would follow Bayes' rule.

Appendix C.3 - Robustness High Stakes Condition

In Table C.6, we show results when we classify feedback by defining 3 positive comparisons as positive feedback and 3 negative comparisons as negative feedback. In Table C.7 we classify feedback according to Bayes' rule.

Table C.6: Recall Accuracy - Normal Versus High Stakes

	Positive Information		Negative Information		Diff-in-diff	
	(1)	(2)	(3)	(4)	(5)	(6)
1 if high stakes	-.070	-.070	.437	.435	-.070	-.056
	(0.062)	(0.058)	(0.103)	(0.104)	(0.062)	(0.062)
1 if negative information					-0.607	-.722
					(0.083)	(0.149)
1 if high stakes negative information					.507	.492
					(0.120)	(0.121)
rank		.000		.033		.022
		(0.021)		(0.035)		(0.024)
predicted belief adjustment		-.001		-.001		-.000
		(0.002)		(0.003)		(0.002)
Constant	0.964	0.980	0.357	0.091	0.964	0.916
	(0.036)	(0.046)	(0.075)	(0.276)	(0.036)	(0.066)
Observations	66	66	76	76	142	142
(R^2)	0.0169	0.0184	0.1909	0.2030	0.3020	0.3072

Results are from a linear probability model. Robust standard errors in parantheses. Positive and negative information is defined as follows: positive = at least 2 out of the 3 comparisons with the randomly selected group members are positive; negative = 0 or 1 of the comparisons with the randomly selected group members are positive. Rank refers to subject's rank in their group, predicted belief adjustment is defined as the belief adjustment if subjects would follow Bayes' rule.

Table C.7: Recall Accuracy - Normal Versus High Stakes

	Positive Information		Negative Information		Diff-in-diff	
	(1)	(2)	(3)	(4)	(5)	(6)
1 if high stakes	-.057	-.072	.260	.276	-.057	-.071
	(0.066)	(0.067)	(0.096)	(0.099)	(0.066)	(0.068)
1 if negative information					-0.400	-.335
					(0.081)	(0.103)
1 if high stakes negative information					.317	.342
					(0.117)	(0.119)
rank		-.015		-.008		-.015
		(0.020)		(0.025)		(0.016)
predicted belief adjustment		.001		-.003		-.002
		(0.003)		(0.003)		(0.002)
Constant	0.909	0.943	0.509	0.665	0.909	.999
	(0.044)	(0.099)	(0.068)	(0.192)	(0.044)	(0.082)
Observations	98	98	94	94	192	192
(R^2)	0.0075	0.0160	0.0695	0.0876	0.1356	0.1437

Results are from a linear probability model. Robust standard errors in parantheses. Positive and negative information is defined as follows: positive = at least 2 out of the 3 comparisons with the randomly selected group members are positive; negative = 0 or 1 of the comparisons with the randomly selected group members are positive. Rank refers to subject's rank in their group, predicted belief adjustment is defined as the belief adjustment if subjects would follow Bayes' rule.

Appendix D - Sociodemographics Summary and Balance

Table C.8: Sociodemographics and Big 5 - Summary and Balance

	(Gender)	(Student)	(Big 5_1)	(Big 5_2)	(Big 5_3)	(Big 5_4)	(Big 5_5)	(Big 5_6)	(Big 5_7)	(Big 5_8)	(Big 5_9)	(Big 5_{10})	(Big 5_{11})	(Big 5_{12})	(Big 5_{13})	(Big 5_{14})	(Big 5_{15})
Announcement	0.470	0.991	2.565	2.765	4.435	2.878	3.183	2.330	3.878	2.922	3.026	3.791	2.626	3.983	2.130	2.591	3.497
	(0.501)	(0.093)	(1.312)	(1.471)	(1,712)	(1.117)	(1.542)	(1.197)	(1.612)	(1.568)	(1.779)	(1.719)	(1.080)	(1.660)	(1.047)	(1.382)	(1.459)
Confidence1Month	0.509	0.962	2.5	2.796	4.139	2.935	3.324	2.491	3.602	2.806	3.167	3.759	2.704	4.093	2.306	2.463	3.602
	(0.502)	(0.190)	(1.115)	(1.545)	(1.537)	(1.217)	(1.546)	(1.301)	(1.552)	(1.469)	(1.759)	(1.628)	(1.104)	(1.526)	(1.072)	(1.271)	(1.453)
ConfidenceDirect (15minutes)	0.506	0.977	2.402	2.460	4.345	2.954	3.195	2.667	3.862	2.621	3.103	3.816	2.598	4.345	2.161	2.540	3.759
	(0.503)	(0.151)	(1.289)	(1.283)	(1.744)	(1.284)	(1.516)	(1.387)	(1.637)	(1.260)	(1.759)	(1.514)	(1.186)	(1.396)	(1.033)	(1.421)	(1.438)
ConfidenceDirect (Immediate)	0.473	0.956	2.626	2.560	4.132	2.912	3.110	2.363	3.385	2.659	3.121	3.758	2.824	3.967	2.154	2.549	3.527
	(0.502)	(0.206)	(1.435)	(1.384)	(1.675)	(1.244)	(1.629)	(1.028)	(1.718)	(1.408)	(1.725)	(1.649)	(1.279)	(1.567)	(.855)	(1.241)	(1.385)
Recall	0.517	0.983	2.534	2.678	4.212	2.983	3.212	2.619	3.907	2.610	3.407	3.754	2.754	4.127	2.339	2.525	3.585
	(0.502)	(0.130)	(1.344)	(1.484)	(1.627)	(1.365)	(1.606)	(1.320)	(1.591)	(1.580)	(1.882)	(1.579)	(1.219)	(1.737)	(1.134)	(1.436)	(1.458)
RecallHigh	0.526	0.991	2.131	2.974	4.544	3.070	3.009	2.570	3.947	3.079	3.614	3.658	2.474	3.921	2.053	2.561	3.5
	(0.502)	(0.094)	(1.117)	(1.548)	(1.434)	(1.173)	(1.549)	(1.343)	(1.666)	(1.506)	(1.851)	(1.612)	(1.058)	(1.552)	(.901)	(1.433)	(1.384)
NoFeedback	0.608	0.941	2.196	2.922	4.471	3.255	3.275	2.431	3.824	3.020	3.686	3.863	2.765	3.784	2.333	2.706	3.196
	(0.493)	(0.238)	(0.825)	(1.339)	(1.759)	(1.383)	(1.686)	(1.153)	(1.670)	(1.319)	(1.643)	(1.613)	(1.124)	(1.404)	(1.194)	(1.346)	(1.312)
Tournament	0.483	0.966	2.5	2.862	4.397	2.776	3.017	2.586	3.586	2.897	2.810	3.707	2.690	3.552	2.103	2.241	3.655
	(0.504)	(0.184)	(1.128)	(1.648)	(1.685)	(1.229)	(1.457)	(1.214)	(1.655)	(1.447)	(1.594)	(1.747)	(1.231)	(1.698)	(.810)	(1.302)	(1.409)
H0: Zero treatment diff. F(7, 734)	0.51	0.97	2.32	1.41	0.99	0.78	0.48	0.98	1.37	1.52	2.34	0.13	0.96	1.70	1.11	0.62	0.92
	(p = 0.827)	(p = 0.450)	(p=0.024)	(p=0.197)	(p=0.435)	(p=0.602)	(p=0.848)	(p=0.443)	(p=0.216)	(p=0.158)	(p=0.023)	(p=0.997)	(p=0.458)	(p=0.106)	(p=0.352)	(p=0.740)	(p=0.491)

Appendix E - Experimental Instructions

Appendix E.1 - Treatment *ConfidenceDirect*

Instructions for treatment ConfidenceDirect, translated into English. Subjects first received general instructions on paper. Instructions for the different parts of the experiment were implemented in z-tree.

GENERAL INSTRUCTIONS (on paper):

Welcome! You are participating in an experiment of the BonnEconLab. For your participation, you receive a fixed payment of 10 euros. You can earn additional money. How much money you will earn will depend on your decisions.

As you already know, by signing-up for this experiment, you signed up for a session today as well as a session in 5 weeks. Your total payments (i.e., the money you earned today and the money you will earn in 5 weeks) will be paid to you in cash in 5 weeks.

It is possible that you do not need to come to the session in 5 weeks. This is randomly determined by the computer, and does not depend on your decisions in the experiment. At the end of this session you will be informed if you need to come to the session in 5 weeks, or not. (In case you don not need to come, you will receive your earnings from the experiment today at the end of the session.)

The experiment consists of a total of 7 parts. In each part, you can earn additional money. At the end of the experiment, the computer will randomly select one of the 7 parts. Your earnings will then be determined based on your earnings from the randomly selected part.

Your anonymity is guaranteed throughout the experiment. The data that are generated through this experiment will only be used for scientific purposes. The researchers involved in this study are the only persons involved in the process of collecting and analyzing the data - this is true for both sessions of the experiment.

Throughout this session, it is forbidden to communicate with other participants. In addition, the curtain of your cabin must remain closed throughout the session.

The experiment will be conducted via computer. The experimenter will soon start the computer program. For each part of the experiment, you will be precisely instructed about your task and/or the decision problem you will be facing. As soon as you have read and understood the instructions for a specific part, please press the OK button to continue.

In case you have a question, please contact the experimenter by holding your arm out your cabin.

INSTRUCTIONS (computerized):

We started by eliciting subjects' personal code. Subjects needed to enter the day of birth and month of birth of their father and mother, respectively, as well as their own day of birth and month of birth. The resulting code was also elicited in the session 5 weeks later and allowed us to link participants' responses. In addition, we asked subjects to enter their email address.

Part 1 of the experiment: In this part, you are endowed with 10 euros. You can decide if you want to donate a part of these 10 euros to the German Red Cross. The German Red Cross helps people in different situations of need. It is especially active in areas of

health and social emergency situations, but is also very engaged in providing help for refugees.

You can decide if you want to donate some part of the 10 euros to the German Red Cross. You can donate every whole number amount up to 10 euros, or you can keep the 10 euros for yourself. If you decide to donate a positive amount, the experimenter will donate this amount to the German Red Cross after the experiment. The part of the 10 euros that you don't donate will increase your earning from this part of the experiment.

Which amount (in euros) would you like to donate?

NEW SCREEN

Part 2 of the experiment: In this part you receive 4 euros. Depending on your decisions you can earn additional money.

In the following, you will go through a Raven IQ-test. This test is frequently used to measure intelligence. It is often found that performance in the test is associated with educational success and future income.

The test consists of 10 tasks, and you have 10 minutes to solve it. You should try to correctly solve as many of the 10 tasks as possible.

NEW SCREEN

Subjects had to solve 10 Raven matrices.

NEW SCREEN

The exact same IQ test you just did was also conducted with a large number of participants who previously, exactly like you, participated in an experiment in the BonnEconLab. We randomly selected 9 of these participants. Together with these 9 participants you now form a group of 10 participants.

We constructed a ranking of this group based on performance in the IQ test. The group member that scored highest in the IQ test obtained rank 1. The group member with the second highest score obtained rank 2, etc... The group member with the worst performance in the IQ test obtained rank 10. In case of a draw between group members, the computer randomly decided who receives the higher rank.

In the following, we are interested in how you think you ranked in terms of IQ in the group of 10. We will ask you two questions. In both questions your earnings are higher, the more precise the estimate is you provide. The computer will randomly select one of the two questions, and this question will then be relevant for your earnings from this part of the experiment.

NEW SCREEN

First, we are interested in what you think is the likelihood (in percent) that you ranked

in the upper half of the group. In other words, what do you think is the likelihood that in the group of 10, your rank is 5 or higher?

You will be paid based on the following formula:

Your payment (in euros) $= 2 - 2(I(\text{rank 5 or higher}) - p/100)^2$,

where I(rank 5 or higher) is an indicator variable that takes the value 1 if your rank was in the upper half of the ranking, and p is your estimate in percent.

While this formula might look complicated, the basic idea is very simple. On average, your earnings are highest if you try to estimate as accurately as possible. In other words, the formula is such that it is best for you to provide an estimate that is as precise as possible. Your maximum earnings from your estimate are 2 euros, negative earnings are not possible.

On the next screen you can provide your answer.

NEW SCREEN

You can now enter your estimate. You can only enter whole numbers. The lowest possible number is 0 (percent). The highest possible number is 100 (percent).

I think the likelihood (in percent) that I rank in the upper half of the group of 10 is:

Subjects had to enter their estimate

NEW SCREEN

Your estimate of the likelihood (in percent) of ranking in the upper half of the group of 10 was: *number displayed*

Second, we are interested in how you would estimate the likelihood of holding specific ranks in the group of 10. We will first ask you to state an estimate for each of the 5 highest ranks. So what do you think is the likelihood that your rank is 1, what do you think is the likelihood that your rank is 2 etc., until rank 5.

Notice that the sum of the 5 estimates you provide must equal your estimate of ranking in the upper half of the groups of 10.

IMPORTANT: The sum of your 5 estimates must be equal to: *number displayed*

Afterwards we will ask you to state an estimate for each of the 5 lowest ranks. Notice that you will be paid for your estimates based on a similar formula as before.

On the next screen you can enter your answers.

NEW SCREEN

You can now enter your estimates. You can again only enter whole numbers. Again notice that the sum of your 5 estimates must be equal to: *number displayed*

Subjects had to enter their estimates

NEW SCREEN

Next, we are interested in how you would estimate the likelihood of holding each of the ranks 6-10. So what do you think is the likelihood that your rank is 6, what do you think is the likelihood that your rank is 7 etc., down to 10.

The sum of your 5 estimates must be equal to: *number displayed*

You can now enter your estimates below. You can again only enter whole numbers.

Subjects had to enter their estimates

NEW SCREEN

Part 3 of the experiment: In this part of the experiment, you receive 5 euros.

Earlier you did a test to measure your intelligence. On the basis of your performance in the IQ test and the performance of 9 other randomly selected participants, we created a ranking. (You were, however, not informed about your position in this ranking.)

We now randomly selected 3 out of the 9 other participants from your group. On the next screen we will inform you, for each of these 3 participants, whether you ranked higher or lower in terms of the IQ test.

WAITING SCREEN - 10 SECONDS

NEW SCREEN

Of the 3 randomly selected participants from your group...

Number of participants that ranked **higher** than you in terms of IQ: *number displayed*

Number of participants that ranked **lower** than you in terms of IQ: *number displayed*

NEW SCREEN

Please repeat the feedback you just received.

Of the 3 randomly selected participants from your group:

How many ranked **higher** than you in terms of IQ? *subjects to insert number*

How many ranked **lower** than you in terms of IQ? *subjects to insert number*

NEW SCREEN

Part 4 of the experiment: In this part you receive 4 euros. Depending on your decisions you can earn additional money.

We will now again ask you about the group consisting of yourself and the other 9 randomly selected participants. On the next screen, we will ask you how you now estimate your rank in this group in terms of IQ.

NEW SCREEN

What do you think now. What is the likelihood (in percent) that you ranked in the upper half of the group. In other words, what do you think is the likelihood that in the group of 10, your rank is 5 or higher?

You will again be paid based on the following formula:

Your payment (in euros) $= 2 - (I(\text{rank 5 or higher}) - p/100)^2$,

where $I(\text{rank 5 or higher})$ is an indicator variable that takes the value 1 if your rank was in the upper half of the ranking, and p is your estimate in percent.

Again: While this formula might look complicated, the basic idea is very simple. On average, your earnings are highest if you try to estimate as accurately as possible. In other words, the formula is such that it is best for you to provide an estimate that is as precise as possible. Your maximum earnings from your estimate are 2 euros, negative earnings are not possible.

On the next screen you can provide your answer.

NEW SCREEN

You can now enter your estimate. You can only enter whole numbers. The lowest possible number is 0 (percent). The highest possible number is 100 (percent).

I think the likelihood (in percent) that I rank in the upper half of the group of 10 is:

Subjects had to enter their estimate

NEW SCREEN

Part 5 of the experiment: In this part you receive 5 euros. Depending on your decisions you can earn additional money. Your task in this part is to count the number of zeros in tables.

Once you have counted the number of zeros in a table, klick OK. If you counted correctly, a new table will be generated. If you miscounted, you can try again twice. In other words, you have three tries per table.

You receive 0.2 euros per correctly solved table. If you miscount a table three times, 0.2 euros will be deducted from your earnings.

You have 4 minutes to count as many tables as you can.

Subjects had 4 minutes to work on the task.

NEW SCREEN

Part 6 of the experiment: In this part you receive 3 euros. Depending on your decisions you can earn additional money.

You need to decide, how much money you want to invest in a lottery. You obtain an endowment of 200 cents. You can invest any amount between 0 and 200 cents in the lottery. The amount you choose not to invest will be directly added to your earnings.

The lottery works as follows: The computer decides randomly if you win or loose in the lottery. The probability that you win is 1/3, the probability that you loose is 2/3.

If you loose the lottery, you loose the amount you invested. If you win the lottery, the amount you invested will be multiplied by factor 2.5. This amount will then be added to your earnings from this part.

On the next screen, you can decide how much you want to invest.

NEW SCREEN

I would like to invest: *subjects could enter the investment amount.*

NEW SCREEN

Part 7 of the experiment: In this part of the experiment, we will ask you a series of question. In this part you earn 5 euros. On the next screen, the questions begin.

NEW SCREEN

Please repeat again the feedback you received about your IQ test performance.

As a reminder: Together with 9 other randomly selected participants, you formed a group. We randomly selected 3 out of these 9 participants, and informed you, for each of the 3 participants, whether you ranked higher or lower in terms of IQ.

Of the 3 randomly selected participants from your group:

How many ranked **higher** than you in terms of IQ? *Subjects had to insert number*

How many ranked **lower** than you in terms of IQ? *Subjects had to insert number*

We then collected a number of sociodemographics, e.g., gender, field of study.

Appendix E.2 - Treatment *Confidence1month*

Instructions at day 1 for treatment Confidence1month, were identical to ConfidenceDirect, except of course that part 4, the elicitation of posterior beliefs, was removed. Below are the instructions for day 2 (one month later), translated into English. Subjects first received general instructions on paper, the remainder was implemented in z-tree.

GENERAL INSTRUCTIONS (on paper)

Welcome! On *date of the experiment*, 5 weeks ago, you participated in an experiment. Today this experiment continues. 5 weeks ago you earned a fixed payment of 10 euros. For participating today, you obtain 15 euros. Thus, in total you receive a fixed payment of 25 euros. You can earn additional money. How much money you will earn depends on your decisions today and 5 weeks ago.

Your anonymity is guaranteed throughout the experiment. The data that are generated through this experiment will only be used for scientific purposes. The researchers involved in this study are the only persons involved in the process of collecting and analyzing the data - this is true for both sessions of the experiment. The set of researchers conducting this part of the experiment are the same than those that conducted the experiment 5 weeks ago.

Throughout this session, it is forbidden to communicate with other participants. In addition, the curtain of your cabin must remain closed throughout the session.

The experiment will be conducted via computer. The experimenter will soon start the computer program. For each part of the experiment, you will be precisely instructed about your task and/or the decision problem you will be facing. As soon as you have read and understood the instructions for a specific part, please press the button to continue.

In case you have a question, please contact the experimenter by holding your arm out your cabin.

INSTRUCTIONS (computerized):

We started by again eliciting subjects' personal code to be able to match responses between the two dates. Subjects needed to enter the day of birth and month of birth of their father and mother, respectively, as well as their own day of birth and month of birth. In addition, we asked subjects to enter their email address.

Part 7 of the experiment: As you may remember, this experiment which began 5 weeks ago consists of 7 parts. At the end of the experiment, one of the 7 parts will be randomly selected. Your earnings will then be determined based on your earnings from the randomly selected part.

In this part you receive 4 euros. Depending on your decisions you can earn additional money.

NEW SCREEN

As a reminder: 1 month ago you participated in an IQ test. We had conducted the exact same IQ test you did with a large number of participants who previously, exactly like you, had participated in an experiment in the BonnEconLab. We had randomly selected 9 of these participants. Together with these 9 participants you formed a group of 10 participants. We had constructed a ranking of this group based on performance in the IQ test. The group member that scored highest in the IQ test obtained rank 1. The group member with the second highest score obtained rank 2, etc... The group member with the worst performance in the IQ test obtained rank 10. In case of a draw between group members, the computer randomly decided who received the higher rank.

NEW SCREEN

We now again ask you about the group consisting of yourself and the other randomly selected participants. On the next screen, we will ask you how you now estimate your rank in this group in terms of IQ.

NEW SCREEN

What do you think now. What is the likelihood (in percent) that you ranked in the upper half of the group. In other words, what do you think is the likelihood that in the group of 10, your rank is 5 or higher?

You will again be paid based on the following formula:

Your payment (in euros) $= 2 - (I(\text{rank 5 or higher}) - p/100)^2$,

where $I(\text{rank 5 or higher})$ is an indicator variable that takes the value 1 if your rank was in the upper half of the ranking, and p is your estimate in percent.

Again: While this formula might look complicated, the basic idea is very simple. On average, your earnings are highest if you try to estimate as accurately as possible. In other words, the formula is such that it is best for you to provide an estimate that is as precise as possible. Your maximum earnings from your estimate are 2 euros, negative earnings are not possible.

On the next screen you can provide your answer.

NEW SCREEN

You can now enter your estimate. You can only enter whole numbers. The lowest possible number is 0 (percent). The highest possible number is 100 (percent).

I think the likelihood (in percent) that I rank in the upper half of the group of 10 is:

Subjects had to enter their estimate

Appendix E.3 - Treatment *Recall*

Instructions at day 1 for treatment Recall were identical to ConfidenceDirect, except that part 4, the elicitation of posterior beliefs, was removed. Below are the instructions for day 2 (one month later), translated into English. Subjects first received general instructions on paper, the remainder was implemented in z-tree.

GENERAL INSTRUCTIONS (on paper)

Welcome! On *date of the experiment*, 5 weeks ago, you participated in an experiment. Today this experiment continues. 5 weeks ago you earned a fixed payment of 10 euros. For participating today, you obtain 15 euros. Thus, in total you receive a fixed payment of 25 euros. You can earn additional money. How much money you will earn depends on your decisions today and 5 weeks ago.

Your anonymity is guaranteed throughout the experiment. The data that are generated through this experiment will only be used for scientific purposes. The researchers involved in this study are the only persons involved in the process of collecting and analyzing the data - this is true for both sessions of the experiment. The set of researchers conducting this part of the experiment are the same than those that conducted the experiment 5 weeks ago.

Throughout this session, it is forbidden to communicate with other participants. In addition, the curtain of your cabin must remain closed throughout the session.

The experiment will be conducted via computer. The experimenter will soon start the computer program. For each part of the experiment, you will be precisely instructed about your task and/or the decision problem you will be facing. As soon as you have read and understood the instructions for a specific part, please press the button to continue.

In case you have a question, please contact the experimenter by holding your arm out your cabin.

INSTRUCTIONS (computerized):

We started by again eliciting subjects' personal code to be able to match responses between the two dates. Subjects needed to enter the day of birth and month of birth of their father and mother, respectively, as well as their own day of birth and month of birth. In addition, we asked subjects to enter their email address.

Part 7 of the experiment: As you may remember, this experiment which began 5 weeks ago consists of 7 parts. At the end of the experiment, one of the 7 parts will be randomly selected. Your earnings will then be determined based on your earnings from the randomly selected part.

In this part you receive 2 euros. Depending on your decisions you can earn additional money. Part 7 consists of 2 subparts. In case part 7 will be payoff-relevant, one of the two subparts will be randomly selected and will determine your earnings

NEW SCREEN

We would like to know which parts of the experiment 5 weeks ago you remember.

Please try to summarize each part you remember in one sentence. For each sufficiently accurate description of a part (as evaluated by the experimenter), you earn 1 euros.

NEW SCREEN

In the following, please try to describe the different parts of the experiment 1 month ago - 1 sentence for each part.

In front of you, you find a sheet of paper. Please write down your descriptions on the sheet of paper. Please inform the experimenter once you are finished.

The experiment continued once all subjects had handed in their answer sheets.

NEW SCREEN

As a reminder: 1 month ago you participated in an IQ test. We had conducted the exact same IQ test you did with a large number of participants who previously, exactly like you, had participated in an experiment in the BonnEconLab. We had randomly selected 9 of these participants. Together with these 9 participants you formed a group of 10 participants. We had constructed a ranking of this group based on performance in the IQ test. The group member that scored highest in the IQ test obtained rank 1. The group member with the second highest score obtained rank 2, etc... The group member with the worst performance in the IQ test obtained rank 10. In case of a draw between group members, the computer randomly decided who received the higher rank.

We had randomly selected 3 out of these 9 participants, and informed you, for each of the 3 participants, whether you ranked higher or lower in terms of IQ.

In the following, we would like to know if you remember how you ranked compared to the three randomly selected participants. If you answer correctly, you receive 2 euros.

On the next screen you can provide your answer.

NEW SCREEN

Of the 3 randomly selected participants from your group:

How many ranked **higher** than you in terms of IQ?

Appendix E.4 - Treatments *ConfidenceNoFeedback*, *RecallHigh* and *Announcement*

Instructions for treatment ConfidenceNoFeedback were identical to Confidence1Month, except that no feedback was provided. Instructions for RecallHigh were identical to Recall, except that we did not ask subjects to recall the different parts of the experiment, and incentives for recall were higher. Instructions for Announcement were identical to Confidence1Month. However, we added the following paragraph before subjects obtained the feedback: "Important: in the experiment in 5 weeks you will need to provide an estimate (in percent) about the likelihood that you ranked in the upper half of the group of 10 in terms of IQ. You will be paid based on the accuracy of your estimate. For this estimate it will of course be important that you can accurately assess how well you did in the IQ test compared to others." The same paragraph was added to the letter that subjects obtained after the first session, in which they were reminded about the second experimental session.