How Transparency Kills Information Aggregation: Theory and Experiment (Online Appendix)

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I. Evaluations over Time

Table OA1—Evaluations over Rounds

dependent variable: evaluation		
Round number	-0.36**	(0.12)
Secrecy		
decision correct	58.21***	(3.75)
decision wrong	10.62***	(1.78)
Transparency		
decision correct	51.89***	(2.05)
decision wrong	18.58***	(4.14)
Mild Transparency		
decision correct	50.86***	(2.60)
decision wrong	15.36***	(2.39)
N observations	1760	
N clusters	14	
R^2	0.31	

Note: * p¡0.10, ** p¡0.05, *** p¡0.01. Standard errors in parentheses are adjusted for clusters in matching groups. The model was estimated without a constant. The R^2 statistic was computed with a constant, leaving out one group as a reference group.

II. Sample Chat Conversations (translated from German)

Further chat protocols are available from the authors upon request.

CONVERSATION 1 (SECRECY): . —

hey (voter 1)

type h (voter 2)

hello (voter 2)

I am type l (voter 1)

Red! (voter 2)

ok (voter 1)

CONVERSATION 2 (TRANSPARENCY): . —

May I guess, you will also again say you are of type h? (voter 2)

Cannot be the case that both are always h. (voter 2)

You can really give up on the chat. (voter 1)

III. Instructions to the Experiment and Screenshots

Instructions and screenshots for the transparency treatment (translation; original in German). Instructions and screens for the other treatments were very similar and are therefore omitted here. The original instructions can be obtained from the authors upon request.

Overview

Welcome to this experiment. We kindly ask you not to communicate with other participants during the experiment and to switch off your phones and other mobile devices.

At the end of the experiment you will be paid out in cash for your participation in today's session. The amount of your pay-off depends in part on your decisions, on the decisions of other participants and on chance. For this reason it is important that you read the instructions carefully and understand them before the start of the experiment.

In this experiment all interactions between participants take place via the computers that you are sitting in front of. You will interact anonymously and your decisions will only be stored together with your random ID number. Neither your name nor names of other participants will be made public, not today and not in future written analyses.

Today's session consists of several rounds. **At the end, 4 rounds will be randomly selected and paid out. The rounds that are not chosen will not be paid out.** Your pay-off results from the points that you earn in the selected rounds, converted to Swiss Francs, plus your show-up fee of CHF 10. The conversion of points to Swiss Francs happens as follows: Every point is worth 15 cents, which means that

20 points = CHF 3.00.

Every participant will be paid out in private at the payment counter, so that no other participant can see how much you have earned.

Experiment

This experiment consists of 20 procedurally identical rounds. In each round a group decision has to be made that can be correct or wrong.

Two members in each group of three make the group decision (henceforth we will call them the voters). There are well and less well informed voters and the task of the third group member is to observe the decision process of the other two members and then to indicate the probability with which he thinks that the other group members are well or less well informed (henceforth, we will call this member the observer).

The higher the evaluation of the observer is with respect to the level of information of a voter, the higher is the pay-off to that voter in the round. The more accurate the evaluation of the observer is with respect to the level of information of the voters, the higher is his or her pay-off in the round. In addition, the observer receives a pay-off for correct group decisions.

The Group

In the **first** round you will be assigned a meta-group of 9 members. In the beginning of **every** round you will be randomly assigned to a **new group** which consists of randomly selected members of your meta-group. Every group has three members: 2 voters and 1 observer.

Whether you will be assigned the role of a voter or an observer, is randomly determined each round. The voters receive, again randomly, the labels “voter 1” and “voter 2”.

All interactions in a round take place within your group of three.

The Voters

There are two types of voters, well informed (type G) and (less well) informed (type I) voters. Of which type the group members are, is again determined randomly. With probability ¼ (or 25%) a voter receives good information which means he is of type G; with probability ¾ (or 75%) he receives less good information which means he is of type I.

Because the assignment of types to the voters is independent of the assignment to other voters, there can be two voters of type G, two voters of type I, or one of each type in a group.

The voters learn their type on the first screen of a round but not the type of the other voter in their group. The observer learns that he is an observer on the first screen but not the types of the voters in his group.

Later, after observing the behavior of the voters, it will be the task of the observer to estimate the probabilities that voter 1 and voter 2 are of type G.

The Jar

There are two jars: one red jar and one blue jar. The red jar contains 11 red and 9 blue balls, the blue jar 11 blue and 9 red balls. Each round one jar will be randomly selected.

The task of the voters is to vote on the color of the jar. Each jar has an equal probability of being selected, that is, it will be selected with 50% probability.

The Ball

The well informed voters (type G) receive a ball with the actual color of the jar, that is they are directly informed about the color of the jar.

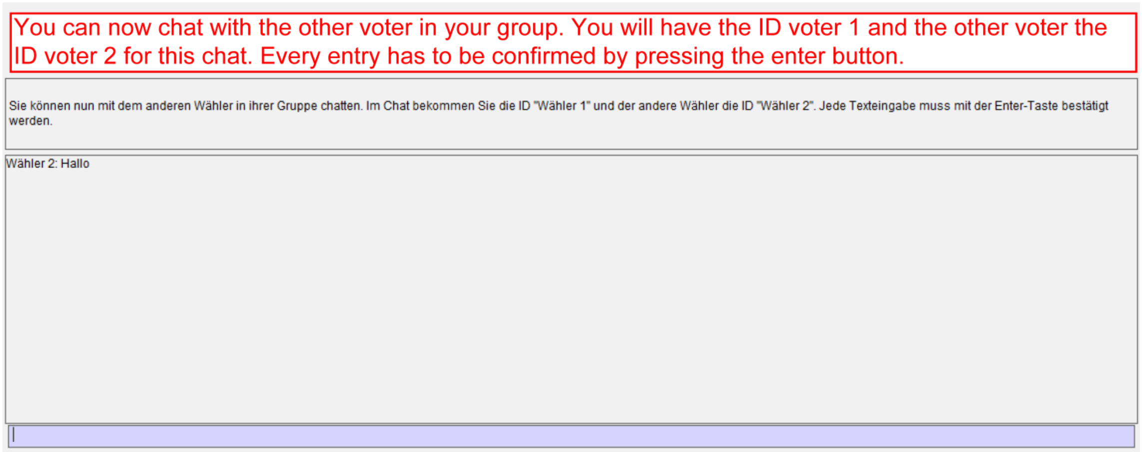
The informed voters (type I) receive a randomly drawn ball from the selected jar. They are not told the color of the jar. If there are two type I voters in a group, each of them receives a ball from the jar. Every ball in the jar has the same selection probability for the type I voters, that is for each voter of type I a ball is drawn from a jar containing 20 balls (11 with the color of the jar, 9 with the other color).

The voters learn the color of their ball on the first screen. Every voter only sees the color of his ball, not the color of the other voter's ball.

Communication

After learning their type and the color of their ball, the voters can communicate the color of their ball to the other voter in their group. They can also communicate the color that their ball did not have or stay silent. The communication is made through the following entry mask.

On the following screen the voters learn the message of the other voter in their group and have the option to chat with him. The chat happens via the following entry mask.



You can enter arbitrary text messages into the blue entry field. Pay attention to confirm every entry by pressing the enter button to make it visible for the other voter. It will then appear in the grey field above.

The observer cannot participate in the communication but sees the messages of the two voters regarding the color of their ball as well as the chat.

Group Decision

After the communication stage the voters make their decision in a group vote.

So, if you are a voter, you have to vote either for blue or for red.

Once both voters have made their decision, the votes for blue and red are counted and the group decision results from the following rule:

- **If the color RED receives 2 votes, the group decision is RED**
- **If the color BLUE receives 1 or 2 votes, the group decision is BLUE**

That is for a group decision for blue only one vote is necessary while a group decision for red requires two votes.

Evaluation of the Observer

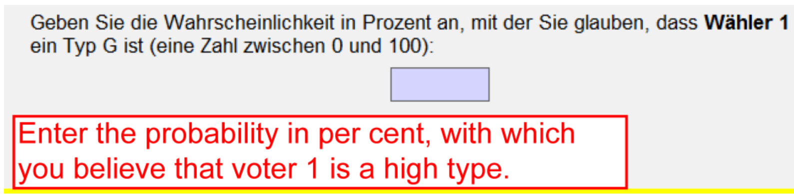
After the voters have cast their vote and the group decision is determined, the evaluator learns the group decision as well as the decisions of the individual voters in his group.

Moreover, he learns the true color of the jar, that is, whether the group decision and the individual decisions were correct or wrong.

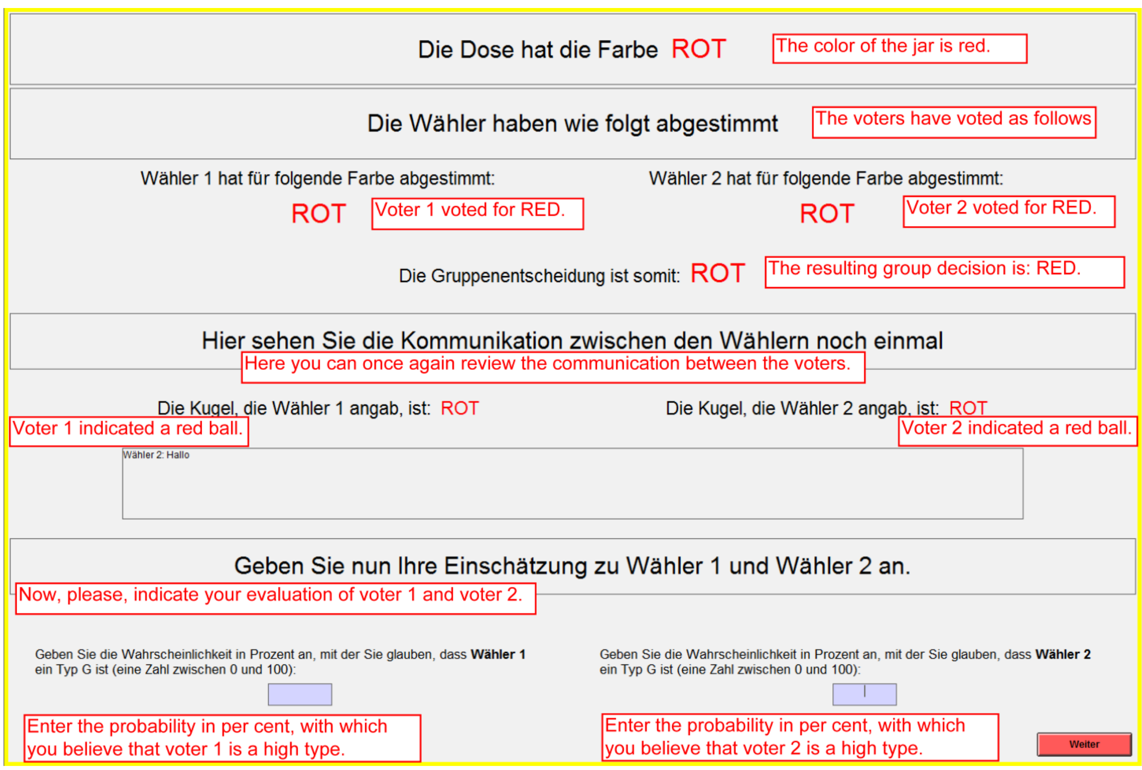
On the same screen the observer can review the entire communication between the voters in his group once again.

If you are an observer, you now have to enter for each of the two voters the probability with which you believe that this voter is of type G.

To do so you enter a number between 0 and 100 wich expresses your evaluation in percentage points. The entry mask looks as follows.



The complete screen of the observer looks as follows (example screen).



Pay-off in each Round

If you are a **voter** your pay-off is determined by the evaluation of the observer. If the observer believes that you are of type G with **X%** probability, you receive a pay-off of **2*X** points in this round. This means that your pay-off directly depends on the probability with which the observer believes you are a **well-informed voter (type G).**

If the observer has entered the probability 25%, for example, your pay-off is 50 points, if he has entered 50%, it is 100 points.

If you are an **observer** you receive a pay-off for correct group decisions and a pay-off for the accuracy of your evaluations of the types of the voters.

- If the group decision is RED and the jar is indeed RED, you as an observer receive **1 point.**
- If the group decision is BLUE and the jar is indeed BLUE, you as an observer receive **3 points.**
- If the group decision is wrong, you receive **0 points**, independently of the true color of the jar.

For your evaluation regarding the types of the voters you receive a pay-off between 0 and 100 points. It will be randomly determined whether you will be paid out for the evaluation of voter 1 or voter 2.

If you have evaluated both voters correctly with certainty (that is with 0 or 100%) (if you entered the probability 0 for both voters, for example, and both are indeed not of type G but of type I), you receive 100 points. If you are completely wrong (if both are of type G in the example) you receive 0 points.

The formula that determines your pay-off is a little complicated.

Put simply, the formula assures **that it is best for you (gives you the highes expected pay-off) if you truthfully indicate the probability with which you believe that a voter is indeed of type G.** Every other evaluation lowers your expected pay-off.

If you believe, for example, that voter 1 in your group is of type G with 30% probability and voter 2 with 60% probability, it is best for you to enter exactly these values.

In case you want to know in more detail how your payoff is determined: for the evaluation of the randomly selected voter you receive:

, if this voter is of type G and
, if this voter is of type I,

where is your indication of probability in percentage points that that voter is of type G. The resulting number is rounded up to a whole number and gives, together with your pay-off in case of a correct group decision, your pay-off in the round.

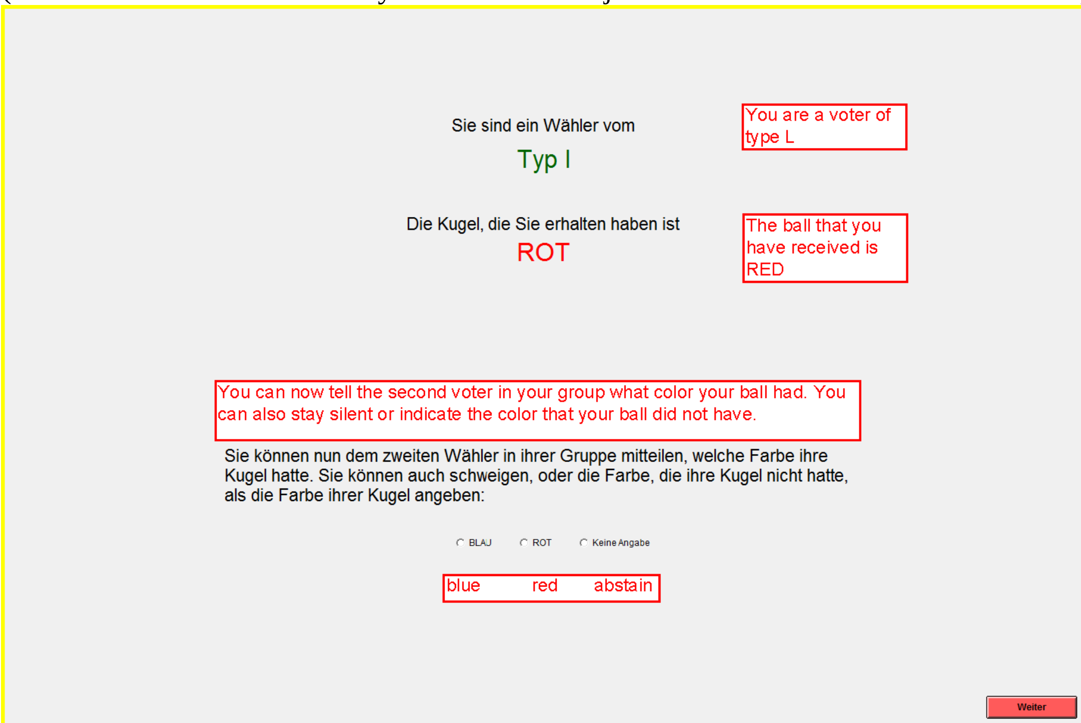
Remember: At the end of the experiment 4 rounds are randomly selected, the point incomes converted to Swiss Francs and paid out in private. The rounds that were not selected will not be paid out.

Questions?

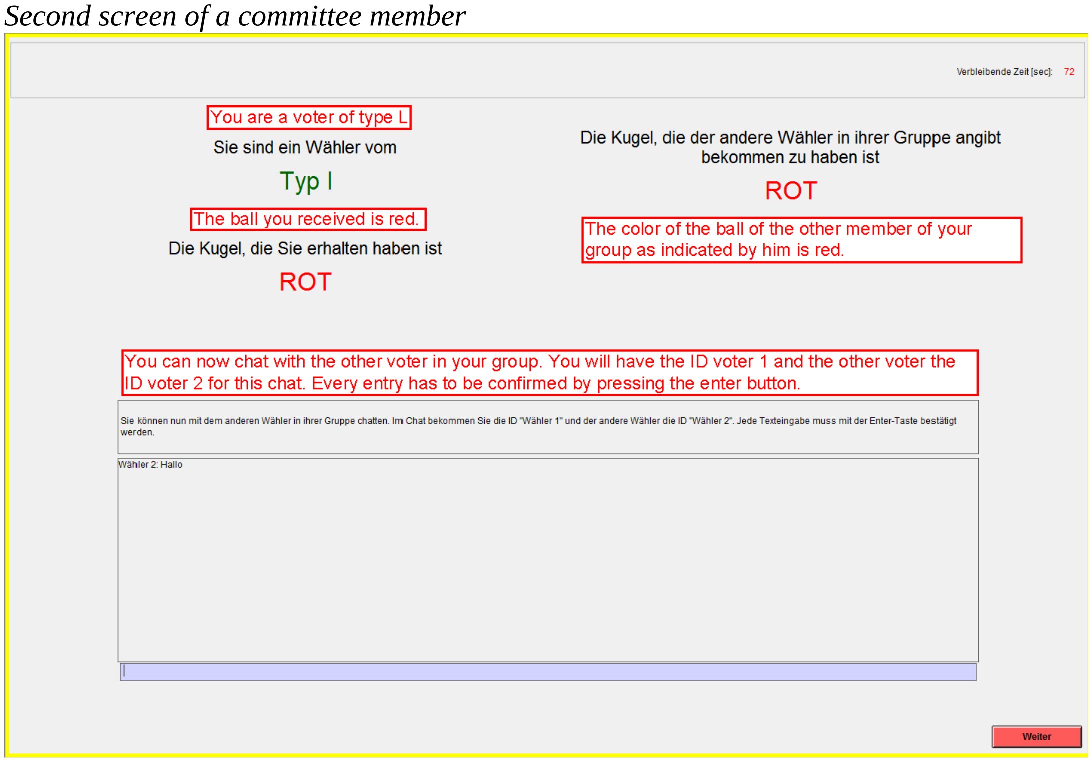
Take your time to read the instructions carefully. If you have any questions, raise your hand. An experimental administrator will then come to your seat.

Screenshots *(not part of the instructions)*

First screen of a committee member
(The observer's first screen only informed the subject that he is an observer in that round.)

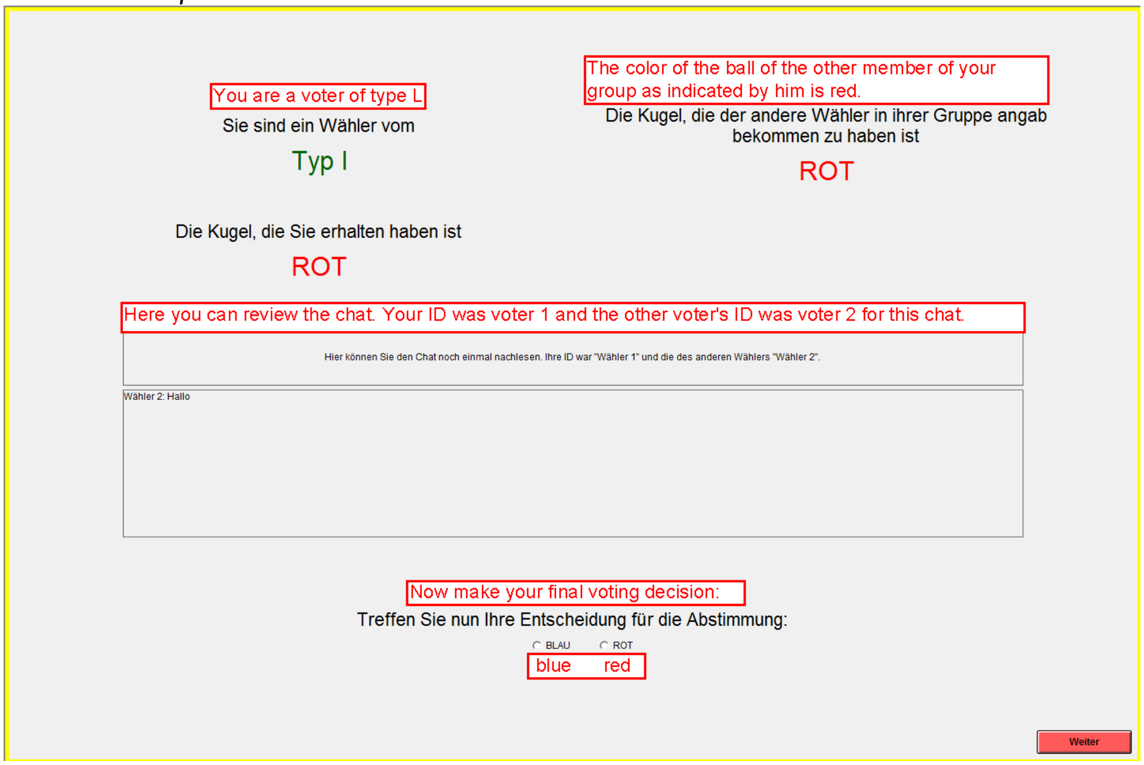


Second screen of a committee member

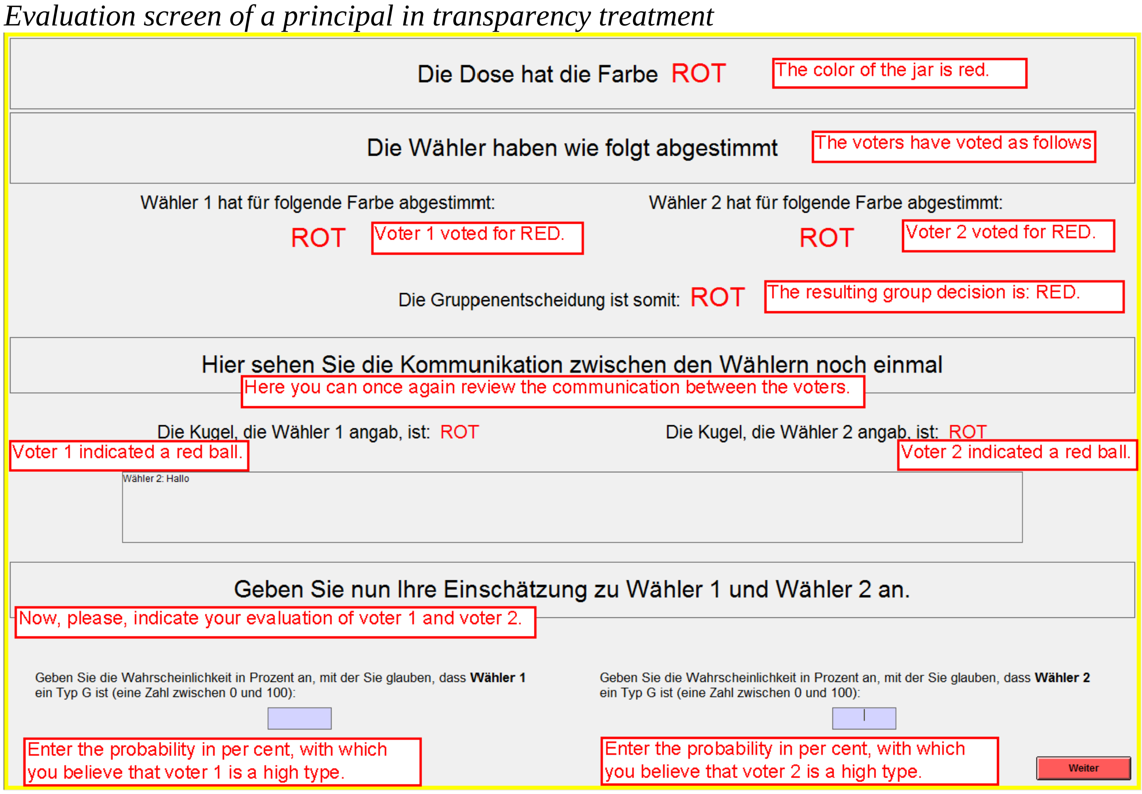


In the transparency treatment the principal could follow the chat in real time on a screen with a very similar layout. Under mild transparency and secrecy the principal just saw a waiting screen during communication.

Third screen of a committee member

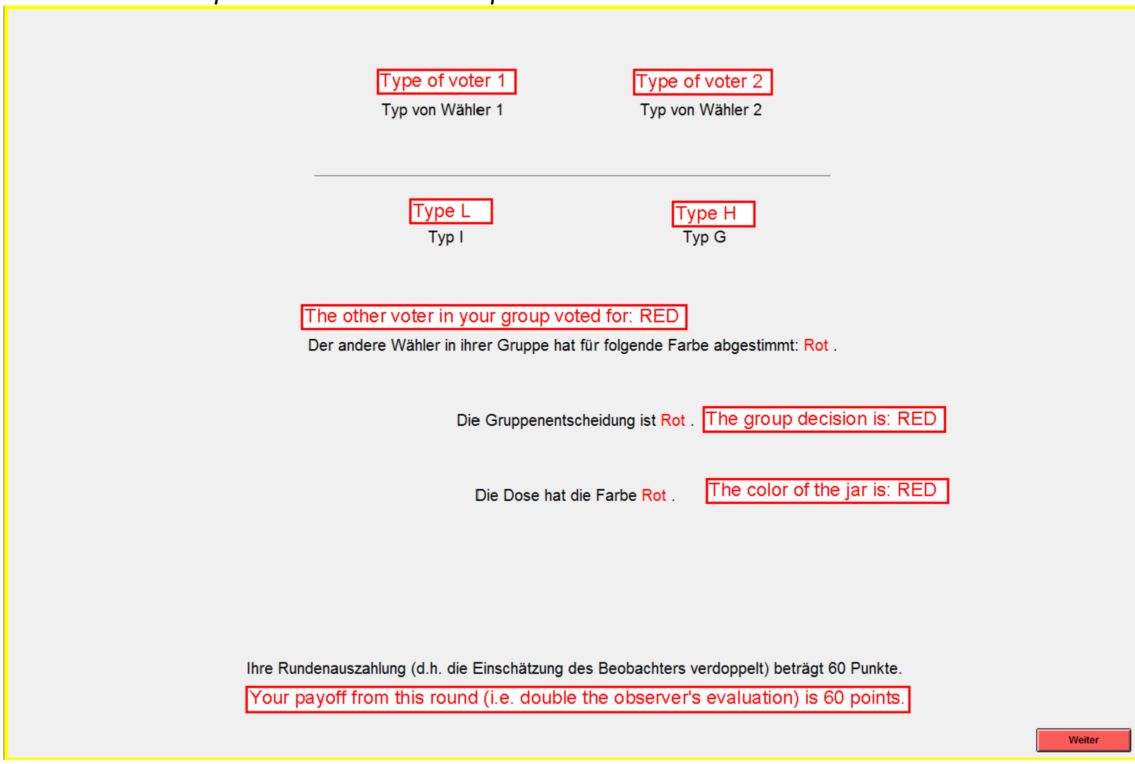


Evaluation screen of a principal in transparency treatment



The evaluation screen had the same lay-out in the other two treatments but with several elements left out. Under mild transparency the communication part was left out. Under secrecy the individual votes and communication were left out and only one randomly selected committee member had to be evaluated.

Feedback screen for a voter at the end of a round



The feedback screens looked very similar for principals. At the end of the last round subjects saw a final screen which reported the rounds which were randomly selected to be paid out and the total earnings in Swiss Francs.