

Preregistration

How to sway voters? Part 4

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Study Information

Research question	RQ1: Can a dishonest advisor successfully draw the attention of a group of individuals when decisions of group members are aggregated via a majority vote?
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Hypothesis	H1 (RQ1): We expect that the dishonest advisor is better able to draw the attention of a group of individuals—whose decisions are aggregated via a majority rule—as compared to single individuals (see Fig. 1 for further explanations of this prediction).
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Design Plan

Existing data	Registration prior to creation of data. As of the date of submission of this research plan for preregistration, the data have not yet been collected, created or realized.
Study design	<p>This preregistration is part 4 of the project “How to sway voters”. Part 1 of this project can be found here and for full experimental details we will refer to this document. Part 2 of this project can be found here and part 3 here. In this fourth part, we plan to replicate the study done in part 3. The reason being that the results in part 3 were not fully conclusive due to drop out of group members in our online experiment, see below for preliminary results of part 3 and further explanation. We, therefore, will repeat this experiment, conducting a lab study instead of an online study (to avoid drop out of group members).</p> <p>In part 4, we will use the exact same settings as in part 3 and again run two treatments: i) single individuals, ii) groups of five individuals. In both treatments, the human participants will be confronted with an honest advisor (HA) and a dishonest advisor (DA) and have to decide which advisor to follow for a total of 20 rounds. i) In the single treatment, a single individual will make decisions by itself. ii) In the group treatment, five participants will perform the experiment together. In each round, each of the five individuals makes an individual decision which advisor to follow. The advisor chosen by most group members will be selected, and all group members bet on the advice of the selected advisor. Group members only see the outcome of this majority vote (i.e., which advisor is selected) but not the size of the majority favoring the selected advisor. Group members will conduct the experiment on separate tablets and will not be able to communicate in person with each other during the experiment. In the (extremely unlikely) case that individuals drop out of the experiment, (and group size is thus reduced,) the experiment continues as planned. Participants are not informed about drop outs and in case of a tie (i.e., equal amount of support for both advisors), one of the advisors is selected by coin flip.</p> <p>If participants complete the experiment, they receive a 5 euro flat fee for participation, plus a bonus payment of 10 cents for each correct outcome.</p>

Randomization In our planned study, the **HA** and **DA** will appear either on the left or right side of the screen and this will be counterbalanced between participants/groups. That is, approximately half of the participants/groups will experience the HA on the left side, and the other half will experience the HA on the right side of the screen.

Data collection procedures The data will be collected via a browser-based study implemented in the [Lioness platform](#). Participants will be invited to the lab of the Max Planck Institute for Human Development. Participants are recruited from the participant pool of the Center for Adaptive Rationality. The study will take approximately 15 minutes for the single treatment and 20 minutes for the group treatment. Participants who complete the study receive 5 euro compensation plus a bonus payment (range: 0 - 2 euro) depending on the number of correct outcomes.

To ensure that participants have understood the instructions before starting the experiment, a series of comprehension questions is asked after the instructions. Only participants who correctly answer all comprehension questions can start the experiment. Participants can go back to read the instructions during the comprehension questions, but can submit their answers maximally five times (to avoid participants who try all possible combinations of answers). Comprehension questions are present in both the single and group treatment (albeit with partly different questions reflecting the relevant differences in experimental treatment).

**Sample size and
stopping rule**

- i) For the individual treatment, we will stop data collection as soon as 60 participants successfully completed the experiment. A successful completion means that a participant started and finished the experiment.
- ii) For the group treatment, we will stop data collection as soon as 30 groups successfully completed the experiment. A successful completion means that in the last round (i.e., round 20), all five players are still remaining in the group.

Measured variables	<p>The key variable of interest is the <i>choice</i> of the clients. Additionally, the following demographic variables will be elicited at the beginning of the study:</p> <ol style="list-style-type: none"> 1. Age. 2. Gender: female, male, other, do not want to report. 3. Education: basic, high school, college, posgraduate.
Explanation hypothesis	<p>Fig. 1A shows the observed likelihood that the client switched advisor after a trial as a function of whether the client lost or won, whether the non-selected reported the same (Confirm) or the different (Oppose) color, and the confidence level of the non-selected advisor. Numbers above the bars indicate the number of occurrences. Data are for single individuals and include all data from the pilot experiment (n=29 individuals), part 1, treatment 1 (n=30) and part 2 (n=45). As can be observed, the client was most likely to switch when he/she lost, and the unselected advisor gave opposing evidence from the selected advisor. This is the strategy the DA is betting on to draw attention of the client. (B) The predicted likelihood that a group of five individuals, whose decisions are aggregated via a majority vote, switches as a function of the same variables. To calculate these likelihoods, we assume that individuals have the same transition probabilities as in (A), and that the five independent decisions are aggregated with a majority vote, following Condorcet's Jury Theorem (CJT). For groups of five this implies: $p^5 + (p^4) \cdot (1-p) \cdot 5 + (p^3) \cdot (1-p)^2 \cdot 10$. With p being the individual likelihood of transition. Under the CJT, probabilities above 0.5 increase with increasing group size, and probabilities below 0.5 decrease with increasing group size. As observed in (B), we predict that the likelihood that a group of five individuals changes advisor after it lost AND the unselected advisor gave the opposing advice increases. All other likelihoods are expected to decrease (as they are below 0.5). (C, D) The results of simulations using the (A) observed and (B) expected switching likelihoods over 20 rounds. We simulated either (C) single individuals, or (D) groups of 5 individuals making 20 decisions, using the same settings as in the experiment. Graphs show average switching likelihood per round, averaged over 10,000 simulation runs. The prediction is that groups of five individuals (D) decide more often for the DA compared to single individuals (C). Note that the simulations assume that individuals in groups have the same individual transition probabilities as single individuals.</p>

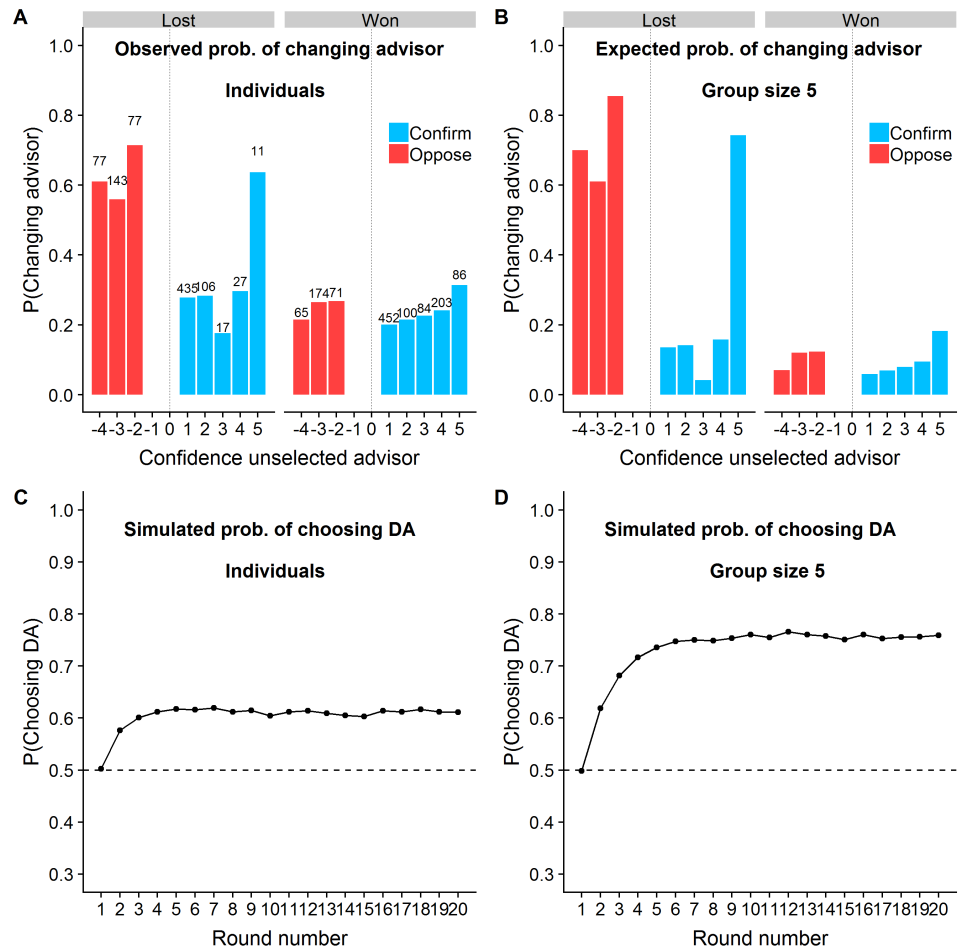


Figure 1: Basis for the main prediction.

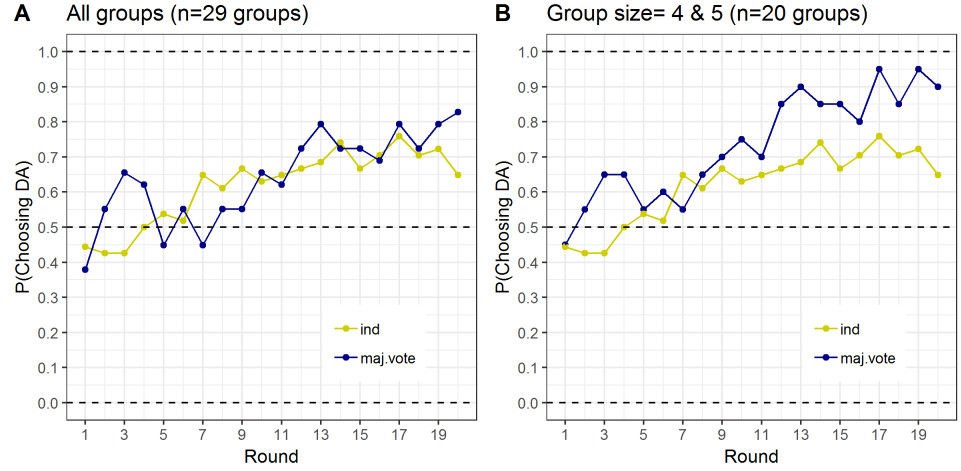


Figure 2: Preliminary results part 3.

Preliminary results part 3

Fig. 2 shows the preliminary results of part 3, showing the likelihood of single individuals (in yellow) to choose the DA over the 20 rounds, and the likelihood of groups using a majority vote (in blue) to choose the DA. Fig. 2A shows the results of all 29 groups combined. Overall, there was a higher likelihood to choose the DA (compared to the HA) in both individuals and groups, but there was no difference between individuals and groups. Fig. 2B shows the results when only including groups who ended with 4 or 5 members (20 groups in total) and excluding groups who finished with less than 4 members. For these larger group sizes, we do observe that group decisions led to a higher likelihood of choosing the DA as compared to single individuals. However, it is now impossible to conclude whether our main hypothesis (**H1**: We expect that the DA is better able to draw the attention of a group of individuals-whose decisions are aggregated via a majority rule-as compared to single individuals) is confirmed, or whether there is a selective bias that in groups ending with less than 4 individuals certain personality types are more likely to leave. Due to the drop-out problem of group members in this online [Amazon Mechanical Turk](#) experiment in part 3, we were thus unable to conclusively confirm or reject our main hypothesis. Therefore, in this part 4, we will repeat this experiment in the lab, which is expected to substantially reduce (or even prevent) the problem of drop-outs.