Preregistration

How to sway voters? Part 3

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Study Information

Research question	**RQ1:** Can a dishonest advisor succesfully draw the attention of a group of individuals when decisions of group members are aggregated via a majority vote?
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).

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

This preregistration is part 3 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. In this third part, we plan to investigate whether our main result (i.e., a dishonest advisor can draw the attention of a client better than an honest advisor) can also be extended to groups of voters.

Compared to part 1, we will only use the environment with the highest level of uncertainty (i.e., treatment 1: 25% of trials with 90 balls of one colour, and 75% of trials with 50 balls of each colour). We will run two treatments: i) single individuals, ii) groups of five individuals. In both treatments, the human participants will (again) 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) The single treatment will be the same as in part 1, with a single individual making 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. When individuals drop out of the experiment during the group treatment (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.

If participants complete the experiment, they receive a 3 dollar flat fee for participation, plus a bonus payment of 10 cents for each correct outcome.

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 using an online study implemented in the Lioness platform. Participants will be recuited over *Amazon Mechinal Turk* (https://www.mturk.com/). The study will take approximately 15 minutes for the single treatment and 20 minutes for the group treatment. Participants who complete the study receive 3 dollar compensation plus a bonus payment (range: 0 - 2 dollar) 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 50 participants succesfully completed the experiment A successfull completion means that a participant started and finished the experiment.

ii) For the group treatment, we will stop data collection as soon as 25 groups succesfully completed the experiment. A successfull completion means that in the last round (i.e., round 20), at least three players are remaining in the group.

Measured variables

The key variable of interest is the *choice* of the clients. Additionally, the following demographic variables will be elicited at the beginning of the study:

1. Age.
2. Gender: female, male, other, do not want to report.
3. Education: basic, high school, college, posgraduate.

Explanation hypothesis

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 occurences. 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 probabilites 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: $p^5 + (p^4).(1\text{-}p).5 + (p^3).(1\text{-}p)^2.10$. With p being the individual likelihood of transition. Under the CJT, probabilies 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 prediciton 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.

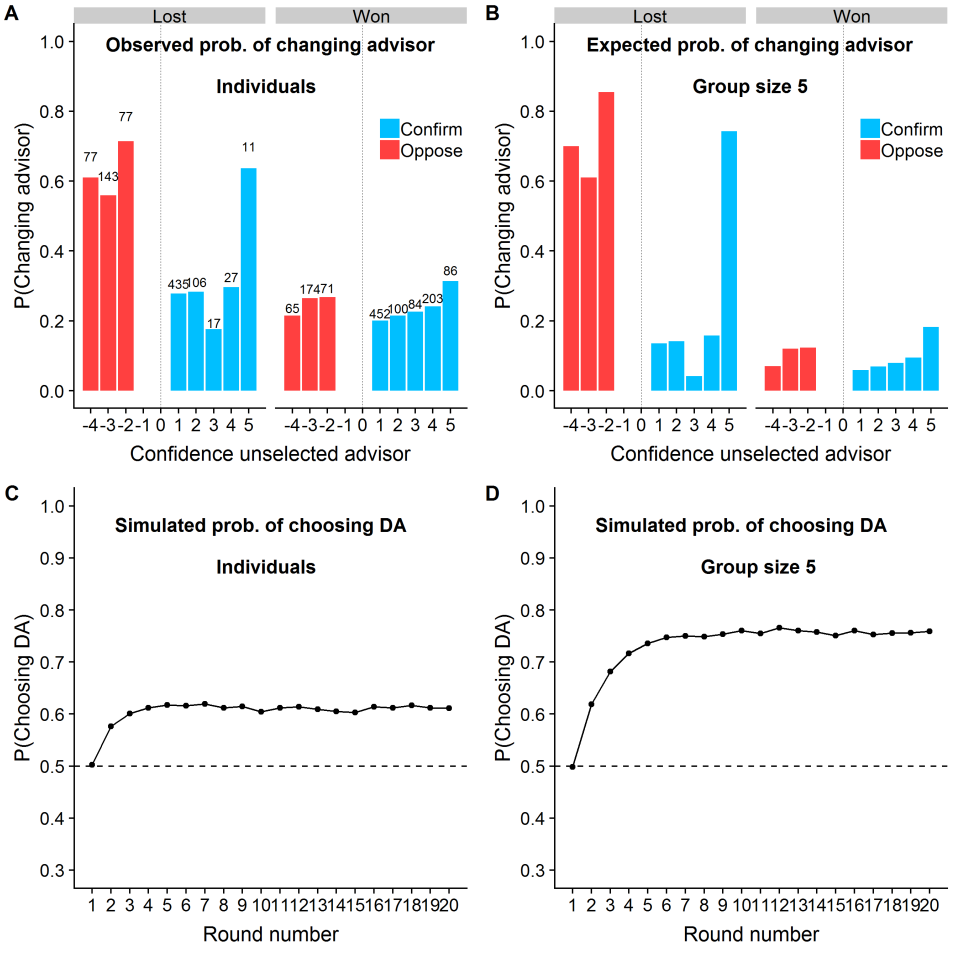

Figure 1: Basis for the main prediction.