

Pre-Analysis-Plan: Investigating Motivations for Information Avoidance - The Role of Certainty, Rewards and Overconfidence *

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1 Motivation

A lot of the literature on active information avoidance has identified a clear objective for people to avoid information: Self-Image protection. In these studies, this happens through willful ignorance about a specific attribute of themselves. This research has identified several factors that influence this importance and identified intelligence and attractiveness as reliable categories. This has also been shown in an experiment by (Eil and Rao, 2011), where people that get a bad but imprecise signal about either their IQ or attractiveness have a positive willingness to pay to avoid more precise information about that. Potentially, this behavior can be hurtful in other instances because a more precise knowledge of these facts could lead to better outcomes in markets (finding a more suitable career path, acting more informed in the dating market etc.). It is yet unclear to what extent individuals are willing to get or avoid information. The two main questions of the study are: *1- What is the extent of willingness and avoidance towards potentially hurtful information? 2-Is it a common phenomena or a rare situation?*

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2 Experimental Outline

This pre-analysis plan will be uploaded before data collection.

First year NHH students, a sample of people that derive high utility from assuming they are smart and put a lot of value on that attribute, will take part in the classroom experiment in October 2018.

First, participants take an IQ test and they are informed that that test was taken from a longer test. After taking the test they are asked to guess their rank compared to their peers in the session and if their guess is correct they are going to win 80 NOK. After making their guess they are assigned to two treatments randomly: costly information and costly avoidance. In both treatments a Becker-DeGroot-Marschak(BDM) (Becker et al., 1964) auction takes place to implement the participants' decision. The aim of having a BDM auction is to elicit their real preferences and willingness to pay for that. A bonus payment of 50NOK will be introduced and they are asked to submit how much they would be willing to pay for their decision (getting/avoiding information) to be implemented. The submitted price is compared to a randomly chosen game price in the next stage and if the submitted price is higher participant pays the game price and the decision is implemented. If the auction is lost, participant's decision is not implemented and bonus payment will be added to final payoff. If the participant gets the information (with or without choosing it) there is a chance to revise the guess. At the end of the game they will receive a payment from their guess (0 or 80) and the rest of the bonus payment after BDM results (see Figure 2).

3 Related Literature

The underlying topic of information avoidance has spawned a sizeable amount of research over the last couple of years. These include theoretic contributions as well as experiments and surveys.

Experiments in economics often reveal a strong tendency of participants to avoid information that could potentially hurt their self-image or would lead to undesired behavioral adjustments. Ganguly and Tasoff (2016) conduct an experiment which results could lead to participants acquiring medical information. In one treatment, the information is relatively harmless while in the other it has considerable consequences for lifestyle decisions. The authors report that a significant share of participants avoid the second information. A couple of other experiments point in the same direction in this regard (for an extensive list of examples Golman et al. (2017)).

4 Measurement and Hypotheses

The experiment will be used to answer the two main research questions mentioned above. The main hypotheses of the experiment are listed below.

The variables of the experiment will be measured in a lab experiment. The experiment will give us an opportunity to measure the extent of information avoidance. We will observe whether a significant amount of participants chooses to avoid the information. Also, it will show if the rank information that is considered for the experimental procedure is sufficiently uncertain to the participants to actually have a strictly positive value.

Moreover, the test will validate if financial incentives are a driver of information acquisition. Other covariates (beliefs, past experiences etc.) will be checked in the post-experimental survey.

Before running the experiment we ran an online survey with the representative Norwegian sample for a preliminary idea on the effects. Results are reported in Figure 1 and the hypotheses are built upon them.

Information Avoidance of Stakeholders As can be seen in the graph below, we can observe the decrease in information avoidance in response to increase in monetary gain (see Figure 1).

Hypothesis 1: The perception of their real rank is a strong indicator for avoidance behavior
Following the previous literature we expect confident participants not to avoid information since they are less likely to be hurt by learning their precise rank. Participants who are less confident are expected to avoid the information. The guess over the rank is a better predictor for avoidance behavior than their actual performance.

Hypothesis 2: Participants will underestimate the share of other participant that did better than them.

On average, participants will report estimates of the share of people that performed better than them that are significantly lower than the reality.

Hypothesis 3: Avoidance is lower in T2 compared to T1 because the cost to avoid information is higher in T2.

This will even hold true if we control for the degree of certainty that people have in their guesses. The reason for that treatment difference is the different costs of information avoidance in both treatments.

Hypothesis 4: Uncertainty about the real rank is high and leads to a high willingness to pay for the information.

Uncertainty as measured by an unincentivized question is high among participants regarding the accuracy of their guess. This adds support to the claim that the information that is offered to participants in the experiment has a strictly positive value.

5 Experimental Procedure

The experiment will be conducted in Norway October 2018 at NHH. The experiment will test for the behavior of participants with regards to information that they could potentially see as unpleasant but that will provide them with a monetary gain in the experiment. An overview of the experimental procedure can be found in Figure 2.

In the first stage of the experiment participants take part in an IQ-test. The test consists of 25 questions and participants get 10 minutes to fill out the test. Afterwards, they are informed that they have to guess the share of participants in the same session that did better than them in the IQ-test. Each session consists of 55-60 participants.

Participants are paid based on the accuracy of their guess. If their guess is within 5 percentage points of the actual share, they earn 80 Norwegian Kroner.

After submitting their guess, participants are asked to estimate the probability that their guess is correct. For that purpose, they have to state the likelihood in percent that they will earn the 80kr.

In the next step, participants are randomly selected into two different treatments. They are assigned to treatment within sessions. In treatment T1, participants are asked for their maximum willingness to pay to find out the information. For that purpose, they are given 50kr as an additional bonus. Participants then take part in a BDM-auction in which they have to state their maximum willingness to pay for that information.

In treatment T2, participants are asked for their maximum willingness to pay to avoid the information. For that purpose, they are given 50kr as an additional bonus. Participants take part in a BDM-auction in which they have to state their maximum willingness to pay to not see the share of participants that performed better than them.

If the participant finds out the actual share of participants that performed better than them, they can revise their previous guess and ensure that they earn the 80kr.

After they finished the revision, they are informed about their payment. To finish the experiment, they are asked to answer a post-experimental survey(see Appendix).

6 Statistical Analysis

Statistical methods to test for the validity of our hypotheses are introduced here. The collected data on the participants include their test performance, their actual rank, their guess over their real rank, their certainty regarding this and their willingness to pay regarding the treatments. Post-Experimental surveys will include questions regarding gender, effort and beliefs. Gender has been identified as an important factor in avoidance decisions, therefore, it will be included in parts of the analysis.

Testing Hypothesis 1

In Treatment 1:

$$WTP = \beta_0 + \beta_1 \text{ GuessShare} + B \text{ ControlVariables} \quad (1)$$

In Treatment 2:

$$-WTP = \beta_0 + \beta_1 \text{ GuessShare} + B \text{ ControlVariables} \quad (2)$$

We expect that β_1 is significant and smaller than zero.

Testing Hypothesis 2

We define the difference between the actual share of participants performing better (S_a) and the guessed share (S_g) as:

$$\Delta = S_g - S_a \quad (3)$$

Then we perform a one-sided t-test, with the $H_0: \Delta = 0$ and $H_1: \Delta < 0$.

Testing Hypothesis 3

We define strict avoidance here as:

- *In T1*: A participant has a willingness to pay for the information of 0kr.
- *In T2*: A participant has a willingness to pay for avoidance of 50kr.

We can now test if the shares of these participants are statistically significantly different. Coding the decision for strict avoidance as a binary decision, we can run a χ^2 -test to test the hypothesis that avoidance is significantly higher in T1 compared to T2.

Testing Hypothesis 4

The following regression will be run:

In Treatment 1:

$$WTP = \beta_0 + \beta_1 \text{ Certainty} + B \text{ ControlVariables} \quad (4)$$

In Treatment 2:

$$-WTP = \beta_0 + \beta_1 \text{ Certainty} + B \text{ ControlVariables} \quad (5)$$

We expect that β_1 will be significantly different from zero and negative.

7 Budget and Timeline

The experiment will be conducted as a lab experiment at NHH on the 22. & 23. of October 2018. We aim for a sample of N=400. Participants will make incentivized guesses over the share of other participants that performed better than them in a general intelligence test. Total cost of the experiment is estimated as 40.000NOK. Details of the budget are listed in the table below (Table 1).

BUDGET DETAILS		NOK
Average Payment to Subjects		100
Aimed Sample Size for Stakeholders		400
COST OF THE LAB EXPERIMENT	$N_{st} * (Avg.Pay.)$	<u>40.000</u>
TOTAL COST		<u>40.000</u>

Table 1: Total budget for the aimed sample size

References

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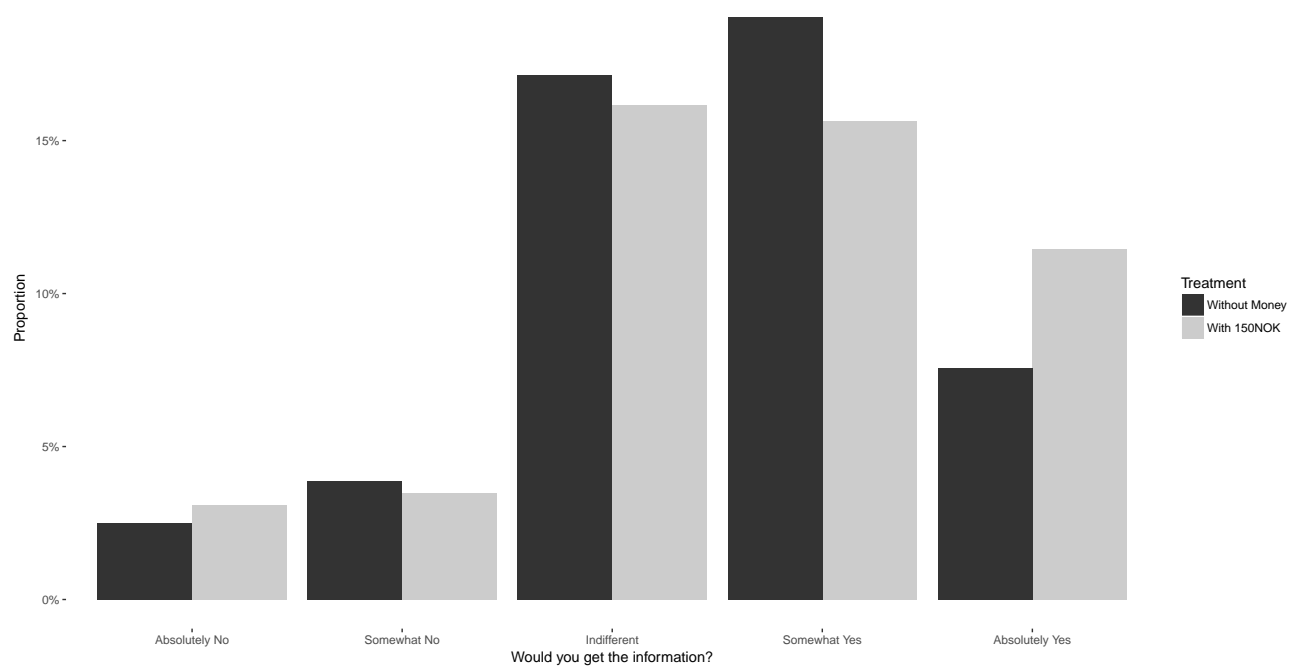


Figure 1: Survey results for stakeholders(N=1000)

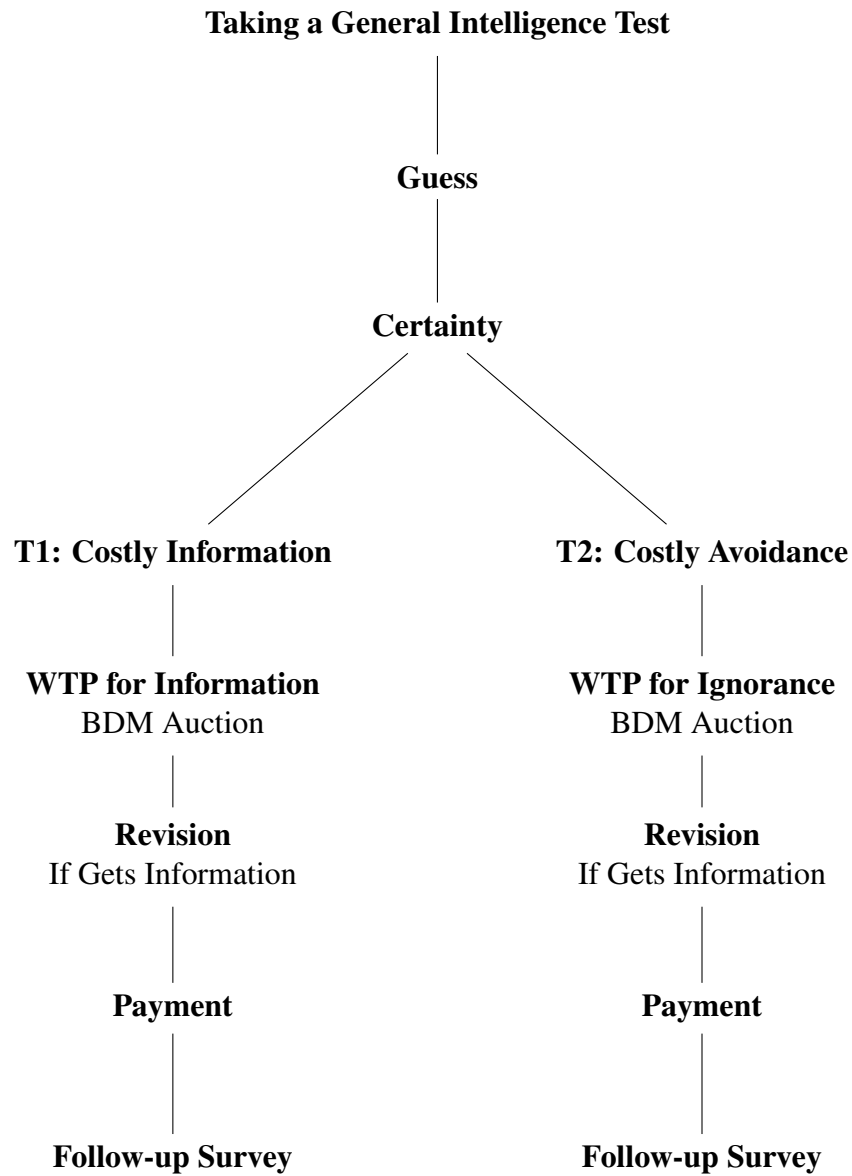


Figure 2: Spin-Off for Stakeholders

Note: In that experiment participants will make decision on learning or not their rank relative to peers. In T1, the default setting will be not getting the information and stakeholders who chose to be informed will be asked how much they are willing to pay for it. In T2, default option is getting the information and ignorance is costly. By using a BDM auction, we aim to measure WTP for information and ignorance before the main experiment.

Appendices

A Certainty Question

What are the chances that your guess is within a 0.05 range of the actual share of the participants that performed better than you?

Please indicate a probability in percentage, your answer has to be between 0 and 100.

Eg. If you enter 20 that means you are 20% certain that your guess is correct. Your answer should be between 0 and 100.

B Post-Experiment Survey

- Gender
- Age
- How competitive do you consider yourself to be? Please choose a value on the scale below, where the value 0 means 'not competitive at all' and the value 10 means 'very competitive'.
- How do you see yourself: are you generally a person who is fully prepared to take risks or do you try to avoid taking risks? Please choose a value on the scale below, where the value 0 means 'not at all willing to take risks' and the value 10 means 'very willing to take risks'.
- How well do you think other participants guessed the share of participants that did better than them?
Higher-Accurate-Lower
- Would the share of participants that did better than you change if there were students from the 2nd and 3rd years taking part?
Would be lower-Wouldn't change -Would be higher
- Would your guess over the share of participants that did better than you change if there were students from the 2nd and 3rd years taking part?
I would report:
Lower guess- The same- Higher guess
- Think about the other participants in this room, would the share of participants that did better than them change if there were students from the 2nd and 3rd years taking part?
Would be lower-Wouldn't change -Would be higher

- Think about the other participants in this room, would their guess over the share of participants that did better than them change if there were students from the 2nd and 3rd years taking part?

They would report:

Lower guesses- The same- Higher guesses

- How do you think about your academic success compared to other students?

Above average-Average-Below average

- How do you think your own intelligence compared to other students?

Above average-Average-Below average

- How important is it for you to think yourself as an intelligent person?

Not important at all(1)-Very Important(5)