Study Information

Title

Where the truth lies: how sampling implications drive deception without lying - A replication study

Authors

Janina Klarmann, Niklas Laasch, Janeke Nemitz, Leonie Roos

Description

This is a replication attempt of Experiment 1 by Ransom et al. (2019). We are interested in how communication works, how interlocutors interact and respond to each other. Many research projects such as this one from Ransom et. al, "Sampling Assumptions in Inductive Generalization", Navarro et al. (2012), "How do people learn from negative evidence...?, Voorspoels et. al (2015) and "Strategies of Deception…" Franke et. al (2020) try to understand communication, how reasoning works and how it is developed. Efficient communication leads to gaps between the message itself and the meaning of it, if you try to understand how the person you are communicating with thinks you will probably fill these gaps which is also called meta-inferential reasoning. Every person reasons differently, which means there are different patterns of behaviour and therefore different assumptions about the communicative intent of the sender of a message. We are curious about how people reason in cases where the sender and receiver of a message don't have the same goal and therefore, how deception influences communication and which models of reasoning people use, if they take the sender's intent fully into account or if they mostly reason based on their prior world-knowledge.

Hypotheses

Our Hypotheses are:
    1. General Hypothesis:
We assume that participants reason differently depending on the condition ("teammate", "opponent") and the shown evidence maps ("helpful", "misleading", "uninformative")

    2. Specific Hypotheses:
Participants will choose the "Lure" map given the "misleading" evidence in the "teammate" condition more often than in the "opponent" condition.
Participants will choose the "Lure" map given the "uninformative" evidence in the "teammate" condition more often than in the "opponent" condition.
Participants will choose the "Truth" map given the "helpful" evidence independent from the condition ("teammate", "opponent")

Group 10

Design Plan

Study type

It's an online experiment. We randomly assign the stimuli to the participants, which is also known as an intervention experiment including randomized controlled trials.

Blinding

There is no blinding involved in this study. The participants know under which condition ("teammate", "opponent") they do the task and they also know that the given evidence maps ("helpful", "misleading", "uninformative") could be helpful, misleading or uninformative but that they always fit to the correct map. There is no direct contact between the experimenters and the participants.
The only "blinding" involved in this study is that under each condition ("teammate", "opponent") the participant gets the same stimuli (same mapping of evidence and treasure maps) which means that even if they were told they do the task under one of the conditions ("teammate", "opponent"), the evidence maps ("helpful", "misleading", "uninformative") are equally often helpful, misleading or uninformative as in the other condition.

Study design

The study design is a within-subject design with one factor (conditions: "teammate", "opponent") since the participants contribute data to all experimental conditions. It is also a repeated-measures design since participants complete more than one trial per condition. Pseudo-randomization in the form of a block design (two blocks, one per condition ("teammate", "opponent")) is used to minimize the possible effect of carry-over artifacts. In the block design we present identical trials in each block but each block shuffles the sequence of its trials. The dependent variable (what we measure) is the response of the participants, which treasure map they chose ("Decoy", "Lure", "Truth") given the condition ("teammate", "opponent") and the given evidence ("helpful", "misleading", "uninformative"). The independent variable (what we manipulate) is the sender's intent.

We used an image-selection task to present the materials to the participants.
The experiment consists of a training session and a main task. Both are split into two parts corresponding to the two conditions ("teammate", "opponent"). The training session contains four trials per condition, the main task 18 trials per condition. Both parts contain stimuli from our created materials.

As soon as the experiment begins, we welcome and thank the participant for taking part in our study. It is mentioned that you can only take part once and that you should put the experiment on full screen. After that the participant gets introduced to the cover story which contains the structure and procedure of the study. The explanation of the structure describes the idea of an online game where pirates buried treasures and left evidence where the treasures might be buried. You need to decide between four treasure maps based on this given evidence which is the correct one. Also, you will be informed that the evidence could be helpful, misleading or

uninformative but that they all fit the correct treasure map. Additionally, the participant gets informed that there will be two different conditions, one where the pirates wanted to help you find the treasures ("teammate") and one where the pirates wanted to mislead you ("opponent"). After that the procedure of the story, that there will be a training session and a main session for the main task, is explained. When the participant reads the instructions, the training session takes place, interrupted by an information view as soon as the condition changes. When the training session is over the participant will get informed that the main task will start and which condition comes first. Finally, there is an optional additional information sheet which the participant could fill out.

The screen which is shown to the participant in the training and main part shows the text "A teammate/opponent has left you this evidence:" on top and beneath it the evidence map is placed. In the lower part of the screen the text "Choose a map." is written and beneath it the four corresponding treasure maps show up. Now, the participant needs to click on one of the four treasure maps to get the next stimulus. Additionally, there is a progress bar in the upper right corner of the screen to indicate the progress of the experiment.

Randomization

We use a block randomization where each participant gets randomly assigned to one of two blocks ("teammate" vs. "opponent") in the beginning of each session ("training session" and "main session"). The two blocks contain identical trials; the order of the trials within each block is shuffled as well. After the first block is done, the second block under the other condition will start. Additionally, in each trial the order of the four treasure maps is randomized.

Sampling Plan

Existing data

As of the date of submission of this research plan for preregistration, the data have not yet been collected, created, or realized.

Explanation of existing data

We don't use any existing data. Since this is a replication of Experiment 1 out of Ransom et. al (2019) we are aware of their results but we will not use their data as we will collect data ourselves.

Data collection procedures

We will directly contact people and also share our experiment on social media. There will be no payment, the participation is voluntary. Every participant is allowed to take part only once and it is required to have a good command of English which is also communicated in the invitation to the experiment. We will collect the data for the time frame of one week.

Group 10

Sample size

Our target sample size is 50 participants.

Sampling size rationale

We will try to reach as many participants as possible which means we will contact around 100 people being aware that not everyone will take part in our experiment. We therefore will use the data of 50 participants.

Stopping rule

As soon as we reach 50 participants we will stop the data collection.

Variables

Manipulated variables

We have two manipulated, independent variables. They are the sender's intent, meaning the condition(teammate/opponent) and the evidence presented(uninformative/misleading/truth).

Measured variables

We measure the response, under which condition ("teammate" or "opponent") which picture ("Lure", "Decoy1", "Decoy2", "Truth") is picked with regards to the evidence map ("uninformative", "misleading - 0%", "misleading - 25%", "misleading - 50%", "helpful") which was shown.

Analysis Plan

Statistical models

We will use a between-group comparison and multinomial regression modeling to analyze the results and to test our hypothesis. We will use a Bayesian approach.
For the analysis the measured variables of misleading are summarized under one category of evidence. Also, the answers of Decoy1 and Decoy2 are summarized under one category named decoy.

The manipulated, independent predictor variables are the condition (teammate/opponent) and the evidence (misleading, uninformative, helpful). The dependent variable is which treasure map is chosen given the evidence and condition.(= response).
All variables are categorical. 'Condition' has two levels and 'Evidence' and 'Response' both have three levels. As our family is categorical and there are more than two possible outcomes, for our analysis we use a multi-logistic regression model.

Group 10

Transformations

We will transform the data such that we only have the entries "response", "condition" and "evidence" left. To achieve that we first need to clean our collected data and only select the mentioned relevant entries for our analysis.

Inference criteria

We will make inference over a directional delta to test our hypothesis. Delta is thought to be bigger than zero.

Data exclusion

If participants answer faster than 700ms in more than 3 Cases, their data will be excluded from the analysis, as it is likely that they just skipped through the experiment.

Missing data

We will not have to deal with missing data, as participants are just able to get to the next evidence, when they have chosen a category. Otherwise the experiment will not proceed. If a participant quits the experiment we will not use the data provided since it won't be submitted.

Exploratory analysis

Out of time issues we will probably not make further exploration of the data - maybe have a look at the responses of the "uninformative" evidence.

References

- "Where the truth lies: how sampling implications drive deception without lying" (Ransom,Voorspoels, Navarroc, Perfosa) 2019
- "Sampling Assumptions in Inductive Generalization" (Navarro, Dry,Lee) 2012
- "How do people learn from negative evidence? Non-monotonic generalizations and sampling assumptions in inductive reasoning" (Voorspoels, Navarro, Perfors, Ransom, Storms) 2015
- "Strategies of Deception: Under-Informativity, Uninformativity, and Lies - Misleading With Different Kinds of Implicature" (Franke, Dulcinati, Pouscoulous) 2020