

Experimental Design

A replication of experiment one of the study: “Where the truth lies: how sampling implications drive deception without lying” by Ransom et al. (2019)

Background

Everyday communication often requires us to fill in the blanks between what is said and what is meant. This blank leaves space for various interpretations that depend on our past experiences and knowledge, as well as on our assumptions about how the sender chooses to communicate the message she is trying to convey. This so-called “meta-inference” may be practiced by both parties and can on one hand improve the communication’s efficiency when the appropriate assumptions are drawn and on the other hand be an obstacle to the communication when inappropriate assumptions are drawn. In this experiment, we replicate experiment one of a study by Ransom et al. (2019). Thus, we examine the effects of (meta-)inference based on the perceived intent of the sender.

Here we will take a look at a deception game, where the participants are presented with four alternative “treasure maps” (see bottom row in Fig. 1) and have to judge which one is genuine based on the evidence provided by “the pirate” (see top row in Fig. 1). The participants are told that “the pirate” is a past player but actually we are providing the evidence. Furthermore, the participants are told that this “pirate” is either a teammate (fellow pirate) or an opponent (opposing pirate). Fig.1 is an example of one round in the deception game:

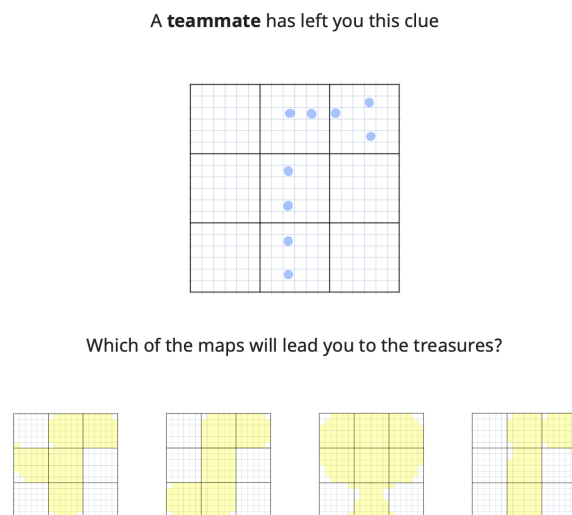


Figure 1: One round in the deception game

In order to understand the background of the deception game, a further definition of the meta-inferential challenge in terms of deception without lying has to be provided. Ransom et al. (2019) have taken the pragmatic reasoning (Grice, 1989) and the verbal deception (e.g. Dynel, 2011) theories into account and have presented three main strategies for deception without lying. These strategies are outright *lying*, being *uninformative* and being *misleading*. Two of these strategies, namely being *uninformative* and being *misleading* have been used as pieces of evidence in the experiment. Additionally, a *helpful* piece of evidence is included, which is consistent with only the genuine map in the experiment, which the participants aim to identify.

Hypotheses

We are interested in the hypotheses obtained from experiment one in the original paper. More precisely, we are interested in whether people take the intention of the sender into account when interpreting the evidence offered. We address the following hypothesis:

1. Participants in the teammate condition are significantly more likely to choose *the Lure* when presented with *misleading* evidence than participants in the opponent condition.
2. Participants in the teammate condition are significantly more likely to choose *the Lure* when presented with *uninformative* evidence than participants in the opponent condition

Design

Materials. The complete set of experimental stimuli can be seen in Fig. 2.



Figure 2: The experimental stimuli

Each of the six sets (rows in Fig. 2) consists of three pieces of evidence (*uninformative*, *misleading* and *helpful*) and four maps (two *decoy*, *lure* and *truth*). The quality of the evidence varies from trial to trial. The three pieces of evidence are designed in the following way:

The **helpful evidence** forms a pattern of locations that bears close similarity to the true map and categorically excludes the two decoy and the lure map.

The **uninformative evidence** is consistent with all of the four maps.

The **misleading evidence** is designed to bear a strong similarity to one of the three false maps (*the Lure*). Additionally, the informativeness of the *misleading* evidence varies over the sets of stimuli in a way that it rules out either none, one or two of the decoy maps (never *the Truth* and never *the Lure*). This is indicated with percentages in Figure 2 on the left hand side.

The full set of materials can be found here:

<https://github.com/lwenzler/deception-game/tree/main/images>

Procedure. The experiment consists of five parts:

- (i) introduction & practice instructions
- (ii) practice trials
- (iii) main instructions
- (iv) main conditions
- (v) post-experiment questionnaire

First, the participants are told they are taking part in an experiment simulating an online game that is based on data provided by past players. They are told that they play the role of an “explorer” who must decide which of four treasure maps is the genuine one based on evidence provided by a past player, here called “the pirate”. In our terminology regarding communication, the explorer is the receiver and the pirate is the sender. The evidence consists of points that correspond to a subset of locations drawn from the genuine map, where each point represents the location of a hidden treasure. Furthermore, the participants are told that the sender can provide *misleading*, *helpful* or *uninformative* evidence by strategically selecting points.

The basis of the within-subjects manipulation is people’s belief about the sender’s intent. There are two conditions. In the teammate condition, participants are told that the goal of the “fellow pirates” is to help the receiver to find the genuine map and that they will provide evidence accordingly. In the opponent condition, the receivers are told that the goal of the “opposing pirates” is to keep the genuine map concealed. Additionally, participants are being informed that “pirates” are not allowed to provide false information, regardless of the condition. Thus, participants know that they can rule out every map, where the shaded regions in the map and the locations indicated on the evidence map don’t overlap.

First, there are six practice trials (three for each condition). Following the practice trials, the main phase for the main conditions is announced and then started. It consists of a block of trials of either the teammate condition or the opponent condition. Within each block, participants see each of the six map sets on three different occasions, that is, they receive either *uninformative*, *misleading* or *helpful* evidence (see Fig. 2). That leads to 30 trials in total. Everything is randomised, the on-screen order of the maps displayed in each trial, the trial order within each block and the block order itself. On each trial, the participants are asked to consider the four maps, the evidence provided and whether the “pirate” is a teammate or an opponent when deciding which of the four maps they believe to be the genuine one. Finally, the participants are asked to participate in the optional post-experiment questionnaire.

References

- Dynel, M. (2011). A web of deceit: A neo-gricean view on types of verbal deception. *International Review of Pragmatics*, 3, 531–538.
- Grice, H. P. (1989). *Studies in the Way of Words*. Cambridge, MA: Harvard University Press.
- Ransom, K., Voorspoels, W., Navarro, D., & Perfors, A. (2019, October 2). Where the truth lies: how sampling implications drive deception without lying.