

## Human Interaction in the Presence of Robotics – A Field-in-the-Lab Experiment (#87128)

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### 1) Have any data been collected for this study already?

No, no data have been collected for this study yet.

### 2) What's the main question being asked or hypothesis being tested in this study?

We investigate whether the pure presence of advanced robotics in a meaningful, sequential real effort team task influences the degree of altruism or spite between team members. Participants earn a monetary team reward and an individual material reward (a bar of chocolate). To measure the effects of the presence of robots, the participants play a bully-game (Krupka and Weber, 2013) with their earned endowment from the previous production round. We also conduct a Becker-DeGroot-Marschak (BDM) mechanism to investigate whether individually earned reward is valued differently between the treatments. We elicit additional behavioural measures and survey items to check for robustness of potential effects.

Our main hypotheses are the following:

H1: The presence of robots in a production line does not influence the individual contribution in a bully game played with the earned endowment from the production round.

H2: The presence of robots in a production line does not influence the perceived value of the individually earned endowment.

### 3) Describe the key dependent variable(s) specifying how they will be measured.

bully\_game\_s; share sent or taken in the bully game:

- Share of individual part of team reward from the production round sent to or taken from the other participant in the bully game

WTA\_BDM; individually perceived value of the individually earned material reward:

- Willingness to accept for individually earned chocolate bar in the production round taken from an interval between 0€ and 2€

### 4) How many and which conditions will participants be assigned to?

There are two conditions with a between-subject design:

In both conditions, there are two participants working on a sequential production task. Within a session, participant 1's task differs from participant 2's task, but participants 1 and participants 2 have the same task across treatments, respectively. In the treatment condition, participants work together with two robots in a production line to earn their endowment for the following decision tasks. In the control condition, the production line only consists of the two participants with no robots present. The task carried out by the robots in the treatment is covertly executed by experimenters in the control and the participants are not informed about details of this process. The decision tasks will be the same for both conditions.

### 5) Specify exactly which analyses you will conduct to examine the main question/hypothesis.

We use appropriate non-parametric and semi-parametric tests as well as regressions to test whether the amount given or taken in the bully-game depends on whether robots were part of the production team or not.

### 6) Describe exactly how outliers will be defined and handled, and your precise rule(s) for excluding observations.

In rare cases, the robots can have malfunctions. Sessions in which these occur will be dropped.

If the production level of a pair of participants is too low to earn the chocolate bar, their willingness to accept in the BDM mechanism is missing. Therefore, these data points will be excluded from the regression analysis. We will not drop it from the overall analysis of the bully-game contributions.

### 7) How many observations will be collected or what will determine sample size? No need to justify decision, but be precise about exactly how the number will be determined.

We run each treatment with 24 participants each. Since there are exactly two stations available for the production tasks, we collect data from two participants per session. Thus, there are 24 sessions with each two participants, resulting in a total of 48 participants for the experiment.

### 8) Anything else you would like to pre-register? (e.g., secondary analyses, variables collected for exploratory purposes, unusual analyses planned?)

Nothing else to pre-register.