

Fair Proxy Mediation – First Experimental Results with Tele-Operated Robots^a

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Introduction

Numerous studies expect negative effects of computerization by artificial intelligence and automation by robots on employment (Ford, 2015; Frey & Osborne, 2017). With advances in big data analytics and sensors even non-routine cognitive and manual tasks might be assumed by computers and robots in the future (Frey & Osborne, 2017). Tasks that require capabilities in creativity or social interaction (Frey & Osborne, 2017) and therefore empathy (Allen & Wallach, 2012), however, are harder to take over by machines.

One of such task requiring social interaction, empathy and creativity to deal with the people involved and the problem at hand simultaneously is mediation. In conflict mediation, however, the usage of robotics and artificial intelligence – once possible due to increased versatility and performance of such systems which can be assumed for the future – could be desirable. Conflict parties might feel treated unfairly and correctly or incorrectly expect a biased behavior by a mediator that differs in demographic aspects like gender, age, education, race, etc. Social robots – as they are not humans and do not show the above mentioned demographic features – might act as fair proxy in mediations.

In this study we explore whether 'fair proxy communication' (Seibt & Vestergaard, 2018) via the Telenoid™ robot will enable better negotiation or conflict facilitation in conflicts where the perception of bias could be an obstacle to communication and the elimination of perceptual biases and greater cooperativeness is of psychological and practical relevance. We focus on the influence of 'fair proxy communication' on perceptual biases (e.g. gender bias), and tendencies to cooperate as well as perceived fairness of the facilitation of conflict negotiation processes in conflicts where the mediator's neutrality in relation to gender, age, attitude etc. matters. These tele-operated android robots are intended to mask their operators gender, age, race, physical features etc and thereby could mitigate or neutralize perceptions of unfair treatment by the mediator which originate from

differences in demographic features only. As technology acceptance of robotics and e-mediation might compound effects the authors developed an empirical design with varying conflict party - mediator gender combinations and different e-mediation support technologies.

The guiding research questions of the study are: (i) Do participants accept e-mediation via the Telenoid. (ii) Is the Telenoid perceived as a fair proxy in e-mediations? And finally: (iii) What are the perceived and actual effects on the mediation and negotiation process and outcome? To address these research questions an experiment was designed and conducted. The remainder of this extended abstract introduces the experimental design and the methods to implement the experimental conditions (expert mediation system and Telenoid) as well as the negotiation case used. Finally we provide an outlook on the analyses planned after data collection is finished.

Experimental Design

This section explains the experimental setup and the methods applied to establish the experimental conditions. An identical case was used in all treatments. For the settings with mediation an electronic mediation expert system was applied to ensure the same questions and advice and thereby reduce variance. This electronic mediation expert system was either used by the participants themselves or by the mediators in the human mediation condition or the operators of the Telenoid in the Telenoid mediation condition (see Table 1).

Table 1: Experimental design

control group	no 3 rd party
e-mediation system	no 3 rd party
human mediator	female mediator male mediator
Telenoid mediator	female mediator male mediator

The experimental procedure varies across the conditions. All participants were recruited from the participant pool of Aarhus University's experimentation facilities and double-blind assigned to experimental conditions. After arriving in the experiment facilities and registering, all participants filled in a pre-questionnaire about demographic data and negotiation experience. Afterwards they received the negotiation case to prepare for the negotiations. After the negotiations and mediations were conducted participants had to fill in an questionnaire about their satisfaction with the process and outcome, perceived fairness of process and outcome, technology acceptance and their attitudes towards robots (for the Telenoid mediator conditions only).

Negotiations were conducted in two sessions, the first of which lasted 15 minutes, the second 30 minutes. In the human, Telenoid, and e-mediation system conditions, participants received mediation between the two negotiations. In the control condition, participants were given a 5 minute break between the two sessions, but received no mediation. Depending on the experimental condition, participants either used the e-mediation system on their own, or were led through the questionnaire and given the advice by a female or male human or Telenoid mediator.

The e-mediation expert system used for the treatments with mediation (all but the control group in the experiments) is an adapted and updated version of negotiator assistant (Druckman et al., 2002; 2004; 2014). The system gathers data about the current state of the negotiation by questionnaires on the most important issue (in our study the patent issue) and the negotiation process. It then calculates and displays flexibility values for both negotiators to show how flexible they are to move from their current position towards an agreement. It also provides advice – based on the answers in the questionnaires that demonstrate low flexibility – on how to conduct the negotiations to reach an agreement. The Telenoid (Figure 1) is a tele-operated android robot developed by Hiroshi Ishiguro from Osaka University and the Advanced Telecommunication Research Institute International.



Figure 1: Telenoid TM

Case

The case used in the experiments is a demerger of a medium sized health technology company due to strategic friction between the two heads and founders (one female and one male) of the otherwise successful company. The female and male founders and head of the company in the case description are represented by participants of the same sex in the negotiation experiments.

The case consists of a total of five open issues (patent ownership, further employment of employees, further use of facilities, further use of equipment, responsibility for past liabilities), which need to be settled. It is designed to be very distributive and conflicting due to opposite preferences and high weight of the most important issue (the patent for the key technology of the company) and little integrative potential in the remaining issues. However, by information exchange and revelation of interests and priorities the negotiators can uncover a creative and integrative alternative solution.

Expected Results

Participants were recruited from the participant pool of Cognition and Behaviour Lab, BSS, Aarhus University in which the experiments take place. Participants are both Danish and international present and former student of Aarhus University, and receive remuneration for their time spent in the experiments. We plan for 20 negotiation dyads, consisting of 20 female and 20 male participants, per experimental condition, i.e. a total of 120 dyads and 240 participants.

Data collection started – after a pilot, a pre-test and the operator/mediator trainings – in April 2018 and will be finished in February 2019. At the conference we present first results of the effects of the experimental conditions on agreement rate and agreement quality in the different treatments, results of the mediation (from the e-mediation system) and technology acceptance, and perceived fairness of e-mediation with Telenoid, human mediator or the e-mediation expert system only compared to the control group.

The insights of the Wizard of Oz experiments in human computer interaction in this study will provide valuable insights for the automation of negotiation (Jennings, 2001; Filzmoser, 2010) and mediation and the applicability of Telenoids and robots for this purpose.

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