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# Subjective Experience of Interacting with a Social Robot at a Danish Airport

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## Introduction

This study originates from a social robot research project at Aalborg University with the aim of developing and implementing robots in a variety of contexts. This raises questions on how social robots should behave and which variables in a social robot is important. When important variables are elicited scales can be developed from these variables which can be use to test a social robot. The study consists of two tests, one where variables are elicited and one where the scales are used to evaluate the robot.

## Method - Elicitation of words

The first test was conducted on Danish travellers who interacted with a social robot in a natural setting. The test was conducted at Aalborg Airport (AAL) after the travellers went through the security check and before they reached the shopping and dining area at the airport. The travellers who interacted with the robot were asked to participate in a semi-structured interview about their first impressions while being observed during both the interaction and the interview.

**Materials** For the test a *Double* robot from Double Robotics Inc with an iPad Air 2 was used. It was decided to change the head mount so that the iPad is angled upwards. The modified *Double* robot is shown on fig:ModificeretDoubleFront and fig:ModificeretDoubleSideClose. The *Double* robot was controlled via a computer and on the screen a developed wireframe to help with wayfinding in AAL was presented.

**Subject Recruitment** 30 subjects from the age of 8 to 62 years (16 females, 14 males) participated. The subjects were recruited by the robot itself, which was remotely controlled by a present controller. The robot recruitment was chosen because it provide a more ecological and undisturbed interaction between robot and subject. The robot approached potential subjects in the area after the security check and asked to help travellers with wayfinding. If travellers wanted help, they were presented with four wayfinding options: Food, Shopping, Toilets or Gate information. After the interaction the robot led subjects to an interviewer.

**Semi-structured Interview** The interview was a two part semi-structured interview. The first part consisted of probing the subjects for their first impression and experience of interacting with the robot in regard to their thoughts about the robot itself. Subjects were asked about their opinion regarding the robot’s approach, relevance, reliability, and regards the subjects experiences at an airport where robot help might have been useful. The second part consisted of asking specific questions relating to the robots physical characteristics such as speed, height, distance, movements, appearance, and approach, if subjects had not already talked about them spontaneously. These questions were asked because the variables are known to affect the experience of HRI.

**Data Processing** The interviews were transcribed and coded along with observations into affinity notes. The purpose was to create an affinity diagram, which brings insights and issues into a hierarchical diagram based on subjects’ statements and behaviour. In the end this affinity diagram will be pivotal in eliciting the variables that affect HRI, and thereafter in creating the scales to be used for further work. 567 affinity notes were sorted into 10 green categories with individual subcategories. To gain more insight it was decided to mix the spontaneous answers from the conversation topics with the answers from the specific questions. These were not differentiated in the affinity diagram.

## Results - Elicitation of words

## Method - Scale Testing

## Results - Scale Testing

## Conclusion

## Acknowledgements

## References