



## UvA-DARE (Digital Academic Repository)

### People's responses to autonomous and adaptive systems

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# A | APPENDIX CHAPTER 2

MEASURE	$\alpha$	M	SD	range
Perceived usefulness of the filter 2 items, Use of a spamfilter enables me to deal with my email more quickly. I find my spamfilter useful.	.87	5.3	1.1	1.0-6.0
Perceived ease of use filter 2 items, I find the spamfilter easy to use. I find it easy to get the filter to do what I want it to do.	.82	4.5	1.4	1.0-6.0
Perceived understanding filter 1 item, I have enough knowledge to use the spam filter.		4.6	1.6	1.0-6.0
Dependability filter 4 items, e.g. I think the spam filter correctly assesses email as spam or non-spam. I think it is necessary to check the spam filter's actions. (Question inverted for analysis) I think the spam filter correctly assesses email as spam or non-spam. I trust my spam filter to not label important messages as spam. I trust my spam filter to label all incoming spam as spam.	.77	3.2	1.3	0.2-5.4

**Table 21:** Final scales, participant mean scores and standard deviations. Cronbach's  $\alpha$  as reliability measure. All 7-point (0-6) Likert-type scales. Table continues on next page (1/1).

MEASURE	$\alpha$	M	SD	range
Attitude toward filter 1 item, Using a spamfilter is a good idea.	5.7	.72	3.0-6.0	
Risk: consequences 1 item, The spamfilter's actions could have negative consequences.	2.5	1.8	0.0-6.0	
Perceived usefulness of training 2 items, I find it useful to train the spamfilter. Training the spamfilter improves the spamfilter.	.74	4.9	1.3	1.0-6.0
Perceived understanding of training 3 items, Training the spam filter is clear and understandable to me. Training the spamfilter is clear and understandable to me. I have enough knowledge to train the spamfilter.	.86	4.5	1.5	0.0-6.0
Attitude toward training 1 item, Training the spam filter is a good idea.	5.1	1.4	0.0-6.0	
Dependability training 3 items, e.g. I trust the outcome of the training process of the spam filter. I think that the spam filter actually adapts according to my feedback / training actions. The filter's learning process is reliable.	.85	4.3	1.3	0.3-6.0

**Table 22:** Final scales, participant mean scores and standard deviations. Cronbach's  $\alpha$  as reliability measure. All 7-point (0-6) Likert-type scales. Continued from previous page (2/2).



# B | APPENDIX CHAPTER 3

MEASURE	$\alpha$	M	SD	range
<p>Perceived transparency of the system</p> <p>2 items, I understand why the system recommended the artworks it did.</p> <p>I understand what the system bases its recommendations on.</p>	.74	4.5	1.2	2.0-6.5
<p>Perceived competence</p> <p>8 items, I think that the system's criteria in choosing recommendations for me are similar to my own criteria.</p> <p>I like the artworks the system recommended to me.</p> <p>I think the system should use other criteria for recommending artworks to me than it uses now. (inverted for analysis)</p> <p>The artworks that the system recommended really interest me.</p> <p>I think that the artworks that the system recommends correspond to my art interests.</p> <p>I think the system does not understand why I like certain artworks I rated as interesting.(inverted for analysis)</p> <p>I think the system does a good job adapting to what I tell it to be interesting artworks.</p> <p>The system correctly adapts its recommendations on the basis of my ratings.</p>	.91	4.1	1.1	1.6-6.5
<p>Actual competence</p> <p>Comparison interests named in interview and in user profile (recall, precision, F-score)</p>				
<p>Intent to use the system</p> <p>3 items, I would rather choose the 6 artworks by hand from the collection of artworks than use the system if I would have to perform this task again. (inverted for analysis)</p> <p>I would like to use the system again for similar tasks.</p> <p>The next time I am looking for a recommendation for an artwork I would like to use this system.</p>	.91	4.4	1.4	1.0-6.7

**Table 23:** Final scales and variables included in overall analysis, including Cronbach's  $\alpha$  for the final scale. Questionnaire items were seven-point Likert-type scale questions, with scale ranging from 1 ('very strongly disagree') to 7 ('very strongly agree'). Table continues on next page (1/2).

MEASURE	$\alpha$	M	SD	range
Acceptance of recommendations Number of recommendations included by participant in final selection of 6 artworks.		2.0	1.9	0-6
Acceptance of system: scenario measuring participant's willingness to delegate task to system. Participants choosing system selection (N=32) vs. manual selection (N=28)				
Trust: dependability 10 items, I am confident in the system. I trust the system not to recommend artworks that are not interesting to me. The system is deceptive. (inverted for analysis) I trust the system to recommend me all artworks that are of interest to me. The system is reliable. Using this system for these tasks is risky. (inverted for analysis) I trust the system. Using this system is risky. (inverted for analysis) I can depend on the system. I trust the recommendations of the system to match my own selection.	.90	4.2	1.1	1.8-6.2

**Table 24:** Final scales and variables included in overall analysis, including Cronbach's  $\alpha$  for the final scale. Continued from previous page (2/2).



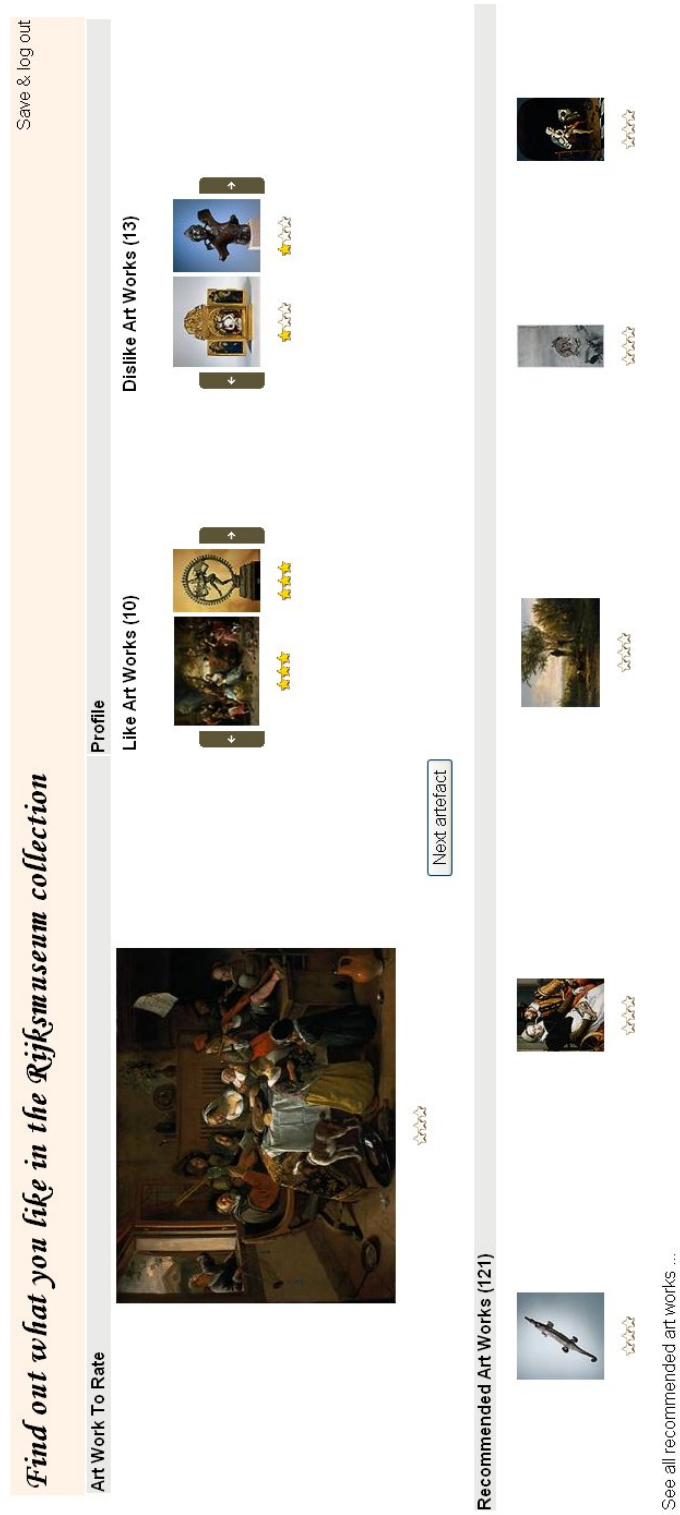


Figure 33: Non-transparent version of the CHIP system.

# C | APPENDIX CHAPTER 4

MEASURE	$\alpha$	M	SD	range
Personality: Locus of control 3 items, I like jobs where I can make decisions and be responsible for my own work. I am sure enough of my opinions to try to influence others. I stick to my opinions when someone disagrees with me.	.62	5.3	.98	1.0-7.0
Personality: Driver characteristics.				
Aggression I really dislike other drivers who cause me problems.		5.0	1.5	2.0- 7.0
Dislike of driving I find myself worrying about my mistakes when driving.		3.6	1.5	1.0-7.0
Perceived usefulness car agent 3 items, I think that the car agent is useful. Using the car agent makes driving easier for the driver. Using this car agent did not enable the driver to drive better. (inverted for analysis)	.77	3.7	1.2	1.0-6.3
Attitude towards agent 3 items, Using the car agent is a good idea. Driving with the car agent is fun. I would not like driving with the car agent.	.77	3.2	1.1	1.0-5.7
Intent to use 4 items, e.g. I would buy the car agent. The next time I drive a car I would like to use the car agent. I would recommend the car agent to someone else. I would like to have the car agent.	.89	1.0-5.8		

**Table 25:** Final scales of questionnaire items included in quantitative analysis, including Cronbach's  $\alpha$  for the final scale, 1 (strongly disagree) - 7 (strongly agree). Table continues on next page (1/2).

MEASURE	$\alpha$	M	SD	range
Trust: dependability 3 items, e.g. I trust the car agent. The car agent was very capable at performing its job. I can depend on the car agent.	.65	3.4	1.0	1.0-5.7
Trust: source credibility 14 items, Unselfish - selfish Intelligent / unintelligent Competent / incompetent Honest / dishonest high character / low character expert / inexperienced bright / stupid trained / untrained sympathic / unsympathic trustworthy / untrustworthy warm / cold approachable / unapproachable	.77	4.4	.63	2.6-5.9
Trust in provided information 2 items, e.g. I trust the information the car agent provides. The car agent offers reliable information to the driver.	.76	3.9	1.1	1.0-6.0
Compliance: Intent to follow-up on decision 2 items, I would follow the car agent's directions. The person should follow the directions of the car agent.	.80	3.6	1.5	1.0-7.0
Human-likeness The car agent was highly social. The car agent acts like a person.	.68	2.6	1.1	1.0-5.5
Machine-likeness The car agent acts like a machine. The car agent has machine-like attributes.	.77	5.5	.98	3.5-7.0
Perception urgency scenario The situation in the video was highly time-critical		4.7	1.7	1.0-7.0

**Table 26:** Final scales of questionnaire items included in quantitative analysis, including Cronbach's  $\alpha$  for the final scale, 1 (strongly disagree) - 7 (strongly agree). Continued from previous page (2/2).



# D | APPENDIX CHAPTER 5

MEASURE	$\alpha$	M	SD	range
Perceived proactiveness 2 items, If the robot sees that something is wrong, the robot doesn't wait to be asked before helping. The robot proactively helps the user.	.70	4.5	1.4	1.0-7.0
Attitude towards robots in general I would feel relaxed talking with robots.(inverted for analysis) I would feel uneasy if I was given a job where I had to use robots. If feel that I could make friends with robots.(inverted for analysis) I feel comfortable being with robots.(inverted for analysis) I would feel nervous operating a robot in front of other people. I would feel nervous just standing in front of a robot. I would hate the idea that robots were making judgments about things. I would feel paranoid talking with a robot.	.83	3.4	1.0	1.4-6.1

**Table 27:** Example items final scales, participant mean scores and standard deviations. Cronbach's  $\alpha$  as reliability measure. All 7-point (1-7) Likert-type scales, unless otherwise indicated. Table continues on next page (1/2).

MEASURE	$\alpha$	M	SD	range
Trust: dependability 3 items, e.g. The robot was capable of performing its job. The robot had a lot of knowledge about its tasks. The robot was reliable.	.76	4.9	1.1	1.3-6.7
Compliance (1-5 scale) 2 items, To what extent do you think the person in the movie should follow the recommendations of the robot? If you were in the same situation as the person in the movie, would you follow the robot's advice?	.75	3.4	.80	1.0-5.0
Perceived closeness (1-6 scale) 1 item, pictorial closeness scale		3.6	1.2	1.0-6.0
Human-likeness 5 items, The robot has characteristics that you would expect of a human. The robot acts like a person. The robot has human-like attributes. The robot looks like a person. The robot was highly social.	.76	3.8	1.1	1.0-6.4
Machine-likeness 2 items, The robot looks like a machine or a mechanical device. The robot has machine-like attributes.	.80	2.2	.96	1.0-6.0

**Table 28:** Example items final scales, participant mean scores and standard deviations. Cronbach's  $\alpha$  as reliability measure. All 7-point (1-7) Likert-type scales, unless otherwise indicated. Continued from previous page (2/2).





# E | APPENDIX CHAPTER 6

Measure	$\alpha$	M	SD	range
Perceived empathic accuracy 1 item, The statements made by the agent where in line with the feelings of the person in the movie.		3.8	1.8	1.0-7.0
Perceived emotional valence 1 item, self-assessment valence manikin scale.	.72	3.2	1.0	1.0-5.0
(Negative) attitude toward robots in general I feel that if I depend on robots too much, something bad might happen. If robots had emotions, I would be able to become friends with them. I would hate the idea that robots were making judgments about things. I would very nervous just standing in front of a robot. I would feel uneasy if robots really had emotions. I would feel paranoid talking with a robot. I would feel uneasy if I was given a job where I had to use robots.	.78	3.9	1.1	1.1-6.3
Perceived empathic ability 4 items, e.g. The robot is patient with the person in the movie. (adapted from Wampler and Powell, 1982) The robot tried to keep the person in the movie from worrying. (adapted (Kim, 2005)) The robot cared for the person in the movie. The robot showed interest in the person in the movie.	.84	3.4	1.3	1.0-7.0
Human-likeness The robot has characteristics that you would expect of a human. The robot acts like a person. The robot has human-like attributes.	.75	3.9	1.3	1.0-7.0
Machine-likeness The robot acts like a machine. The robot looks like a machine or a mechanical device. The robot has machine-like attributes.	.63	5.2	1.0	2.0-7.0

**Table 29:** Final scales of questionnaire items included in quantitative analysis. Cronbach's  $\alpha$  as reliability measure. All 7-point (1-7) Likert-type scales. Table continues on next page (1/2).

Measure	$\alpha$	M	SD	range
Trust: perceived dependability 7 items The robot was very capable in performing its task. The robot had a lot of knowledge about the work it was doing. The robot was reliable. I felt confident about the robot's ability to perform its task. I trusted the robot to do its task. I trusted the actions of the robot. I could rely on the robot's task related skills and abilities.	.92	4.3	1.2	1.0-6.1
Trust: perceived credibility 14 items, Unselfish - selfish Intelligent / unintelligent Competent / incompetent Honest / dishonest high character / low character expert / inexperienced bright / stupid trained / untrained sympathic / unsympathic trustworthy / untrustworthy warm / cold approachable / unapproachable	.86	5.6	1.2	1.6-8.4
Perceived closeness Select the number that corresponds to the picture that most closely represents how close you think the human feels towards the robot. Please select the number that corresponds to the picture that most closely represents how close you would feel towards the robot.	.73	2.6	1.1	1.0-6.0

**Table 30:** Final scales of questionnaire items included in quantitative analysis. Cronbach's  $\alpha$  as reliability measure. All 7-point (1-7) Likert-type scales. Continued from previous page (2/2).



# F | APPENDIX CHAPTER 7

	Socially expressive, empathic	Non-socially expressive
System message 1 (information request)	Sorry to interrupt you, but chemical sensors in your area indicate an abnormal value. Please describe the smell of the object inside the brown bag in the machine room.	Chemical sensors in your area indicate an abnormal value. Describe the smell of the object inside the brown bag in the machine room.
Answer options	<ignore/describe smell>	<ignore/describe smell>
Follow-up scenario sent if participant decided to react to the request	Describe the smell: [open text field]	Describe the smell: [open text field]
	Data has been analysed, don't worry, the smell you describe does not match a harmful substance.	Data has been analysed, described smell does not match a harmful substance.
System message 2 (information request)	This can be stressful, but an abnormal sensor value was detected in your location. Please describe the pattern of the dots on the screen on machine 2 in the machine room.	An abnormal sensor value was detected in your location. Describe the pattern of the dots on the screen on machine 2 in the machine room.
Answer options	<ignore/describe pattern>	<ignore/describe pattern>
Follow-up scenario sent if participant decided to react to the request	Describe the pattern on machine 2:[open text field]	Describe the pattern on machine 2:[open text field]
	Thank you, you might feel insecure about what the pattern means, but your description of the pattern does not indicate a problem.	Description of the pattern does not indicate a problem.

**Table 31:** Scenario in both conditions. Table continues on next page (1/3).

	Socially expressive, empathic	Non-socially expressive
System message 3 (information request)	Sorry to interrupt you, this can be annoying, but chemical sensors in your area indicate an abnormal value. Please describe the smell of the brown bag in room 7.	Chemical sensors in your area indicate an abnormal value. Describe the smell of brown bag in room 7.
	<ignore/describe smell>	<ignore/describe smell>
Follow-up scenario sent if participant decided to react to the request Describe the smell: Describe the smell:	Thank you, that probably wasn't too pleasant, but your description of the smell does not indicate a dangerous substance.	Entered description of smell does not indicate a dangerous substance.
System message 4 (warning)	You appear worried about finishing, but please do not enter room 5, air quality has been assessed as unacceptable.	Do not enter room 5, air quality has been assessed as unacceptable.
	<ignore/ok>	<ignore/ok>
System message 5 (information request)	The pressure levels in machine 4 appear abnormal. This might worry you, but please check the value on machine 4 in the machine room.	The pressure levels in machine 4 appear abnormal. Check the value on machine 4 in the machine room.
	<ignore/enter value>	<ignore/enter value>
Follow-up scenario sent if participant decided to react to the request	Enter the value on machine 4:	Enter the value on machine 4:
	Don't worry, the value you entered is within safe limits. This must feel reassuring.	Entered value is within safe limits.

**Table 32:** Scenario in both conditions. Continued from previous page, table continues on next page (2/3).



	Socially expressive, empathic	Non-socially expressive
System message 6 (warning)	Finding the containers may be important, but multiple machine and air sensor readings indicate a dangerous situation. This may be upsetting, but please leave the building.	Multiple machine and air sensor readings indicate a dangerous situation. Leave the building.
	<ignore/ leave the area>	<ignore/ leave the area>
Follow-up question sent if participant decided to react to the request	Did you leave the area?<yes/no>	Did you leave the area?<yes/no>
Last message (via system when participant had left room or verbally)	Your session is completed. Thank you!	Your session is completed. Thank you!

Table 33: Scenario in both conditions. Continued from previous page (3/3).

SOCIALLY EXPRESSIVE, EMPATHIC
Good job, the container has been registered and added to your map. Thank you for entering that container, you appear quite enthusiastic. Great, the container has been registered. You appear quite alert. Another successful finding, you must be feeling a bit proud now. You must feel good about finding that container. Another container successfully found! You must be pleased. You must be happy you found this many containers. Thanks, you must be content about finding another container. Thank you. You appear quite determined in finding the containers.
NON-SOCIALLY EXPRESSIVE CONDITION
Container registered and added to your map.

Table 34: Reactions to found containers

MEASURE	$\alpha$	M	SD	range
Manipulation check: perceived empathy 3 items, The system reassures users. The system takes into account the emotions of the user. The system makes users feel at ease.	.64	3.8	1.3	1.0-7.0
Participant personality: empathy 10 items, 5-point scale, e.g. I cry easily. Don't understand people who get emotional. (inverted for analysis) Feel others' emotions. Suffer from others' sorrows. Am deeply moved by others' misfortunes. Am easily moved to tears. Experience my emotions intensely. Feel spiritually connected to other people. Am not interested in other people's problems. (inverted for analysis) Seldom get emotional. (inverted for analysis)	.83	3.1	.1	1.8-4.4
Participant personality: extraversion 10 items, 5-point scale, e.g. I start conversations. Feel comfortable around people. Am the life of the party. Talk to a lot of different people at parties. Don't mind being the center of attention. Don't talk a lot. (inverted for analysis) Keep in the background. (inverted for analysis) Have little to say. (inverted for analysis) Don't like to draw attention to myself. (inverted for anal- ysis) Am quiet around strangers. (inverted for analysis)	.88	3.4	.78	1.1-4.8
Perceived own performance 1 item, How would you rate your own performance on the task?		4.4	1.1	1.0-7.0

**Table 35:** Final scales of questionnaire items included in overall analysis, including Cronbach's  $\alpha$  for the final scale, 1 (strongly disagree) - 7 (strongly agree) unless otherwise indicated. Table continues on next page (1/3).

MEASURE	$\alpha$	M	SD	range
Willingness to follow-up on system requests 2 items, To what extent did you want to perform the tasks the system asked you to do? To what extent did you want to perform the tasks the system asked you to do? How important did you personally think reacting to the system's messages was?	.71	4.5	1.5	2.0-6.5
Willingness to follow-up on system advice 1 item, To what extent did you want to follow the system's advice?		4.5	1.9	1.0-7.0
Trust: dependability of the system 8 items, The system was reliable. The system was very capable of performing its job. The system had a lot of knowledge about the work it was doing. I felt confident about the system's ability to perform its task. The system had knowledge about its task. I trusted the system to do its task. I trusted the actions of the system. I could rely on the system's task-related skills and abilities.	.93	4.7	1.2	2.9-7.0
Trust: source credibility 14 items, Unselfish - selfish Intelligent / unintelligent Competent / incompetent Honest / dishonest high character / low character expert / inexperienced bright / stupid trained / untrained sympathetic / unsympathetic trustworthy / untrustworthy warm / cold approachable / unapproachable	.86	4.6	.90	2.3-6.9

**Table 36:** Final scales of questionnaire items included in overall analysis. Continued from previous page, table continues on next page (2/3).

MEASURE	$\alpha$	M	SD	range
Trust: Trust in information 4 items, The information provided by the system was trustworthy. The information provided by the system was relevant. The information provided by the system was helpful. The information provided by the system was insightful.	.81	4.8	1.1	2.3-6.8
Perceived control 1 item, Do you feel you were in control during the session or that the system was in control?		3.5	1.6	1.0-6.0
Perceived closeness 1 item, 6-point pictorial scale, ranging from 1=apart to 6=overlapping		3.6	1.0	1.0-6.0
Disruptive 1 item, In general, how disruptive do you feel the system was?		4.7	1.5	1.0-7.0
Emotional experience 20 items, (1-5 scale negative - positive), e.g. excited, upset (inverted for analysis), alert, strong, ashamed (inverted for analysis), scared (inverted for analysis), hostile (inverted for analysis), enthusiastic, proud, irritable (inverted for analysis), inspired, nervous (inverted for analysis), determined, attentive, active, afraid (inverted for analysis), stressed (inverted for analysis), dissatisfied (inverted for analysis), comfortable Emotion figurine scale: self-assessment valence manikin (Lang and Bradley, 1994)	.78	3.8	.39	3.0-4.5
Perception intention of the system 1 choice item, What did you feel the system cared about most? e.g. Preserving the building (N=4, 8%), Locating the chemical containers (N=0, 0%) Keeping me safe (N=33, 66%), Preserving the machines in the machine room (N=5, 10%), Other (please specify) (N=8, 16%)				

**Table 37:** Final scales of questionnaire items included in overall analysis. Continued from previous page (3/3).