

## ***Supplementary Material***

### **1 APPENDIX: BACKGROUND QUESTIONNAIRE**

#### **Q1 What is your age?**

- Under 18
- 18 to 24
- 25 to 34
- 35 to 44
- 45 to 54
- 55 to 64
- 65 or older

#### **Q2 What is your gender?**

- Female
- Male
- Other: \_
- Prefer not to answer

#### **Q3 What is your dominant hand?**

- Left
- Mostly left
- About equal
- Mostly right
- Right

#### **Q4 Which of the following categories best describes your race/ethnicity?**

- American Indian or Alaskan Native
- Black, Afro-Caribbean or African American
- East Asian
- Hispanic or Latino
- Middle Eastern or Arab
- Native Hawaiian or Other Pacific Islander
- South Asian or Indian
- White
- Other: \_
- Prefer not to answer

**Q5 What field best describes your educational background?**

- Design, Arts, Entertainment and Recreation
- Software Engineer
- Human Resources
- Hardware Engineer
- Social Science
- Finance, Insurance or Legal Services
- Perception, Cognition, and UIUX
- Operations
- Product oriented
- Other: \_

**Q6 Which of the following best describes your work experience in an AR/VR related field?**

- Less than 2 years
- Between 2 and 5 years
- Between 5 and 10 years
- More than 10 years
- Zero (I have never worked in an AI/AR related field)

**Q7 How familiar are you with Virtual Reality (VR)?**

- Never or rarely use VR
- Used VR several times
- Use VR semi regularly
- Regular VR user
- Heavy user of VR

**Q8 When it comes to technology, what best describes you?**

- I am skeptical of new technologies and use them only when I have to
- I am usually one of the last people I know to use new technologies
- I usually use new technologies when most people I know do
- I like new technologies and use them before most people I know
- I love new technologies and am among the first to experiment with and use them

**Q9 - Q10 - Q11 Please rate the following statements:**

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
I do not mind being the center of attention	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel comfortable around people	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am the life of the party	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I start conversations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I talk to a lot of different people at parties	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

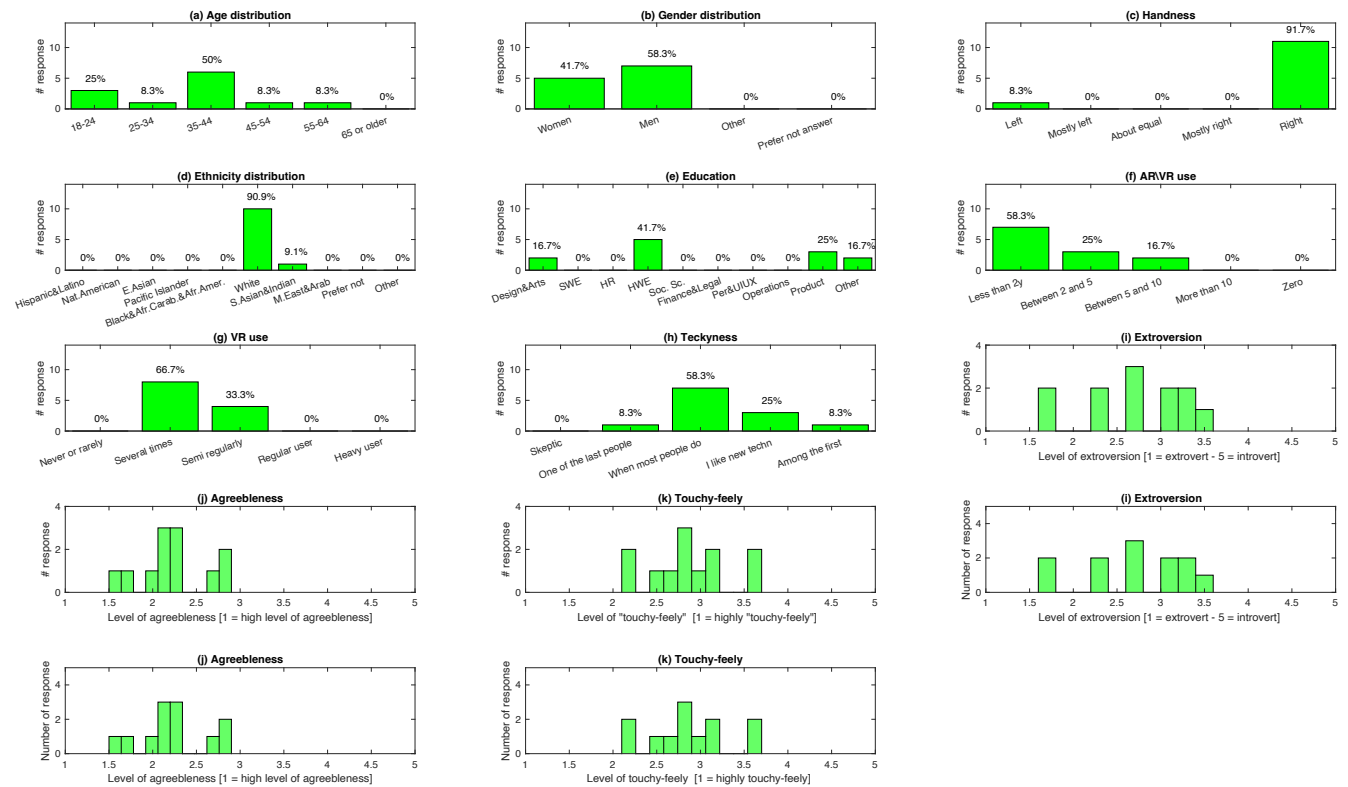
	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
I am interested in people	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I sympathize with others' feelings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have a soft heart	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I take time out for others	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel others' emotions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I make people feel at ease	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
I consider myself to be a more "touchy" person than most of my friends	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel more comfortable initiating touch than most	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
When talking to people, I often touch their arm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I do not mind if someone touches my arm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
During conversation I don't mind if people touch me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I do not mind receiving touch from another person	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Q12** This is the last question, please write below if you have any comments regarding this questionnaire: \_\_\_\_\_

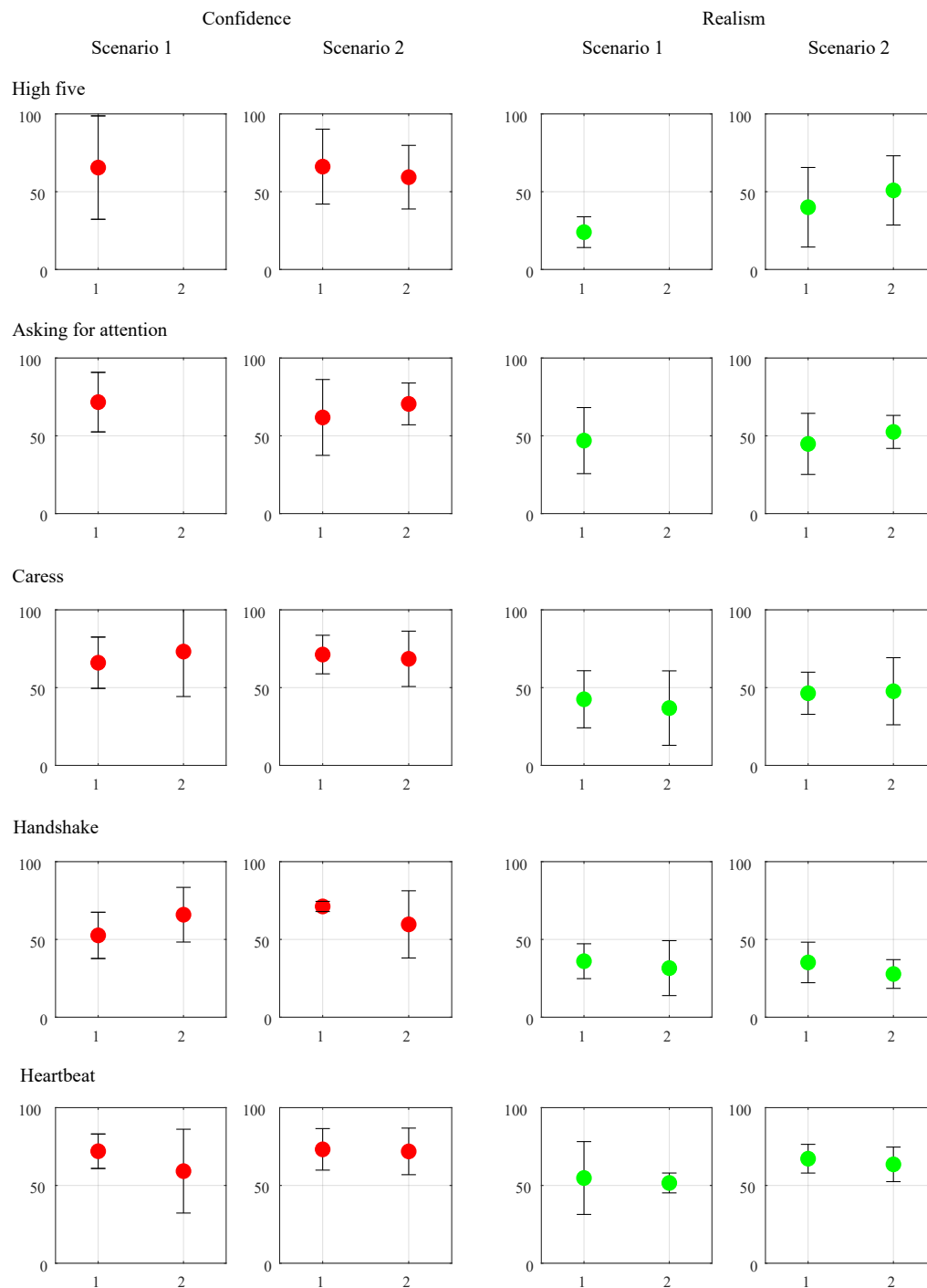
## 2 APPENDIX: USER STUDY 1

### 2.1 Participants' background



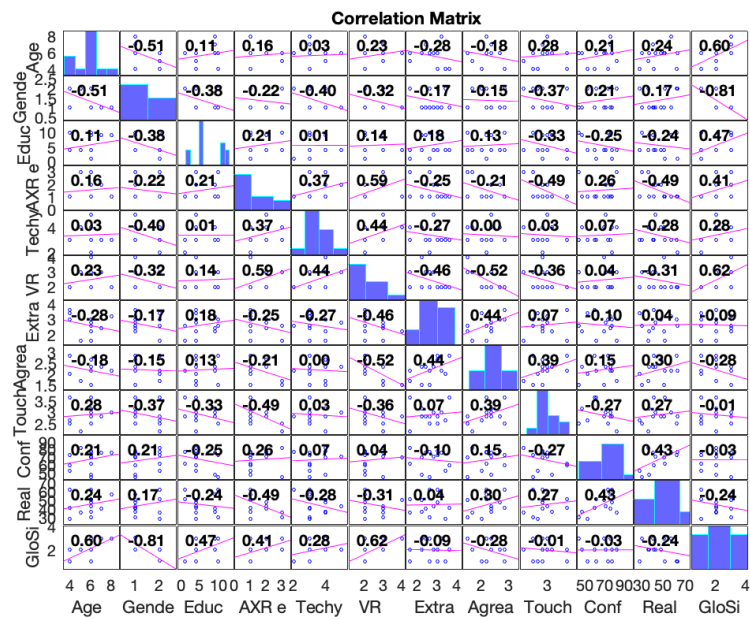
**Figure S1.** Results of the participants background questionnaire for the first user study

## 2.2 Confidence and realism mean and standard deviation per cluster

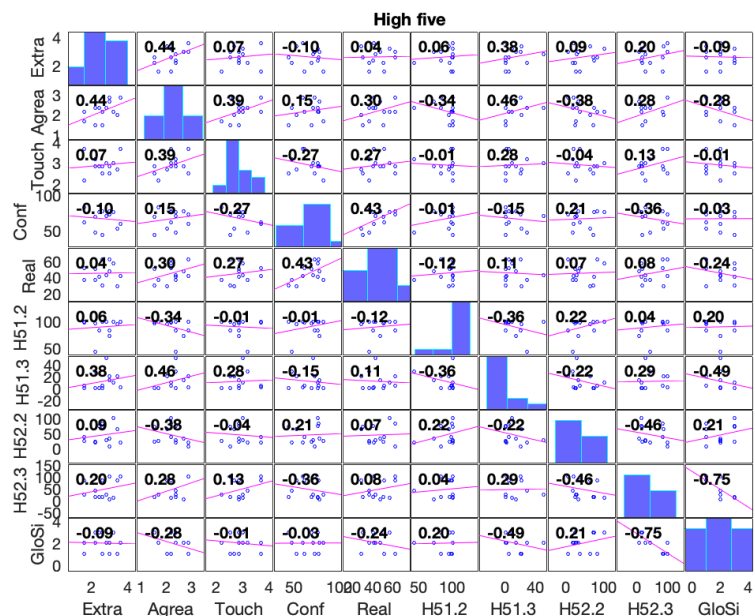


**Figure S2.** Confidence and realism mean and standard deviation per cluster

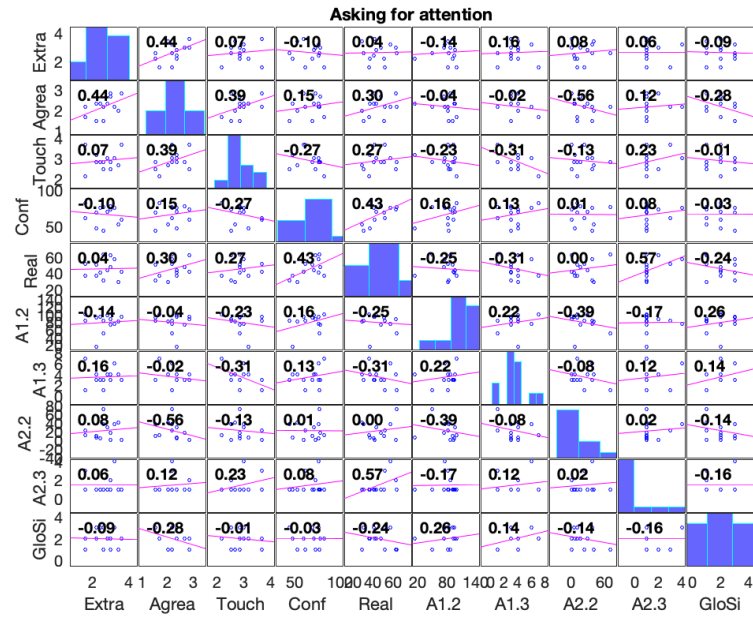
## 2.3 Data analysis - Correlation



**Figure S3.** Results of the correlation analysis between the participants' background, their confidence and realism rating, and their glove size



**Figure S4.** Results of the correlation analysis between the participants' background, their confidence and realism rating, their sliders values for high five, and their glove size

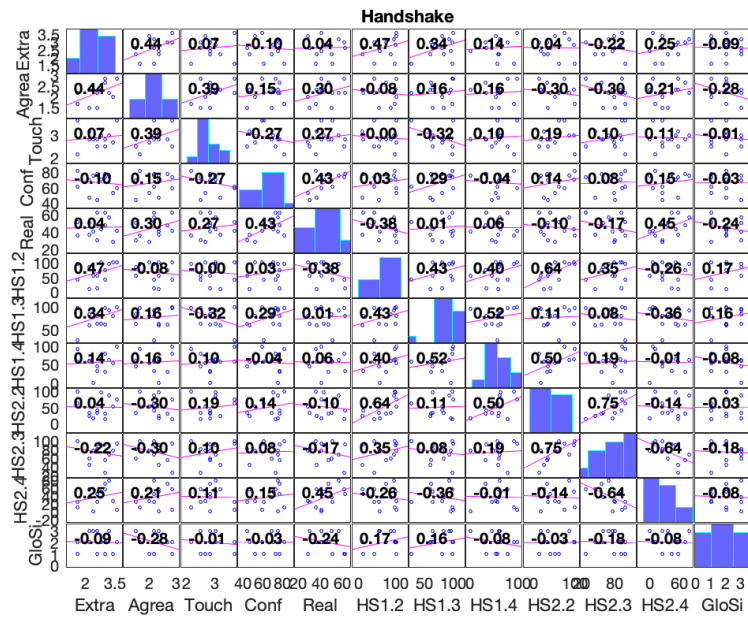


**Figure S5.** Results of the correlation analysis between the participants' background, their confidence and realism rating, their sliders values for asking for attention, and their glove size

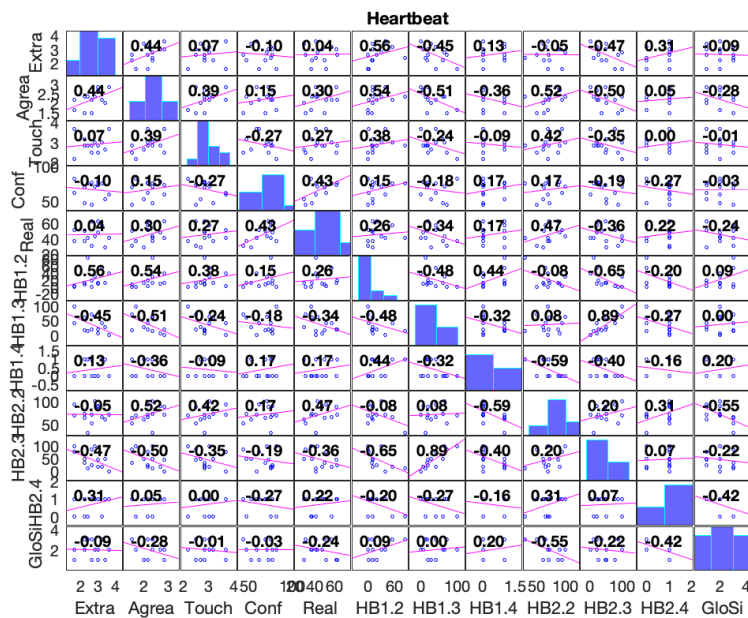


**Figure S6.** Results of the correlation analysis between the participants' background, their confidence and realism rating, their sliders values for caress, and their glove size





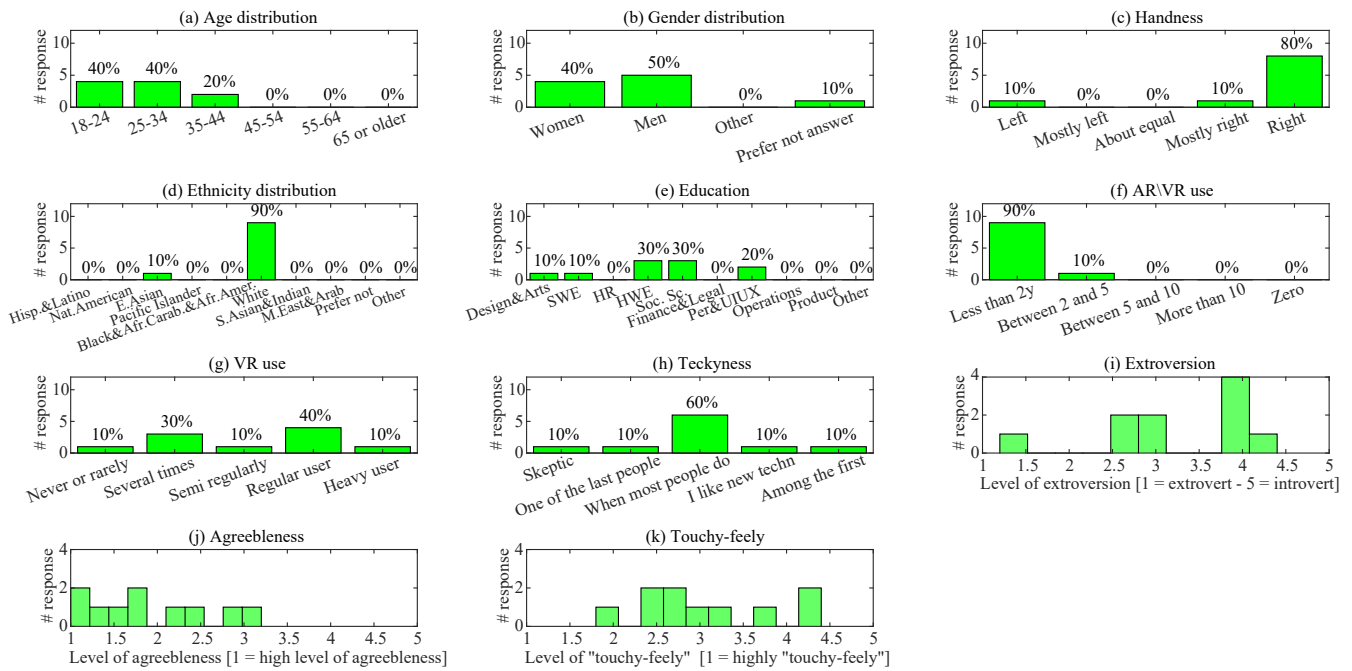
**Figure S7.** Results of the correlation analysis between the participants' background, their confidence and realism rating, their sliders values for handshake, and their glove size



**Figure S8.** Results of the correlation analysis between the participants' background, their confidence and realism rating, their sliders values for heartbeat, and their glove size

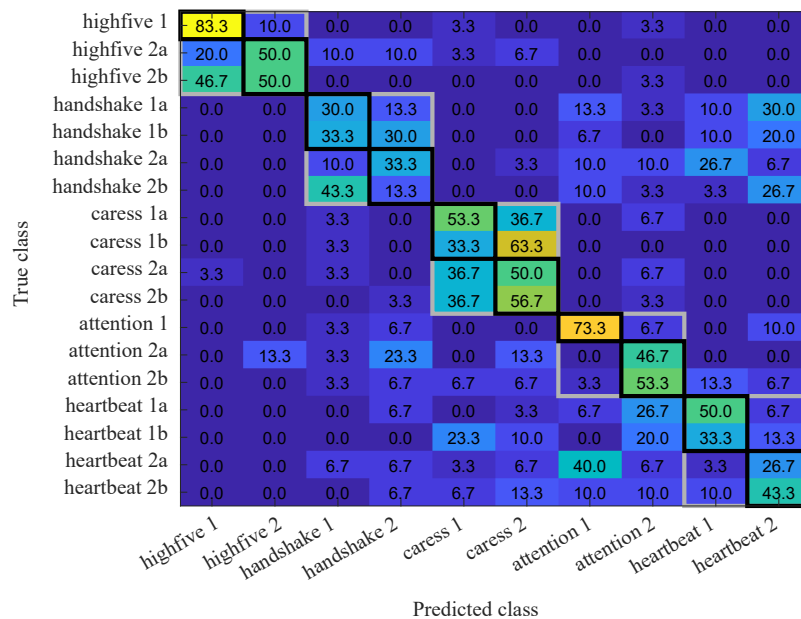
### 3 APPENDIX: USER STUDY 2

#### 3.1 Participants' background

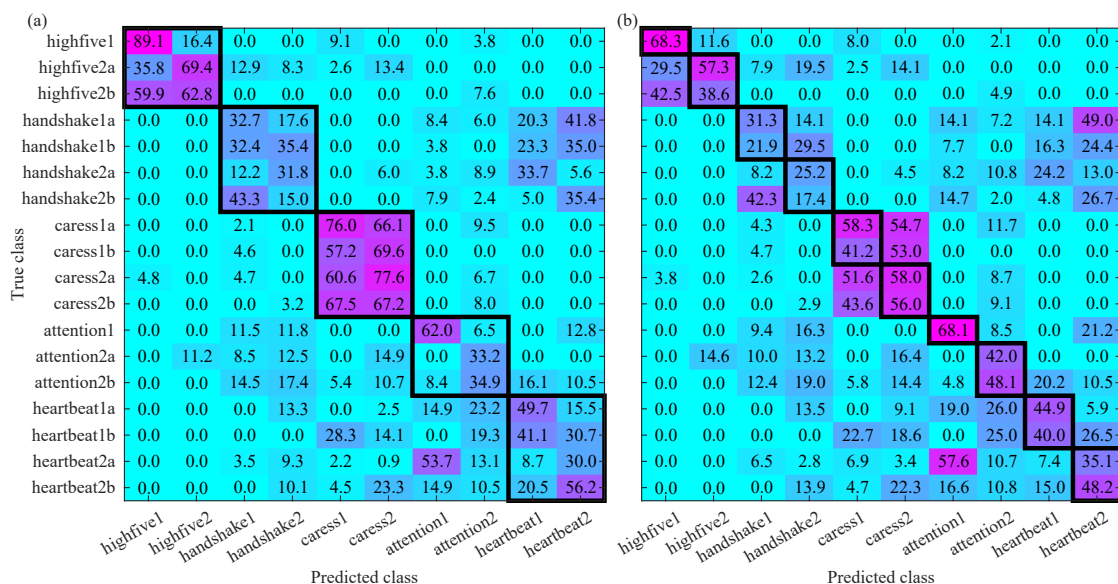


**Figure S9.** Results of the participants background questionnaire for the second user study

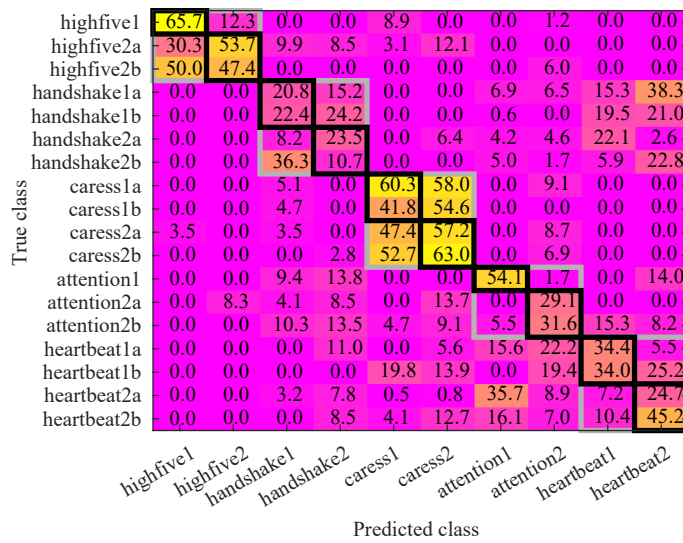
### 3.2 Tables of full dataset



**Figure S10.** Confusion table presenting the recognition rate of the emotional content of the social touch with the true class, the 18 haptic patterns, in the y-axis and the predicted class, the ten scenarios, in the x-axis. The cells outlined in grey highlight the correct social touch selection and the one in black, the correct social touch and scenario selection.

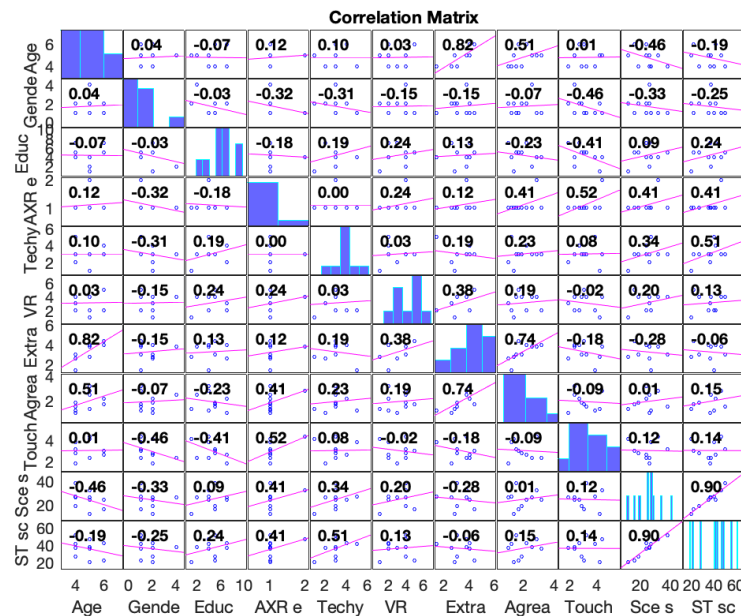


**Figure S11.** Confusion table presenting the participants' confidence rating in (a) their social touch selection, and (b) their scenario selection. The cells outlined in black highlight the correct selections

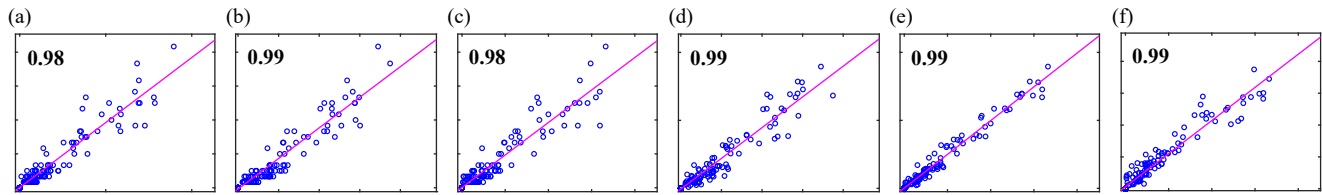


**Figure S12.** Confusion table presenting the results of the realism rating. The cells outlined in grey highlight the correct social touch selection and the one in black, the correct social touch and scenario selection

### 3.3 Data analysis



**Figure S13.** Results of the correlation analysis between the participants' background, and their social touch and scenario selection correctness



**Figure S14.** Spearman's rank correlation analysis results between (a) the recognition rate (RR) and the confidence in the social touch selection (CST), (b) the RR and the confidence in the scenario selection (CSc), (c) the RR and the realism rating (REAL), (d) the CST and the CSc, (e) the CST and the REAL, and (f) the CSc and the REAL

Spearman's rank correlation analysis demonstrated a highly significant correlation between recognition rates and the following participant ratings: confidence in the social touch selection, confidence in the scenario selection, and realism (see Fig. S14 and Table S1).

**Table S1.** Results of the correlation between recognition rates and the following participant ratings: confidence in the social touch selection, confidence in the scenario selection, and realism

Recognition rate and confidence in social touch	$r(8) = 0.98$	$p < 0.001$
Recognition rate and confidence scenario	$r(8) = 0.99$	$p < 0.001$
Recognition rate and Realism	$r(8) = 0.98$	$p < 0.001$
Confidence social touch and confidence scenario	$r(8) = 0.99$	$p < 0.001$
Confidence social touch and Realism	$r(8) = 0.99$	$p < 0.001$
Confidence scenario and Realism	$r(8) = 0.99$	$p < 0.001$