

Don't Touch Me There! Comfortability with Robot Touch Across Different Roles and Settings

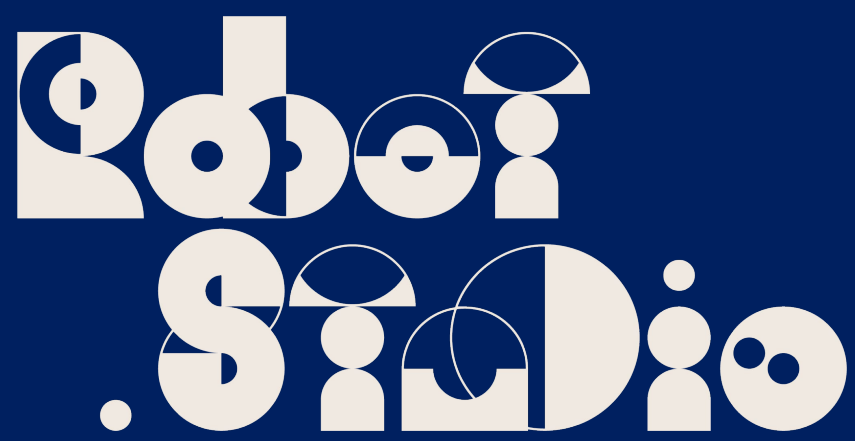
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*Does the role of the robot influence
comfortability with physical robot touch
across the body?*

*How can we evaluate and measure
comfortability in interactions with robot
systems?*

Background:

- Touch is fundamental to human connection and well-being, and has shown potential benefits in Physical Human-Robot Interaction (pHRI), such as promoting trust, effort, and prosocial behavior [1] - [5]
- Past literature has revealed that imagined scenarios can feel just as "real" as real life experiences, and people still experience a large range of emotional responses [6] - [8]
- We generated storytelling vignettes, asked participants to read and imagine these scenarios, and we created body heatmaps of touch comfort using the data from the body coloring tool to identify how robot roles influence comfortability in pHRI
- The body coloring tool is a method of evaluation that researchers can utilize to test comfort with specific robot systems



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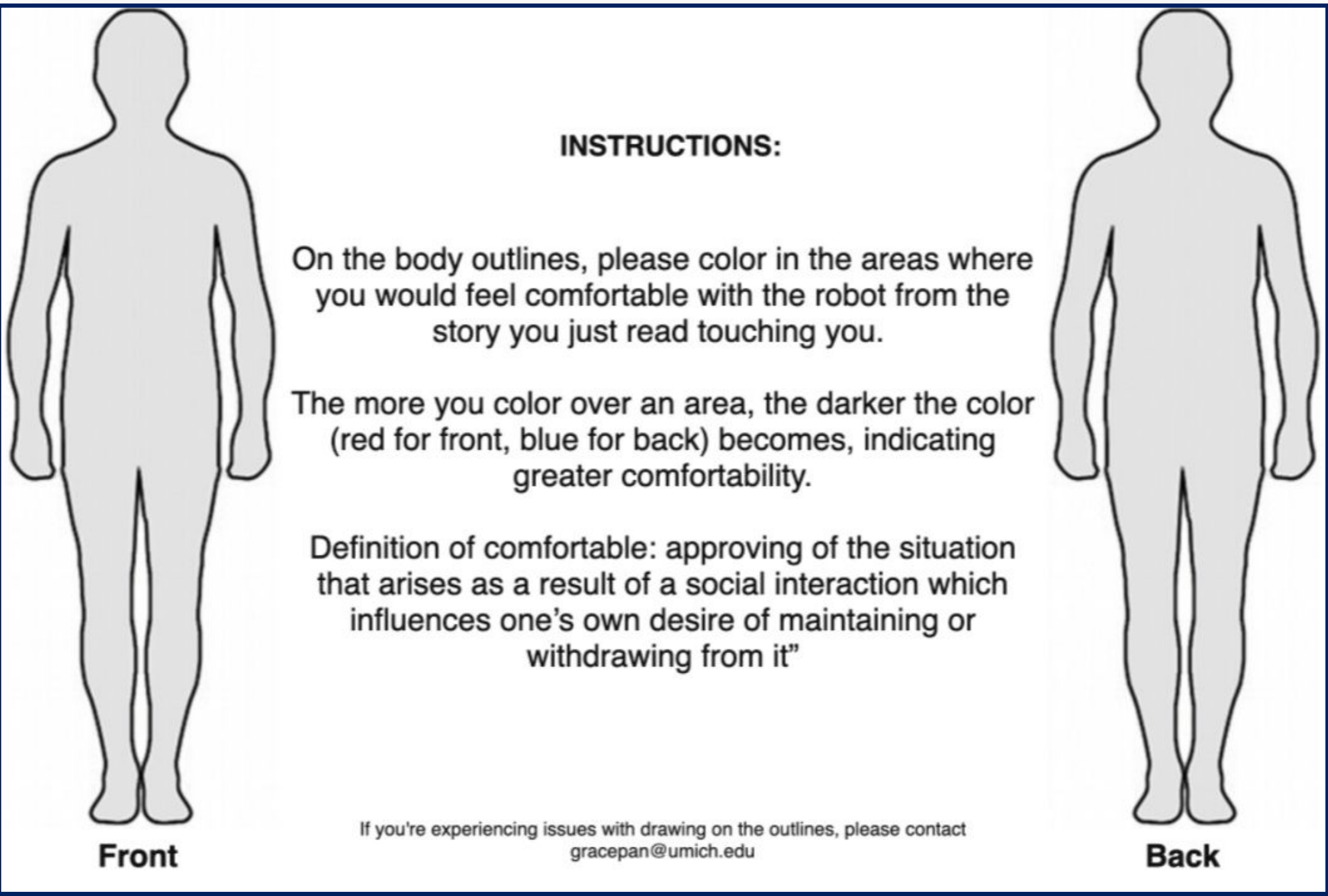
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Storytelling Portion (Medical Robots)

Your doctor's office has been using robots to assist with different medical tasks throughout the past couple years. Today, you have an annual checkup, and the nurse walks you to the examination room with the robot.

As you enter the room, the nurse and the robot prepare you for your appointment. The nurse logs into the computer, asks routine questions, and informs you that the robot will perform a standard full body examination. The robot directs you to sit on the examination table and makes physical contact with you while conducting the exam. After the exam is complete, the nurse finishes entering information into the computer and informs you that the doctor will see you soon before exiting the room with the robot."



Methods

- 333 participants (ages 18 and above, living in the United States, speaks English)
- 5 storytelling scenarios, each describing a robot touch interaction in a specific role (Future of Work, Domestic Robots, Medical Robots, Education and Culture Robots, and Romantic Partner Robots)
- Coloring tool to mark on the body outlines → where they feel comfortable being touched by that robot
- Comfortability with human touch and different embodiments

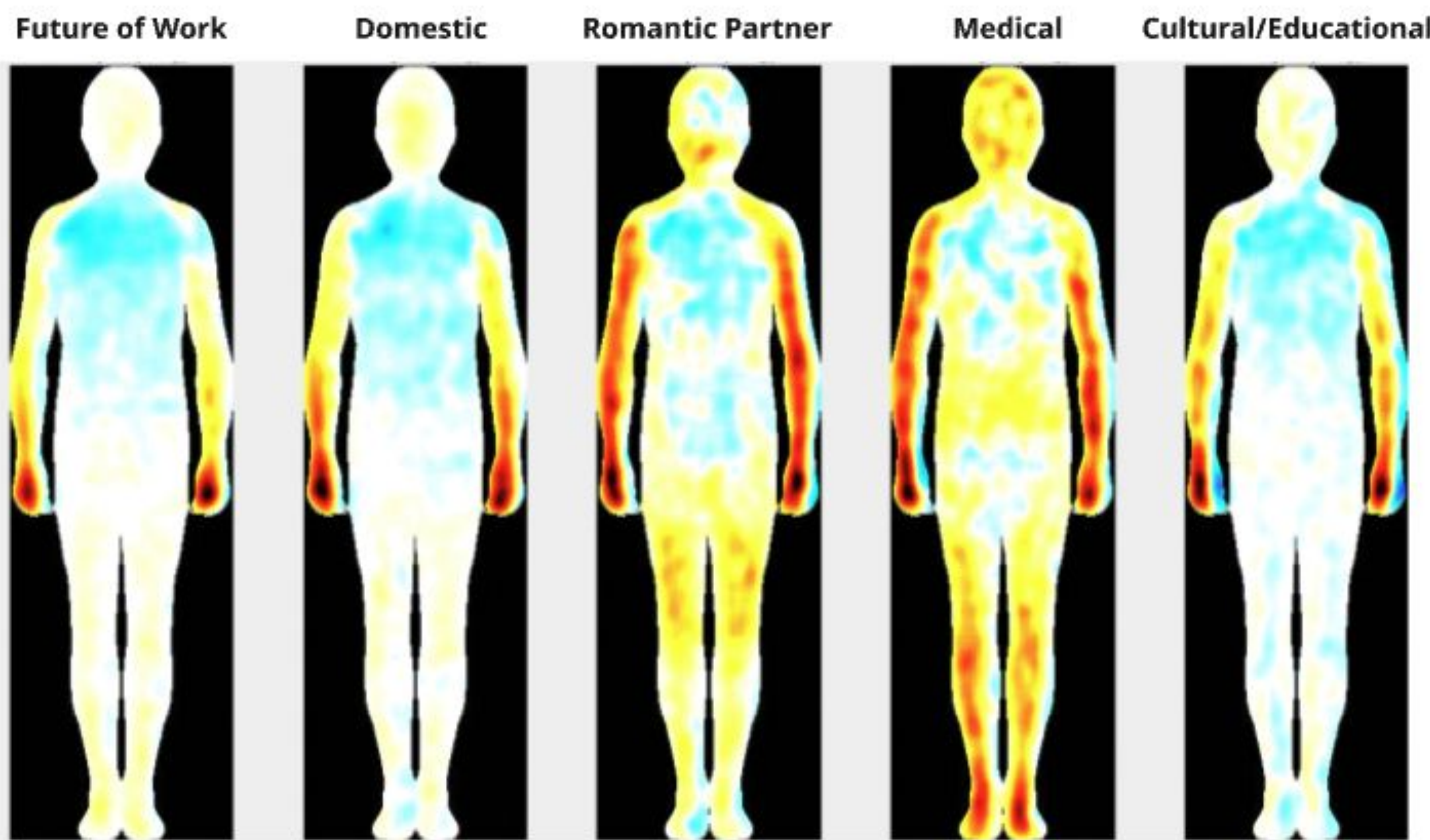
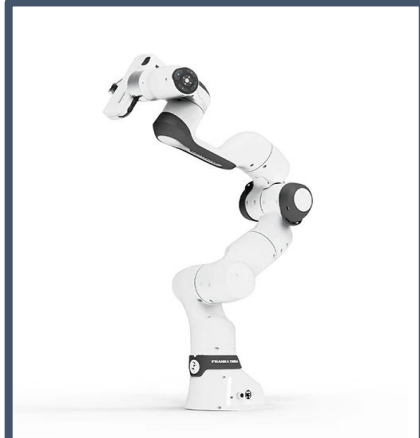


Fig. 1 Comfortability heatmaps across the stories. The warm colors correspond to the front of the body, and the cool colors correspond to the back of the body. The darker the color, the more comfortability with touch in that area.

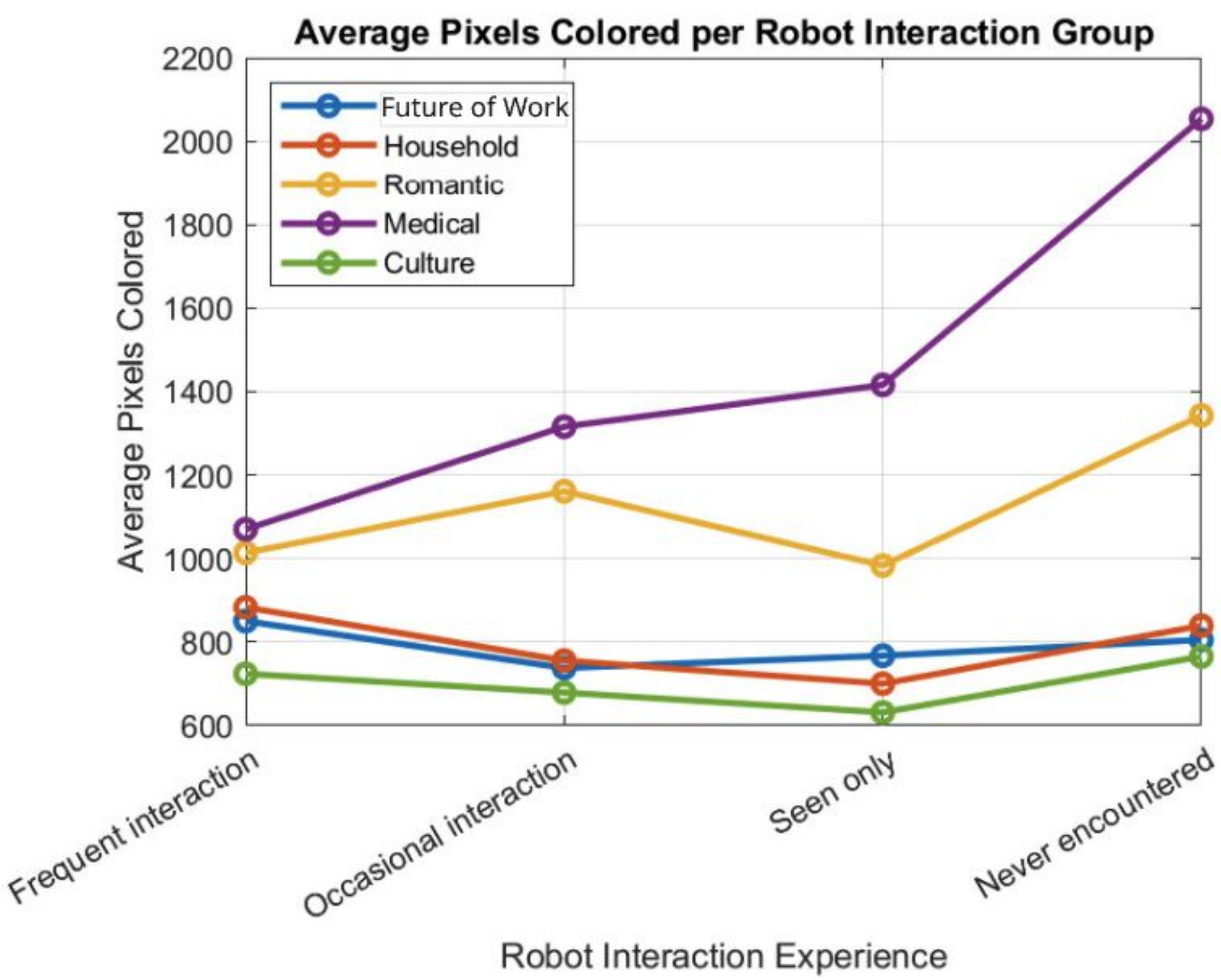
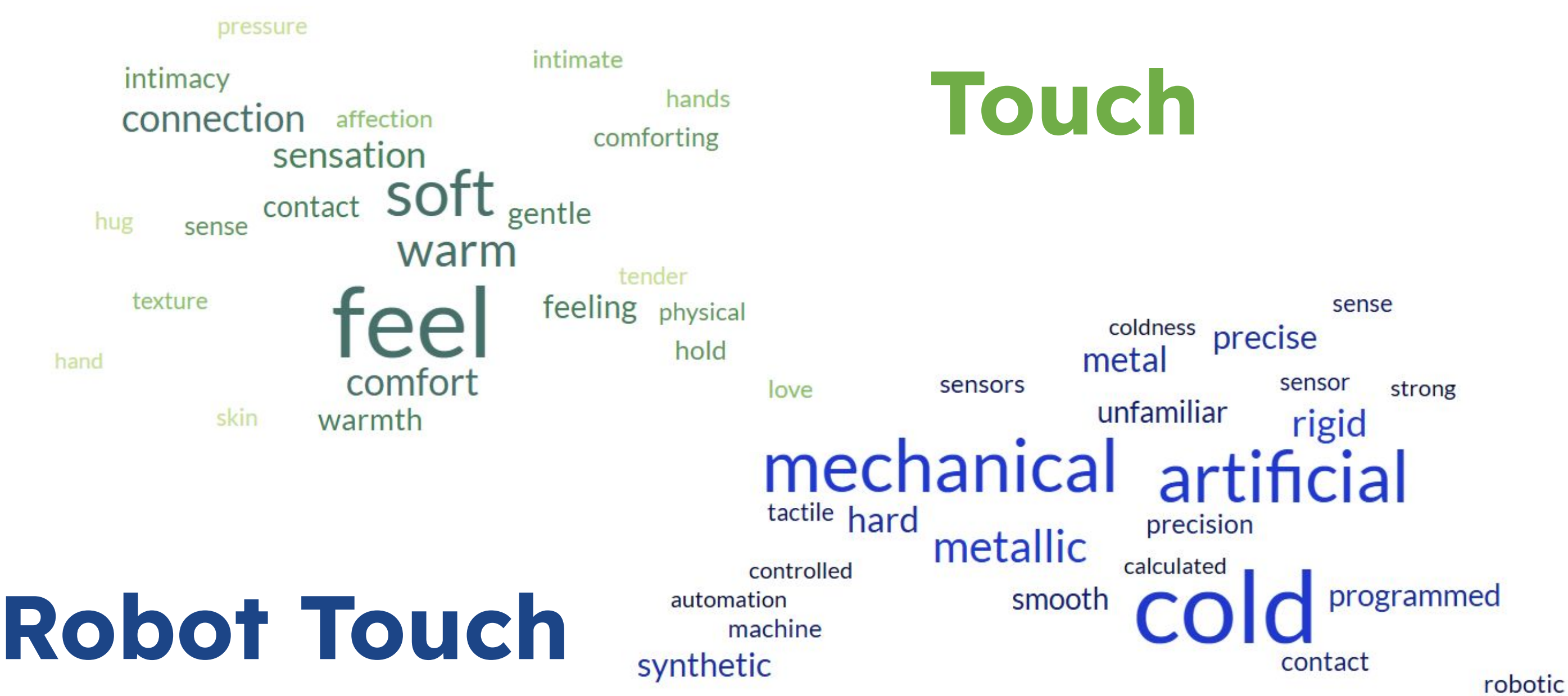


Fig. 2 Participants' prior experience with robots and average number of pixels colored in on the body outlines for each of the storytelling vignettes.



Robot Touch

Fig. 3 Word clouds formed from words participants associated with "touch" and "robot touch." These word associations may serve in developing a new questionnaire for assessing comfortability with robot touch.

Results and Future Work

- Comfortability varied according to the robot role and prior experience with robots
- Word association clouds → provide next steps for questionnaire measuring comfortability with robot touch
- Future work to implement the body coloring tool with physical robot systems
- Researchers can use this body coloring method to assess comfortability with a specific robot system