# An Online Survey on the Perception of Mediated Social Touch Interaction and Device Design

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## APPENDIX A
## FULL QUESTIONNAIRE

### A.1 Participant background

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 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

Q4 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

Q5 Please rate your reaction to the following statement: "I consider myself a touchy-feely person."

- Strongly agree
- Agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Disagree
- Strongly disagree

### A.2 The type of social touch missed and in which context

Q6 Fill in the blanks for the sentence below using the drop-down menu to express how you are feeling. You may create up to three sentences. Note: Do not write sentences about people you are currently living with.

In general, I am missing physical touch such as _[touch]_ with my _[person]_ _[amount]_.

*Example: In general, I am missing physical touch such as _[hugging]_ with my _[grandparent(s)]_ _[an extreme amount]_.*

Amount:

- an extreme amount
- a lot
- a moderate amount
- a slight amount

Person:

- partner(s)
- parent(s)
- child(ren)
- sibling(s)
- grandparent(s)
- grandchild(ren)
- other Relative(s)
- friend(s)
- colleague(s)
- staff member(s)

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- pet(s)

Touch:

- asking for attention
- holding their arm
- holding hands
- handshaking
- giving a high five
- caressing
- doing a fist bump
- massaging
- cuddling
- hugging
- doing a playful touch

Q7-9 (3x the same question regarding the respondent's answer to Q6). With your *SelectedAnswers*, when *SelectedAnswers*, what kinds of emotion(s) do you like to communicate? Select all that apply:

- Affection
- Love
- Comfort
- Support
- Gratitude
- Sympathy
- Happiness
- Excitement
- Greeting
- Asking for attention
- Missing them
- Anxiety
- Sadness
- Other: _
- I don't know

## A.3 The limitations of current technologies to communicate emotions

Q10 When using existing communication technologies (phone call, video call, texting, virtual reality, social media, etc.), which emotion(s) do you have difficulty communicating? Select all that apply:

- Affection
- Love
- Comfort
- Support
- Gratitude
- Sympathy
- Happiness
- Excitement
- Greeting
- Asking for Attention
- Missing someone
- Anxiety
- Sadness
- Anger
- Other: _
- I do not have difficulty communicating emotion using existing technologies

## A.4 The type of device(s) people would like to use and to communicate what

Q11 Without considering any technological limitations, which of the following wearable devices would you be willing to use to communicate touch? Select all that apply:

- Glove
- Sleeve
- Glasses
- Shoes
- Ring
- T-shirt
- Hat
- Belt
- Bracelet
- Jacket
- Necklace
- Other: _
- None of these

Q12 Without considering any technological limitations, which of the following non-wearable devices would you be willing to use to communicate touch? Select all that apply:

- Controller
- Cell phone
- Tablet
- Joystick
- Robotic arm
- Mannequin
- Stuffed animal
- Furniture (chair, bed, table, lamp, etc.)
- Writing utensil (pen, pencil, etc.)
- Other: _
- None of these

Q13 Without considering any technological limitations, with whom would you use a device to communicate touch? Select all that apply:

- Partner(s)
- Parent(s)
- Child(ren)
- Sibling(s)
- Grandparent(s)
- Grandchild(ren)
- Other Relative(s)
- Friend(s)
- Colleague(s)
- Staff member(s)
- Pet(s)
- Other: _
- I would not use a device to communicate touch messages with anyone

Q14 Without considering any technological limitations, which touch(es) would you like to communicate with using a device that can transmit touch? Select all that apply:

- Asking for attention
- Handshake
- High five
- Fist bump
- Playful touch

- Hugging
- Caressing
- Holding hand
- Holding arm
- Cuddling
- Massaging
- Other: _
- I would not like to communicate touch using a device

Q15 Without considering any technological limitations, which gesture(s) would you like to communicate using a device that can transmit touch? Select all that apply:

- Poking
- Pinching
- Shaking
- Tickling
- Squeezing
- Pressing
- Holding
- Stroking
- Kissing
- Twisting
- Other: _
- I would not like to communicate gestures using a device

Q16 Without considering any technological limitations, what kinds of emotion(s) would you like to communicate using a device that can transmit touch? Select all that apply:

- Affection
- Love
- Comfort
- Support
- Gratitude
- Sympathy
- Happiness
- Excitement
- Greeting
- Asking for attention
- Missing someone
- Anxiety
- Sadness
- Other: _
- I would not like to communicate emotion using a device

### A.5 In which scenario would people use an MST device

Q17 Without considering any technological limitations, how likely are you to communicate touch in the following scenarios? 5-points Likert scale: 1 -Not at all, 2 - Not really, 3 - Neutral, 4 - Probably, 5 - Absolutely

- In real life (i.e. meeting the person 6 feet apart)
- During a video call
- During a voice-only call
- While texting
- In virtual reality
- With a standalone device

### A.6 Free comment section

Q18 This is the last question, please write below if you have any comments regarding this survey

# APPENDIX B

## FULL BAR PLOT RESULTS

### B.1 Subsection 3.1: What types of social touch are people missing and in which context?
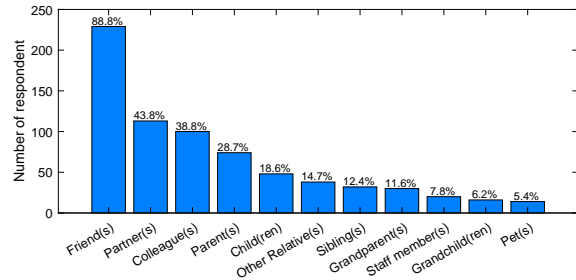


Fig. 1. Results for the missed social touch interactions by relationship. The numbers above the bar plot represent the percentage of respondents that selected this option

### B.2 Subsection 3.2: What are the limitations of current technologies to communicate emotions?
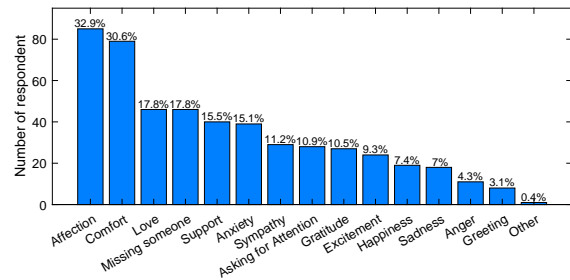


Fig. 2. Results for the emotions that respondents found the most limited to communicate with current technologies

### B.3 Subsection 3.3: What type of device(s) would people like to use and to communicate what?
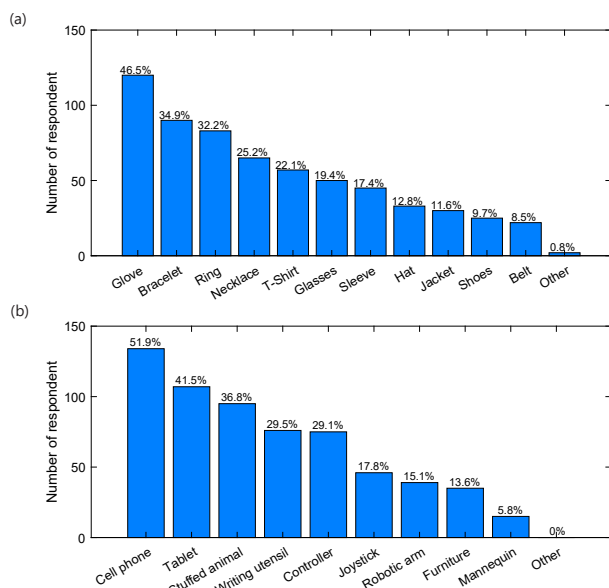


Fig. 3. Results for the selected (a) wearable and (b) non-wearable devices that respondents would use to communicate social touch
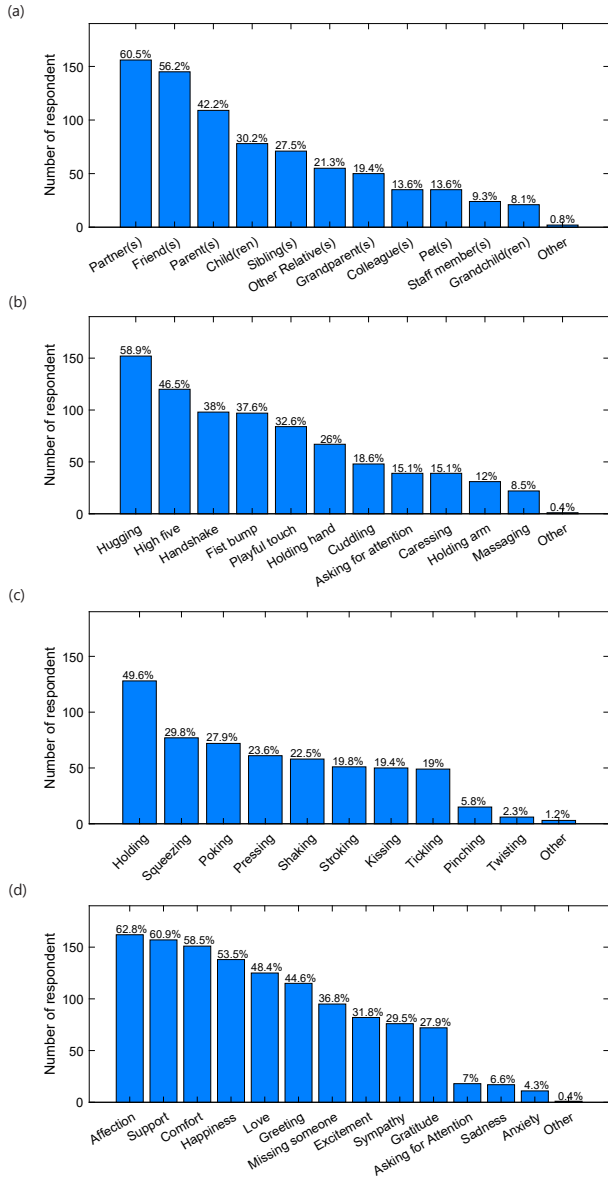
Fig. 4. Content of the mediated social touch interaction that respondents would like to have. (a) The social relationships, (b) the types of social touch, (c) the gestures, and (d) the emotions they would like to convey
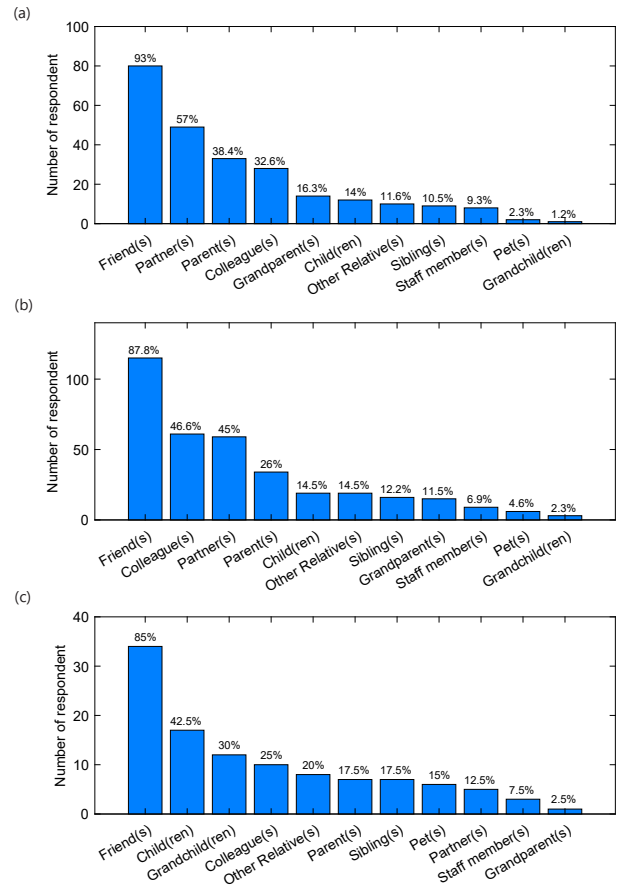


Fig. 5. Results for the missed social touch interactions by relationship for (a) the "young" age group (b) the "middle-aged" group, and (c) the "older" age group

## C.2 Types of social touch and emotions missed by relationship

# APPENDIX C
# MISSED SOCIAL TOUCH AND CONTEXT PER AGE GROUP

## C.1 Missed social touch interactions by relationship

We classified the respondents in three different age groups: "young adult" = 18 to 34 y.o., "middle-aged adult" = 35 to 54 y.o., and "older adult" = 55 y.o. and older.

Fig. 6. For the "young" age group: heatmap representing the weighted occurrences of each social touch interaction scenarios that are missed by the respondents with (a) their friends, (b) their colleagues, (c) their partner, and (d) their parents



Fig. 7. For the "middle-aged" group: heatmap representing the weighted occurrences of each social touch interaction scenarios that are missed by the respondents with (a) their friends, (b) their colleagues, (c) their partner, and (d) their parents
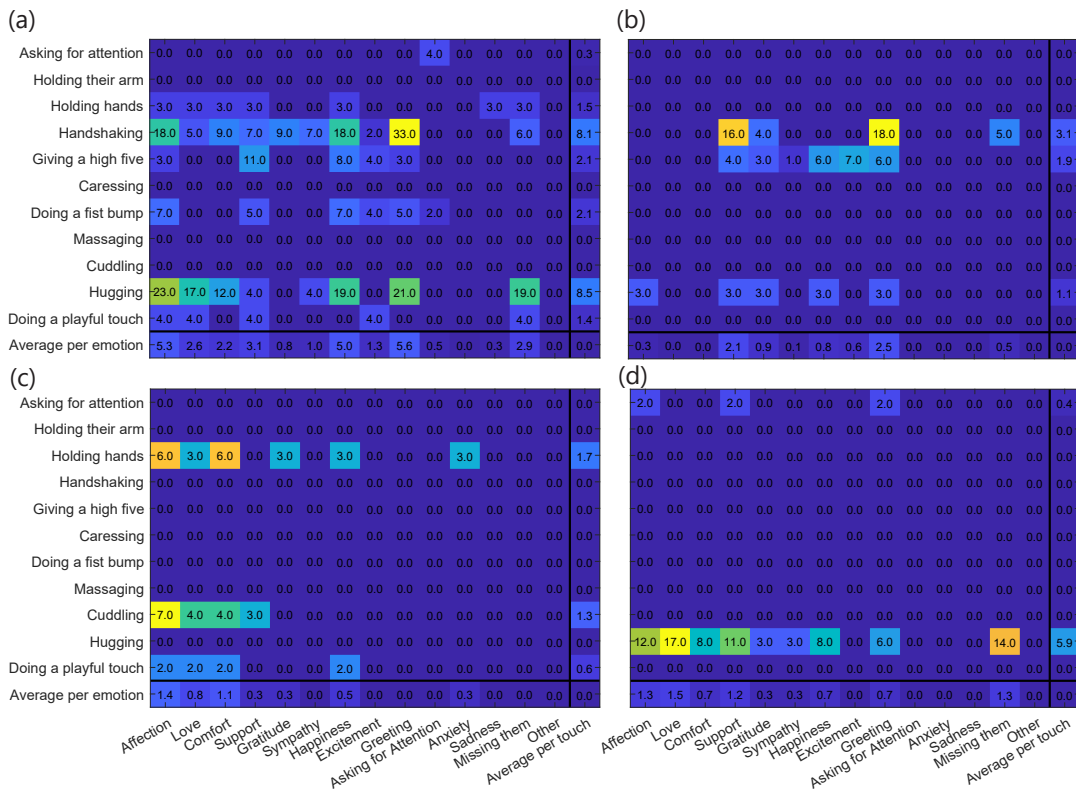
Fig. 8. For the "older" age group: heatmap representing the weighted occurrences of each social touch interaction scenarios that are missed by the respondents with (a) their friends, (b) their colleagues, (c) their partner, and (d) their parents