What is the "Virtual Touch Toolkit" ?

- An integral part of the smartphone application "HandsOn" (Android and iOs)

- Promoting self-discovery by focusing on social, affective touch

- Research tool to study human touch behavior
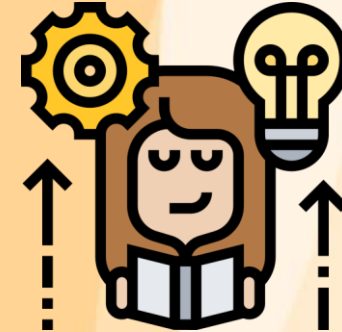
Why now?

- Pandemic Covid-19

  - Societal changes became a reminder of the importance and impact of the affective touch.

- Technological breakthroughs

  - Despite many alternative communication channels, the importance of affective touch for wellbeing is evident (Field et al., 2020; Von Mohr et al 2021, Fairhurst et al., in prep.).

Self-awareness and introspection is the key

Mandatory solitude and perceived loneliness were some of the many challenges, which, although intolerable for some, provided space and time for focusing on personal aspects of life by practicing self-awareness and introspection.

How can the "Virtual Touch Toolkit" help?

- Promotes self-discovery by focusing on social, affective touch, which refers to **the emotional dimension** of the touch modality

- Provides a **digitized and secure way to reflect on touch** contributing to counter the ever-growing social isolation

As a research tool it aims:

To popularize scientific knowledge regarding the psychology & neurobiology of affective touch

To provide a novel approach to collecting large scale data for empirical research & citizen science

To further understanding of the impact of COVID on mental / physical health and human behavior

How the Virtual Touch Toolkit is made

Collaborators

Cyprus University of Technology

Universität der Bundeswehr München

CYENS CENTRE OF EXCELLENCE

GET Lab

VR WELL-BEING

UNIVERSITAT DE BARCELONA

LMU LUDWIG-MAXIMILIANS-UNIVERSITÄT MÜNCHEN

LIVERPOOL JOHN MOORES UNIVERSITY

IASAT International Association for the Study of Affective Touch

Some of software

- Unity Game engine
- Visual Studio 2019 (C#)
- Android Studio
- Adobe Photoshop
- Adobe Illustrator
- Clip Studio Paint
- Axure Pro

The Virtual Touch Toolkit

Designed for:

- Neurotypical adults, who struggle with physical, social contact or affective touch, in general.

- Can be used in clinical populations (daily diary function may be of particular clinical use)

- People interested in learning about affective touch and its undervalued properties in well-being

Multiple features and sets of exercises designed to stimulate the user's reward system while offering educational insights on affective touch

Development that allows data collection, for the enhancement of user experience and the study of experimental procedures on affective touch.

- History of emotional state
- Performance for each exercise
- Exercise evaluation (subjective ratings)
- Specific data from some exercises

How the Virtual Touch Toolkit Works?

Profile Creation

Emotional state

User dashboard

Selecting exercise

Exercise

Evaluation

Reports

Diary notes
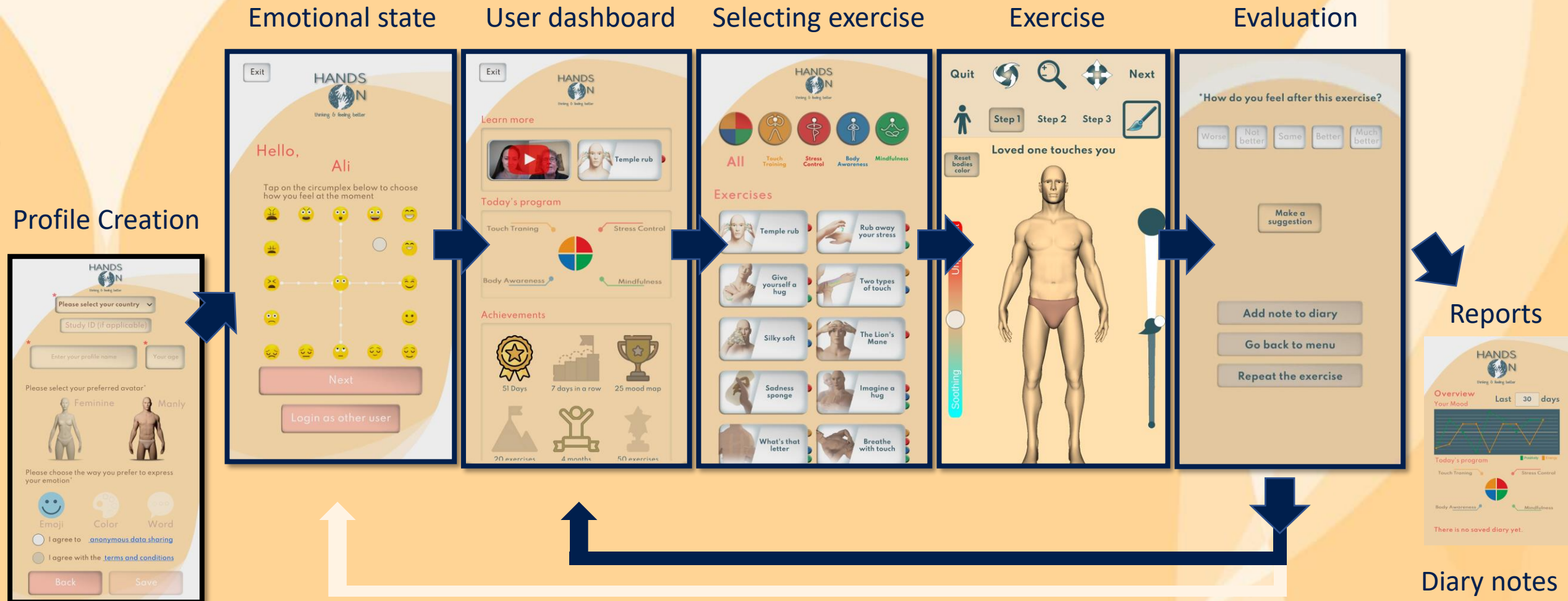
# Profile and Mood map

Mood Map style

Emoji
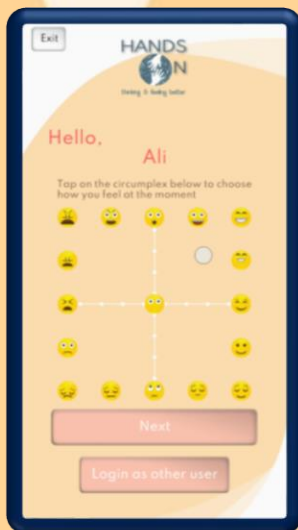
Word
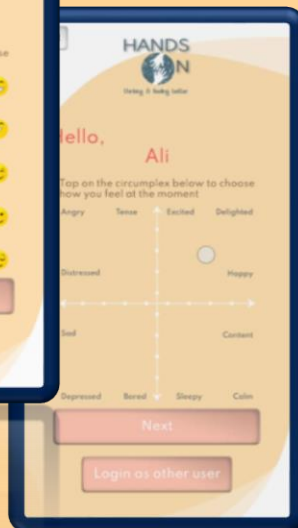
Color
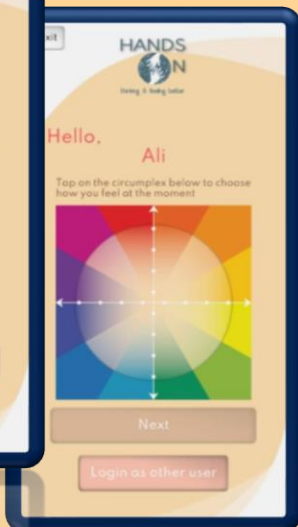
User dashboard
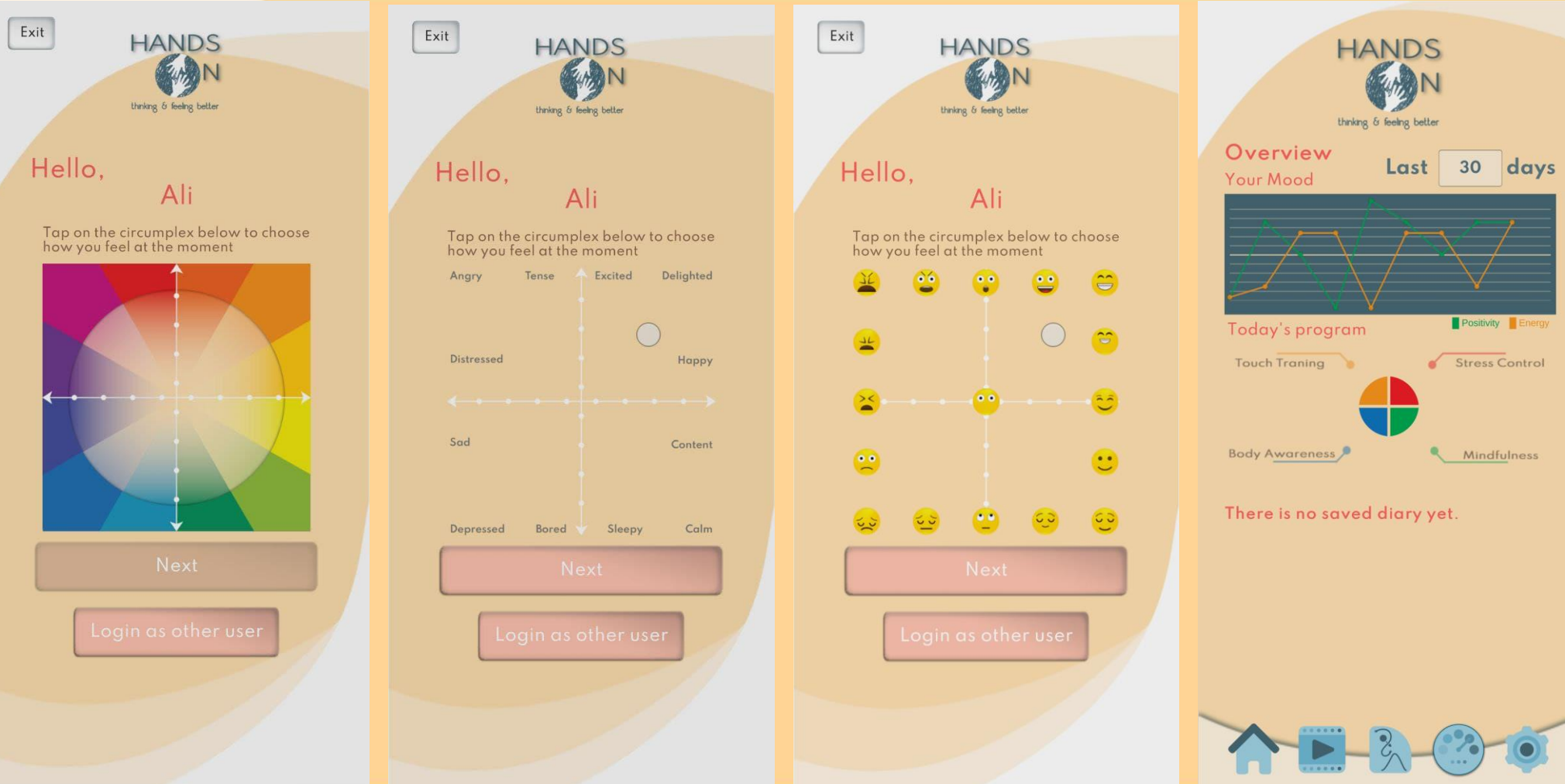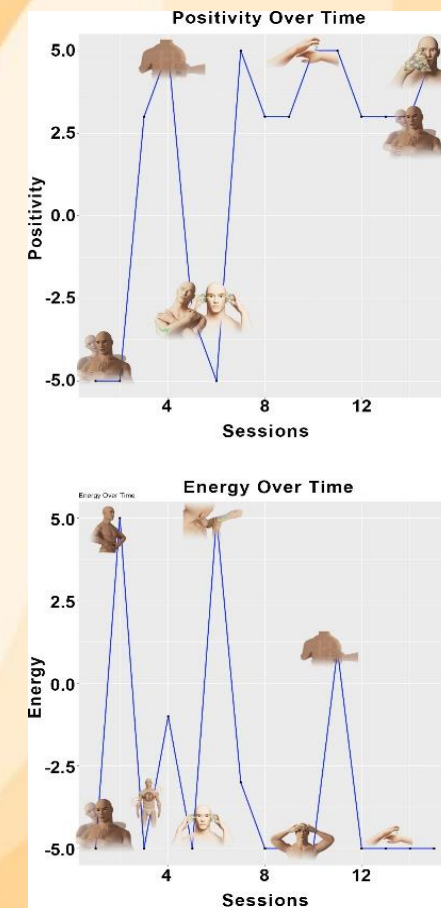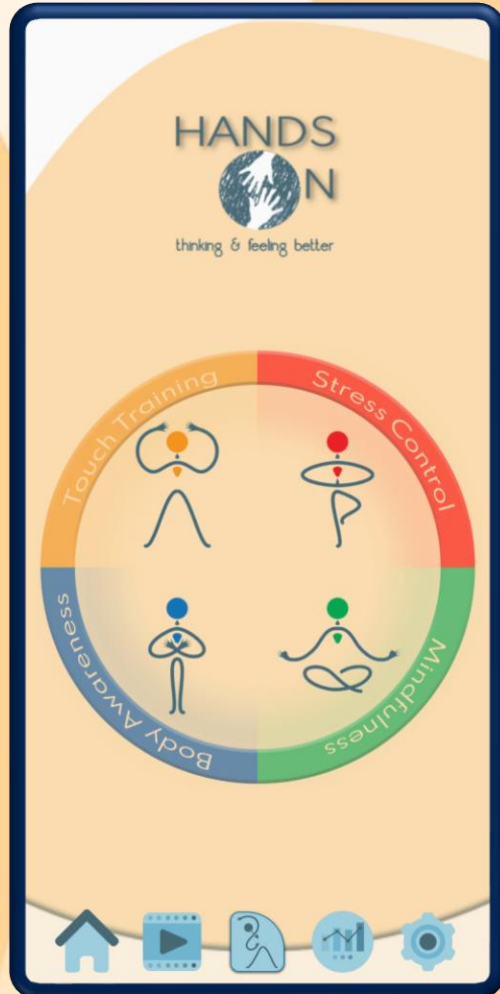
Exercises

The four types of exercises:

- Stress control

- Increased mindfulness

- Touch training

- Heightened bodily awareness

16 Exercises

Temple rub
Instructional
- Timer

Rub away your stress
Instructional
- Timer

Give yourself a hug
Instructional
- Timer
- Metronome

Two types of touch
Instructional
- Metronome

Silky soft
Instructional
- Timer

The Lion's Mane
Instructional
- Timer

Sadness sponge
Instructional
- Timer

Imagine a hug
Instructional
- Timer

What's that letter
Instructional
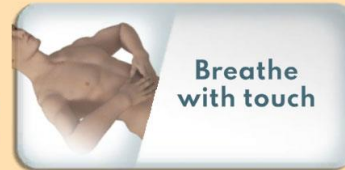
Breathe with touch
Instructional

Goldilocks effect
Interactional
- Touch speed
- Sound effect

Lullaby
Interactional
- Touch speed
- Sound effects
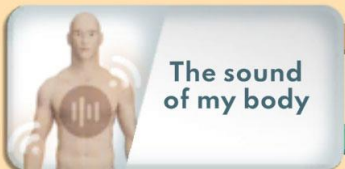
The sound of my body
Interactional
- Different materials
- Touch speed
- Sound effect
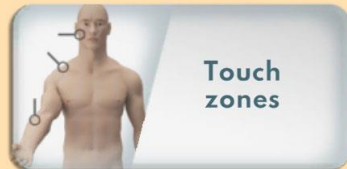
Touch zones
Instructional
- Timer
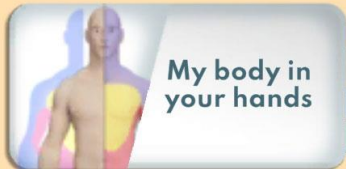
My body in your hands
Interactional
- 3D body
- Saving colored body

Touch Materials
Interactional
- Different materials
- Touch speed
- Saving stroking info

Each exercise

Three main sections:
- Educational information
- Text and visuals Instructions
- Assessment of the effect

Getting Ready

Step 1: (60 Sec)
Try and wrap yourself up in a long, one minute hug, rubbing your hands up and down your upper arms. It may seem long and awkward at first but try to remember that you are just giving those special affective touch fibers something to do. Do you want to try that again?

Step 2: (60 Sec)
Activating those affective touch fibres is done specifically by rubbing at their preferred speed. Let us focus on that as we try that 1-minute self-hug again. Use the metronome to guide the speed at which you rub your upper arms (first up and then down).

Are you ready?

YES

Back

Step 2

Cancel

Activating those affective touch fibres is done specifically by rubbing at their preferred speed. Let us focus on that as we try that 1-minute self-hug again. Use the metronome to guide the speed at which you rub your upper arms (first up and then down).

51

Speed

30.0

0 BPM   60 BPM

Done

*How do you feel after this exercise?

Worse | Not better | Same | Better | Much better

Make a suggestion

Add note to diary

Go back to menu

Repeat the exercise

# Affective-touch exercises with a virtual human
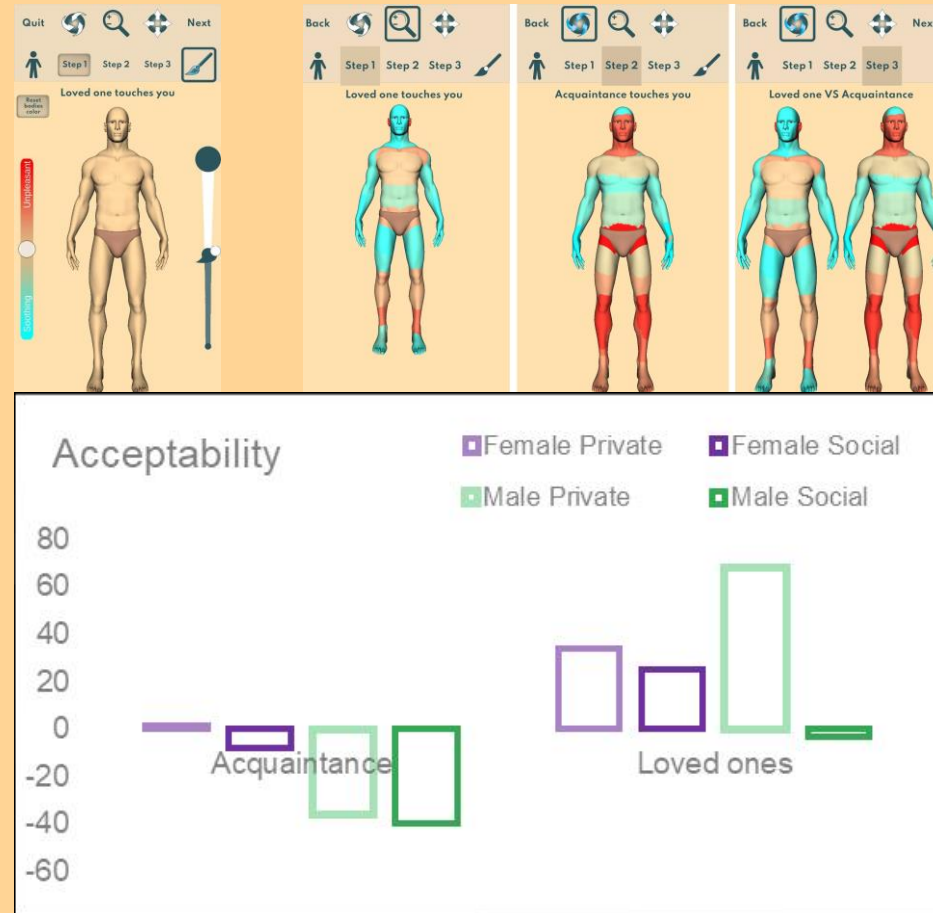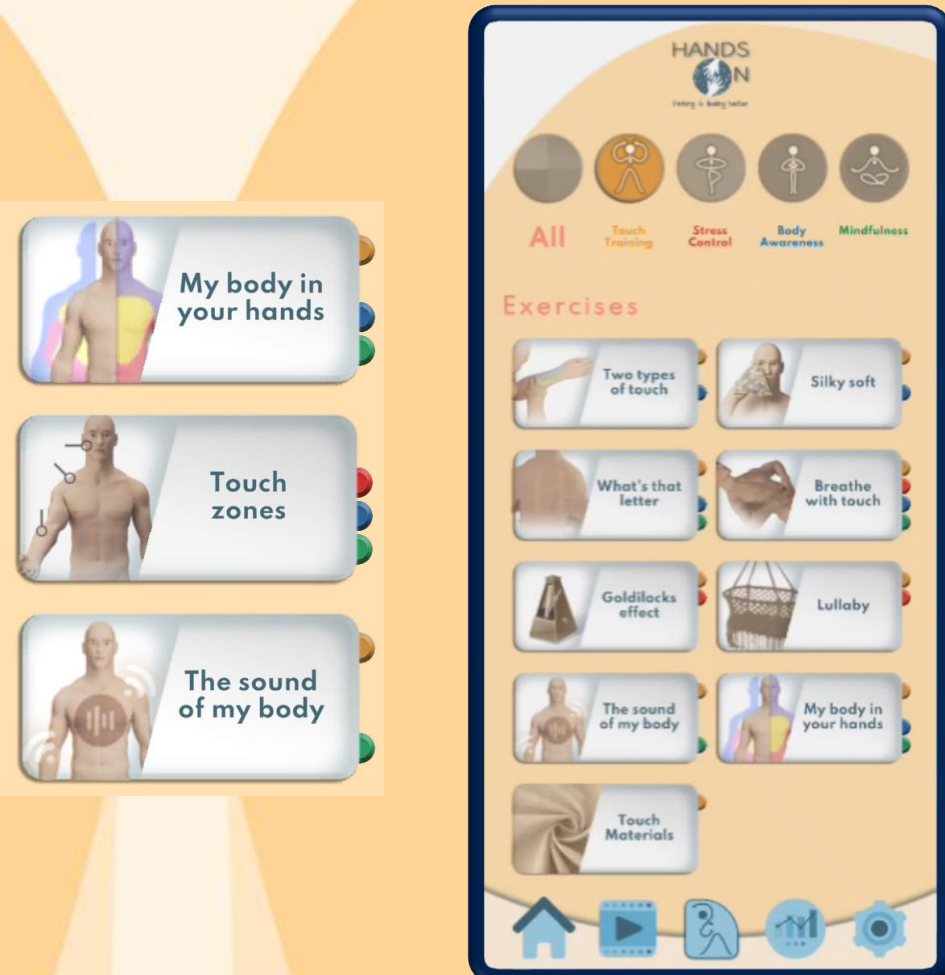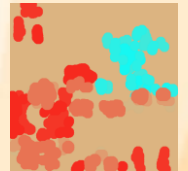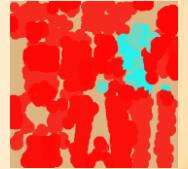
Discriminative-touch exercises

Self-touch exercises

Social-touch exercises

Two types of touch

What's that letter

Step 1

Cancel

You can do this first by pressing one finger and then another onto your forearm - think about how much skin is being touched, the distance between the two fingers, how warm or cold your touch is or how much pressure you feel. Try this 5 times.

Next

Step 1

Cancel

Imagine the first letter of your name being drawn on your back

Next

Multi-modal exercises

Data Saving

- All the saving data includes date and time.

	Subject	Saving data	Occasion
General data	Profile	• Country • Study ID • Age • Preferred Avatar (Male / Female) • Mood Map Type	On profile creation
	Mood Map State	• X axis value (Positivity) • Y axis value (Energy)	Every time toolkit runs
	Exercise info	• Exercise name • Duration of exercise	When each exercise completed
	Exercise feedback	• Mood (Feel worse) – (Feel not better) – (Feel the same) – (Feel better) – (Feel much better) • Comment (If there is any) • Diary note (Saved only on the device. Only the local user has access)	After each exercise

	Exercise	Saving data	Occasion

Exercises	My body in your hands	• Type of exercise (Select the two contexts)
		• Three colorful images (JPEG)
		   1. First situation (2D texture of 3D body)
		   2. Second situation (2D texture of 3D body)
		   3. First vs Second situation (3D models)
			When the exercise completed

	Touch Materials	• Material name • Touching Coordinates (X & Y) / Time	Any touch on screen during the exercise

Conclusion

- In conclusion, the toolkit serves as a way to capture individual touch behaviour in the comfort of one's home; to reflect upon and learn about what touch means to the individual (**ecological validity & flexibility**)

- Opportunities for personal self-reflection but also exciting potential for large scale citizen science projects as well as integrated into more traditional empirical research (**benefits for the end-user and for science**)

More potential uses in research:

Investigating neuropsychological disorders, exploring the differences in the experience of affective touch between ethnic groups, empirical research on virtual and the related sense of vicarious touch etc.