

6-months projects

1. Thesis type: MSc

Title: Social touch to comfort: effects on stress parameters of the toucher

Description: This project investigates how providing comforting touch influences the person who delivers it. While most research has focused on the recipient of touch, this study shifts the perspective to the toucher, exploring how empathetic engagement during social touch shapes their experience. Specifically, it examines whether offering comfort through touch reduces stress in the toucher and how these effects manifest on neural, physiological, and subjective levels. By linking empathy, stress regulation, and touch behaviors, the project seeks to clarify why humans instinctively use touch to support others and what benefits it may confer on the giver.

Starting date: 2025.26

Data type: systematic literature review to be conducted

Ideal student's background: psychology, neuroscience

Supervisor and contact: Dr. Irene Valori, irene.valori@tu-dresden.de

Responsible Professor: Junior Professor Merle Fairhurst

2. Thesis type: MSc

Title: Eliciting and regulating stress in adolescents: paradigms, Virtual Reality applications, and the role of social touch

Description:

This systematic review synthesizes existing research on experimental paradigms used to elicit stress in adolescents and the measures employed to assess it, including physiological, neural, behavioral, and self-report indices. Special attention is given to how established paradigms (e.g., Cyberball, Trier Social Stress Test) can be adapted and implemented in virtual reality to provide ecologically valid yet controlled stress induction. In addition, the review examines protective and buffering strategies for stress regulation, with a specific focus on social touch as a mechanism of support. By integrating insights across paradigms, technologies, and intervention strategies, the review aims to provide a comprehensive framework for studying adolescent stress and for designing VR-based tools that both induce and mitigate stress in controlled research settings.

Starting date: 2025-26

Data type: systematic literature review to be conducted

Ideal student's background: psychology, neuroscience

Supervisor and contact: Dr. Irene Valori, irene.valori@tu-dresden.de

Responsible Professor: Junior Professor Merle Fairhurst

3. Thesis type: MSc

Title: Interpersonal social touch in Virtual Reality

Description: The project investigates how people perceive interpersonal, social touch in Virtual Reality. The candidate for this student project can proficiently use Blender and Unity to create 360° scenarios and animations of avatars performing dynamic interpersonal tactile gestures (e.g. a gentle caress on the touchee's arm). The student will also conduct lab-based experiments to test the scenarios with participants.

Starting date: 2025-25

Data type: empirical data to be collected

Ideal student's background: computer science, miscellaneous (skills with Unity, Blender, game development are required)

Supervisor and contact: Dr. Irene Valori, irene.valori@tu-dresden.de

Responsible Professor: Junior Professor Merle Fairhurst

4. Thesis type: MSc

Title: Pseudohaptic social touch: a neurophysiological study in Virtual Reality

Description: The project investigates the power of pseudohaptic illusion of touch to facilitate interpersonal synchrony. Participants are immersed in dual-player virtual reality scenarios where they can freely explore touching one another. No haptic feedback is provided. Instead, multisensory augmentation and substitution are used to create new, beautiful experiences of interpersonal contact. Subjective ratings (pleasantness, realism and emotional content), kinematics, physiological responses (heart rate), and neural activity (fNIRS) are measured.

Starting date: 2025-26

Data type: empirical data to be collected

Ideal student's background: psychology, neuroscience, data science

Supervisor and contact: Dr. Irene Valori, irene.valori@tu-dresden.de

Responsible Professor: Junior Professor Merle Fairhurst

3-months projects

5. Thesis type: BSc

Title: Social touch as a source of comfort: the role of empathy and individual differences in the toucher

Description: This project experimentally investigates how providing comforting touch influences the person who delivers it. While most research has focused on the recipient, this study examines the toucher, with an emphasis on empathy and the role of individual differences. Conducted as an online experiment on Gorilla, participants will be presented with scenarios simulating comforting touch interactions. Subjective measures will be collected, including self-reported stress, emotional state, and empathic concern, alongside trait-level assessments such as dispositional empathy, touch attitudes, and stress sensitivity.

Starting date: 2025-26

Data type: empirical data to be collected

Ideal student's background: psychology

Supervisor and contact: Dr. Irene Valori, irene.valori@tu-dresden.de

Responsible Professor: Junior Professor Merle Fairhurst

6. Thesis type: BSc

Title: Cultural differences in social touch behaviour

Description: The project investigates the role of in-group/out-group dynamics in shaping the way people use affective touch. Using the online experimental platform Gorilla.sc, students will design and implement a new empirical study investigating cultural differences in the way individuals touch others in different situations (to express different emotional meanings, on different body areas, depending on the touchee's demographic characteristics). Participants

will imagine touching others in different contexts and simulate touching them by interacting with a touch-screen. Touch behaviour (e.g., kinematics of touch-screen stroking) will be measured.

Starting date: 2025-26

Data type: empirical data to be collected

Ideal student's background: psychology

Supervisor and contact: Dr. Irene Valori, irene.valori@tu-dresden.de

Responsible Professor: Junior Professor Merle Fairhurst

7. **Thesis type:** BSc

Title: Movement dynamics of social touch: kinematic profiles of different touch behaviours

Description: The project investigates the kinematic characteristics of social touch. Students will conduct a literature review on how motor parameters help us understand the processes and meanings behind touch behaviours. They will review literature on research questions such as: What are the motor, kinematic parameters that describe affective touch? Do we touch objects or social others differently? Does touch look different when used to express different emotional meanings? Do we move differently when touching different body areas of other people? Do we move differently when touching others according to the type of relationship (e.g. familiarity, trust)?

Starting date: 2025-26

Data type: literature review to be conducted

Ideal student's background: psychology, neuroscience

Supervisor and contact: Dr. Irene Valori, irene.valori@tu-dresden.de

Responsible Professor: Junior Professor Merle Fairhurst