



UCL Collaborative Social Science Domain:

Social Science Plus Pilot
Project Outcome Report

Project Title:

Digital Touch Emoticons:
Development, Effectiveness
and Usability

Amount £11,500

Academic Year 2017–18

Social Science Principal Investigator

Professor Carey Jewitt

Professor of Technology and Learning,
Culture Communication and Media Department
UCL Knowledge Lab, Institute of Education, UCL

Co-Investigator

Non-Social Scientist Co-Investigator

Dr. Aikaterini Fotopoulou

Reader in Affective Neuroscience,
Research Department of Clinical, Health and Educational
Psychology, Division of Psychology and Language Sciences,
Brain Sciences, SLMS, UCL

Second Co-Investigator

Professor Nadia Berthouze

Professor in Affective Computing and Interaction,
UCL Interaction Centre, connected to both the Division of
Psychology and Language Sciences and Computer Science,
Brain Sciences, SLMS, UCL

Additional Collaborators

Professor Sara Price

Professor of Digital Learning,
UCL Knowledge Lab, Institute of Education, UCL

Project Outline

Digital Touch Emoticons brought together multidisciplinary expertise on touch from social science (Jewitt and Price), neuroscience (Fotopoulou), computer science (Berthouze), with the aim of understanding how affective touch can be digitally-mediated to enhance social communication and positive social feedback.

Alongside a literature review, the project used methods from these three disciplines (observation, situated interventions, prototyping, and lab experiments) to generate a prototype design and explore how a device for digital touch communication could be best commercialized in the near future. More specifically we asked:

1. What features and specific types of affective touch experience can be translated into socially meaningful digital communicative experiences?
2. What multi-sensorial cues best serve as 'emoticons' for such digital affective touch and its associative communications?
3. Which technology best implements digitally-mediated affective touch for socially meaningful communicative experiences?
4. How can qualitative social science methods, quantitative neuroscience methods, design-based computer science and affective computing methods support each other to explore affective touch in the context of digital communication technologies?

Main findings

The project led to the production of two digital touch prototypes (figures 1 and 2). We used these devices as research tools, alongside scenarios referencing socially meaningful contexts of (1) for social support; (2) admiration (like) and (3) intimacy (love) where we were able to explore and characterise participant digital touch experiences. The study provided preliminary insights and findings on the:

- Range of associations that participants made between the social and physiological aspects of touch, and how they envisaged these being employed/exploited in a digital realm;
- Potential features, multi-sensorial cues, and specific types of affective touch experience that were considered (made) socially meaningful via a digital communicative experience with the Tactile Emoticon device – in relation to heat, pressure, vibration, movement of touch sensation;
- Aspects of ‘touch sensation’ that could be (re)produced, sent and received via the device and the technical challenges of doing so
- Methodological reflections on our disciplinary differences and our data needs and expectations. The use of scenarios provided a socially orientated point of connection across these differences and an opportunity to explore the consequences of more or less specified (closed vs open) scenarios, and the implications of this for digital touch
- Experience of digital touch communication as: reflection vs immersion; sensory and emotional vs ‘communicative intent’; notion of sender and receiver and a new form of blended digital touch in which both are felt to engage with the concept of the duality of touch in novel ways;
- Communicative potentials of ‘uncertainty’ or ‘ambiguity’ and newly constructed forms of digital touch vs known ‘analogue’ touch experiences’; ways of blocking or rejecting touch; touch-based notions of presence and absence; and the materiality of digital touch (moisture, softness, etc.)
- Emergent concept of ‘tactile liking’ and how this might be realised in a digital context

The findings also raise questions around:

- User ‘acceptance’ to the digitalization of touch communication;
- Possibilities of moving beyond the experience of the device as a ‘hand to hand experience’ – by designing in the ambiguity re the hand and the embodied felt experience of touch.

Plans for funding applications

This project provides the foundation for our application to the European Research Council’s (ERC) ‘Proof of Concept’ Call April 2019, 150,000 EUR, PI – Fotopoulou. This is a specialized grant call for further validation of ideas and devices on the pathway to commercialization and is only available to current ERC grantees (Jewitt and Fotopoulou are both current ERC PIs). This will focus on digital affective touch, as a way to reduce feelings of stress and loneliness among young people. It will use the findings of the pilot to develop 2-3 Tactile Emoticon prototypes to show as proof of concept.

The pilot project together with the ERC Proof of Concept grant (if successful) will provide some initial digital prototypes, together with a set of concepts, questions and methodologies for a larger collaborative grant. This would aim to further investigate and develop digital touch devices for affective touch interaction, and embrace a broader set of affective-meaning, specifically applications within health and well-being. We envisage an application either to the Wellcome Trust, or to EPSRC. This project will set out to push the boundaries of Human Computer Interaction/Computer Science through an interdisciplinary approach to touch in a broader context of stress and well-being.

Key achievements and impacts

- Two interdisciplinary workshops were facilitated during the project with participants from across the PI’s disciplines and industry. These served to enhance the interdisciplinary work of UCL by providing a new space for conversations across communication and sociology studies, neuroscience, computer science and HCI, with academics, researchers, industry, PhDs and PGRs
- The project resulted in the design of a Prototype Tactile Emoticon Device. This is a research tool that will be used as a basis for student dissertation projects on the MSc Human Computer Interaction, UCLIC
- This project has enabled the team to forge a valuable interdisciplinary collaboration within UCL and build new links across three leading research units and two faculties leading to a collaborative Late Breaking Work submission to CHI 2019 (the number one International conference on Computer Human Interaction, Glasgow, UK
- A paper in an accepted Symposium (Fotopoulou & Berthouze) at ACII (8th International Conference on Affective Computing & Intelligent Interaction, Cambridge, UK)An interdisciplinary paper, for a social science journal (TBC) on the development and use of the Tactile Emoticon as a research tool
- In addition, we anticipate an empirical paper on the distinct, psychological and social effects of affective touch in digital communication

Next steps

The team have met to discuss future plans for a proposal and publications.

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