Comparing Different Tactile Stimulation Methods in Affective Touch Research

Xiaoqin Cheng*†[1] and Annett Schirmer[1]

[1]Leopold Franzens Universität Innsbruck - University of Innsbruck, Department of Psychology – Austria

Abstract

Experimental research on affective touch has grown exponentially over the last few decades. Yet, little attention has been paid to the kind of stimulation methods used to deliver affective touch. Here, we compare and contrast the advantages and disadvantages of four such methods: experimenter touch, touch from the rotatory tactile stimulator (RTS), touch from a cable-driven robot, and touch from a robot arm. Experimenter touch is the most naturalistic and easiest to implement. However, it is difficult to execute specific parameter like velocity, distance, and force and to maintain these parameters consistently across an experiment. Touch from the RTS circumvents these problems as stroking parameters can be programmed. However, as the RTS moves with only one degree of freedom, its touch stimulus is physically limited (e.g., force varies along its arc). Like the RTS, the cable-driven robot offers precise control over important touch parameters with the added advantage of a customisable stroking trajectory. However, its force control and access to a participant's body parts are limited. A robot arm addresses these issues but creates significant technical challenges in the implementation of force and velocity control. In reviewing these different stimulation methods, we highlight their suitability for different research questions and make suggestions with regards to their optimal implementation in the study of affective touch.

Keywords: Stimulation methods, touch stimuli, affective touch, robot, stroking, force, velocity, touch parameters

*Speaker

†Corresponding author: xiaoqin.cheng@uibk.ac.at