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# I see how you are touching: similarities and differences in vicarious execution vs. reception of interpersonal affective touch

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## Abstract

Unmyelinated CT fibres, particularly represented in the hairy skin, are activated by caress-like touch, eliciting a pleasant sensation that decreases for static and faster stroking. Previous studies documented this effect also for vicarious observation of affective touch, and pointed to mirror mechanisms to perceive observed interpersonal touch as if we were receiving a similar tactile stimulation. Notably, less is known about simulation of vicarious execution of touch, i.e., as if we were giving gentle touch. To address this issue, we adapted a validated task during which 53 healthy adult participants were asked to complete self- and other-directed touch ratings for both executer (toucher-referred) and receiver (receiver-referred) with touch being delivered at CT-optimal (3cm/s) and non-CT optimal velocities (0cm/s and 30cm/s), on hairy (i.e., hand dorsum) and glabrous (i.e., palm) skin sites. Consistent with the CT fibres properties, for both self- and other-directed judgements of touch execution and reception, participants provided higher ratings for touch delivered at CT-optimal vs. other velocities, and when CT-optimal touch was delivered to the hand-dorsum compared to the palm. However, higher ratings were attributed to reception compared to execution of CT-optimal touch. Notably, whilst greater emotional empathy was associated with other-directed pleasant touch awareness, individual differences in interoceptive trusting and attitude to interpersonal touch were positively correlated with overall pleasantness of touch. These findings suggest that both toucher- and receiver-referred vicarious touch perceptions are specifically attuned to CT-optimal touch, even though they might rely on different mechanisms to understand affective information conveyed by interpersonal tactile interactions

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