
The perception of affective and discriminative touch in blind individuals

Dominika Radziun^{*1}, Laura Crucianelli¹, Maksymilian Korczyk², Marcin Szwed², and H. Henrik Ehrsson¹

¹Department of Neuroscience, Karolinska Institutet – Sweden

²Institute of Psychology, Jagiellonian University – Poland

Abstract

Enhanced tactile acuity in blindness is among the most widely reported results of neuroplasticity following prolonged visual deprivation. However, tactile submodalities other than discriminative touch are profoundly understudied in blind individuals. Here, we examined the influence of blindness on two tactile submodalities, affective and discriminative touch, the former being vital for social functioning and emotional processing. We tested 36 blind individuals and 36 age- and sex-matched sighted volunteers. In Experiment 1, we measured the perception of affective tactile signals by asking participants to rate the pleasantness of touch delivered on the palm (nonhairy skin, sparsely innervated with C tactile (CT) fibers) or the forearm (hairy skin, densely innervated with CT fibers) in a CT-optimal versus a CT-nonoptimal manner using a paradigm grounded in studies on tactile sensory neurophysiology. In Experiment 2, we implemented a classic task assessing discriminative touch abilities, the grating orientation task. We found that blind individuals rated the touch as more pleasant when delivered on the palm than on the forearm, while the opposite pattern was observed for sighted participants, who rated stimulation on the forearm as more pleasant than stimulation on the palm. We also replicated the previous findings showing enhanced discriminative tactile acuity in blind individuals. Altogether, our results suggest that blind individuals might experience affective touch differently than sighted individuals, with relatively greater pleasantness perceived on the palm. These results provide a broader insight into somatosensory perception in blind individuals, for the first time taking into consideration the socioemotional aspect of touch.

Keywords: blindness, neuroplasticity, affective touch, discriminative touch

^{*}Speaker