Blindness does not hamper extension of touch localization on tools

Cécile Fabio*†[1], Salam Bahmad[1], Roméo Salemme[1,2], Luke Miller[3,4], and Alessandro Farnè[1,2,5]

[1]Centre de recherche en neurosciences de Lyon - Lyon Neuroscience Research Center – Université Claude Bernard Lyon 1, Université de Lyon, Université Jean Monnet - Saint-Etienne, Institut National de la Santé et de la Recherche Médicale, Centre National de la Recherche Scientifique – France
[2]Hospices Civils de Lyon, Neuro-immersion – Hospices Civils de Lyon, Neuro-immersion – France
[3]Donders Institute for Brain, Cognition and Behaviour – Netherlands
[4]Radboud university [Nijmegen] – Netherlands
[5]Center for Mind/Brain Sciences – Italy

Abstract

Tactile events frequently occur outside the body and on external objects. For example, tools can be used to extend tactile perception beyond the body-a classic example being when blind individuals use canes to pick up information about their surroundings. We recently found that sighted participants can accurately localize where an object touches a hand-held tool when they actively make contact with it. However, localization performance drops when tool-object contact is passive, suggesting that certain factors such as motor variables or tactile feedback play a role in forming the spatial percept. Despite being a paradigmatic case to address the debate about touch superiority in the blind, it remains unknown whether blind individuals surpass sighted individuals in tool-sensing abilities. To fill this gap, we compared sighted and blind participants on their ability to localize touch on the surface of a held-hand tool in both active and passive sensing conditions. To do so, we developed a novel paradigm that allowed participants to haptically report where an object made contact with the tool. Consistent with our prior findings, localization was more accurate and precise during active sensing compared to passive sensing. Surprisingly, we found no difference in performance between the sighted and blind participants in either condition, supporting the arguments against touch superiority in the blind.

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*Speaker
†Corresponding author: fabio.cecile@yahoo.fr