

## **Mechanisms of self-other distinction in mirror-touch synaesthesia**

### **ABSTRACT:**

#### **Objectives**

Individuals with mirror-touch synaesthesia (MTS) experience tactile sensations on their own body when viewing touch to other people. The authenticity of these experiences has been well established, but why some people have MTS remains unclear. One theory is that MTS is related to atypical abilities in distinguishing the self from others.

#### **Aims**

The primary aim was to examine mechanisms of self-other representation in MTS by studying major aspects of self-other perception including: the sense of ownership (the feeling that one's body is one's own), the sense of agency (the feeling that one's actions are completed by oneself), and the ability to control representations of the self or other. Additionally, broader traits and cognitive styles linked with self-other representation were examined.

#### **Methods**

A series of experiments were conducted combining methods from neuropsychology, psychophysics, and individual differences research. For example, agency and ownership perception; interoceptive sensibility and interoceptive accuracy; measures of self-other control; and psychometric personality inventories. Performance was compared between control and MTS participants.

#### **Results & Conclusions**

Across several measures MTS were found to show altered self-other representations. This included atypical representations of the sense of ownership and agency (e.g. Cioffi et al., 2016), and difficulties with controlling self-other representations in circumstances where they had to inhibit others (Santesteban et al., 2015). Collectively these findings point to altered boundaries between the self and other MTS, and are consistent with the theory that MTS is linked to a more expansive plasticity of the bodily self.

#### **Keywords**

Synaesthesia, Mirror-touch, Self-other, Agency, Body ownership

### **Published Work:**

Cioffi, M. C., Banissy, M. J., Moore, J. W. (2016). 'Am I moving?' An illusion of agency and ownership in mirror-touch synaesthesia. *Cognition*, *146*, 426-430

Janik-McErlean, A., & Banissy, M. J. (2016). Examining the relationship between schizotypy and self-reported visual imagery vividness in grapheme-colour synaesthesia. *Frontiers in Psychology*, *7*:131.

Santiesteban, I., Bird, G., Tew, O., Cioffi, M., & Banissy, M. J. (2015). Mirror-touch synaesthesia: Difficulties inhibiting the other. *Cortex*, *71*, 116-121.

Ward, J., & Banissy, M. J. (2015). Explaining mirror-touch synaesthesia. *Cognitive Neuroscience*, *6*, 118-133.

Cioffi, M., Moore, J., & Banissy, M. (2014). What can mirror-touch synaesthesia tell us about the sense of agency? *Frontiers in Human Neuroscience*, *8*: 256. doi: 10.3389/fnhum.2014.00256

Banissy, M. J. & Ward, J. (2013). Mechanisms of self-other representation and vicarious experiences of touch in mirror-touch synaesthesia. *Frontiers in Human Neuroscience*, *7*:112. doi: 10.3389/fnhum.2013.00112

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