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Individuals with High Kinesthetic Intelligence Experience an Active Embodiment Illusion Assessed with Pupil Dilation

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Abstract

The role of the Sense of Embodiment (SoE) in teleoperation is becoming prominent. The SoE affects both the operator's experience and the task performance. In this study we investigate how the individual level of kinaesthetic intelligence affects the SoE during an embodiment illusion experience (EIE). We identify the experimental group in dancers and gymnasts who practice at a competitive level. We hypothesise that individuals with high kinaesthetic intelligence are more resilient to the EIE, due to their awareness of the joints position in the space. Moreover, we designed an active EIE to better assess the sense of agency and self-location. Usually, EIEs propose static tasks which are appropriate to assess the sense of ownership, but cannot clearly assess the other two components of the SoE. Finally, for the first time, to the knowledge of the authors, the variation of the pupil dilation was used as psycho-physiological measure of the SoE.