Role of body cues in intent perception during ball catching in VR

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Correct perception of biological motion enables humans to take appropriate action. We studied the extent the perception of full-body cues plays during catching task in a virtual environment. METHODS: In a fully immersive VR environment, displayed using HTC Vive, participants were asked to catch a ball thrown by highly realistic human avatar. The throwing movements were derived from motion captured human underhand throws. The executed throws were left in their genuine form or modified to be deceptive. The thrown ball was occluded at various stages during the flight phase. Spatiotemporal error between ball trajectory and commencement of catching action determined the success of ball interception. RESULTS: As expected, the catching performance drops with increased ball trajectory occlusion ($p < 10^{-8}$). Higher level deception during throws also has negative effect on catching performance ($p < 10^{-8}$). While fully occluded, the participants' catching success was higher for genuine throws compared to deceptive throws. Hence, not only ball trajectory but also thrower's body cues play important role in ball catching performance.

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