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Visual perceptual learning is enhanced by training in the illusory far space

Antonio Zafarana, Alessandro Farnè, Luigi Tamè

Objects' shape discrimination is faster for objects closer to the body (peripersonal space, PPS) compared to objects far from it. The closeness advantage has been observed for both low-level (size, orientation) and high-level (face identification) visual features, recent evidence supporting body centred perception of multisensory stimulation in PPS, namely a better performance when stimuli are near the body. However, it is unclear how PPS influences visual learning. In a series of studies, we investigated whether visual perceptual learning differs according to the depth dimension (near or far from the observer). Depth perspective was created using the "Ponzo Illusion", the effect of the illusion on learning was also examined. Participants performed a visual search task in which they reported whether a specific target object orientation (e.g., triangle pointing downward) was present amongst distractors. The task was performed before and after a training phase. This phase consisted in a visual search task in the near (half of the participants) or far space and lasted about 3 (Study 1) or 1.5 (Study 2) hours. Results showed that the learning was specific for the orientation of the target and position (near or far) in space with a more prominent improvement for the far space. These findings suggest that different learning processes may be specifically associated to different sectors of space.