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Does Hand Constraint Affect Visual Roughness Perception?

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Abstract

When movement of hands is restricted, memory for words referring to hand-manipulable objects (e.g., cup or pencil) declines (Dutriaux & Gyselinck, 2016), and activity in the intraparietal sulcus decreases and reaction times to judge the size of the objects represented by those words increase (Onishi, Tobita, & Makioka, 2022). These findings suggest that body immobility influences higher-order cognitive processes. However, whether hand immobility also affects the perception of lower-level features, such as texture, remains unclear. The aim of our study was to investigate whether changes in somatosensation caused by hand constraint affect visual judgments of roughness. As a result, hand constraint did not significantly influence either the accuracy or reaction times of visual roughness judgments. This suggests that somatosensory information is not recruited automatically during visual roughness judgments. However, we cannot exclude the possibility that participants made judgments based solely on visual information, potentially because the task was too easy.