

Study finds grasping motions lead by visuo-haptic signals are most effective

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NYU Abu Dhabi researchers have found that the availability of both visual and haptic information for a target object significantly improves reach-to-grasp actions, demonstrating that the nervous system utilizes both types of information to optimize movement execution. The findings are featured in the journal *Scientific Reports*.

NYU Abu Dhabi Assistant Professor of Psychology Robert Volcic and Postdoctoral Associate Ivan Camponogara compared participants' grasping movements towards an object sensed through visual, haptic, or visuo-haptic signals using special sensors capable of measuring hand and fingers [movement](#) in real-time.

When movements were based on haptic information only, hand pre-shaping was initiated earlier, fingers closed on the object more slowly, and the [final phase](#) was more cautious compared to movements based on only [visual information](#). Instead, the simultaneous availability of vision and haptics led to faster movements and to an overall decrease of the grip aperture.

"Our findings also show that each modality contributes to a different extent in different phases of the movement, with haptics being more crucial in the initial phases and vision being more important for the final on-line control," said Volcic. "We confirmed that vision and haptics can be flexibly combined to optimize the execution of grasping movement."

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