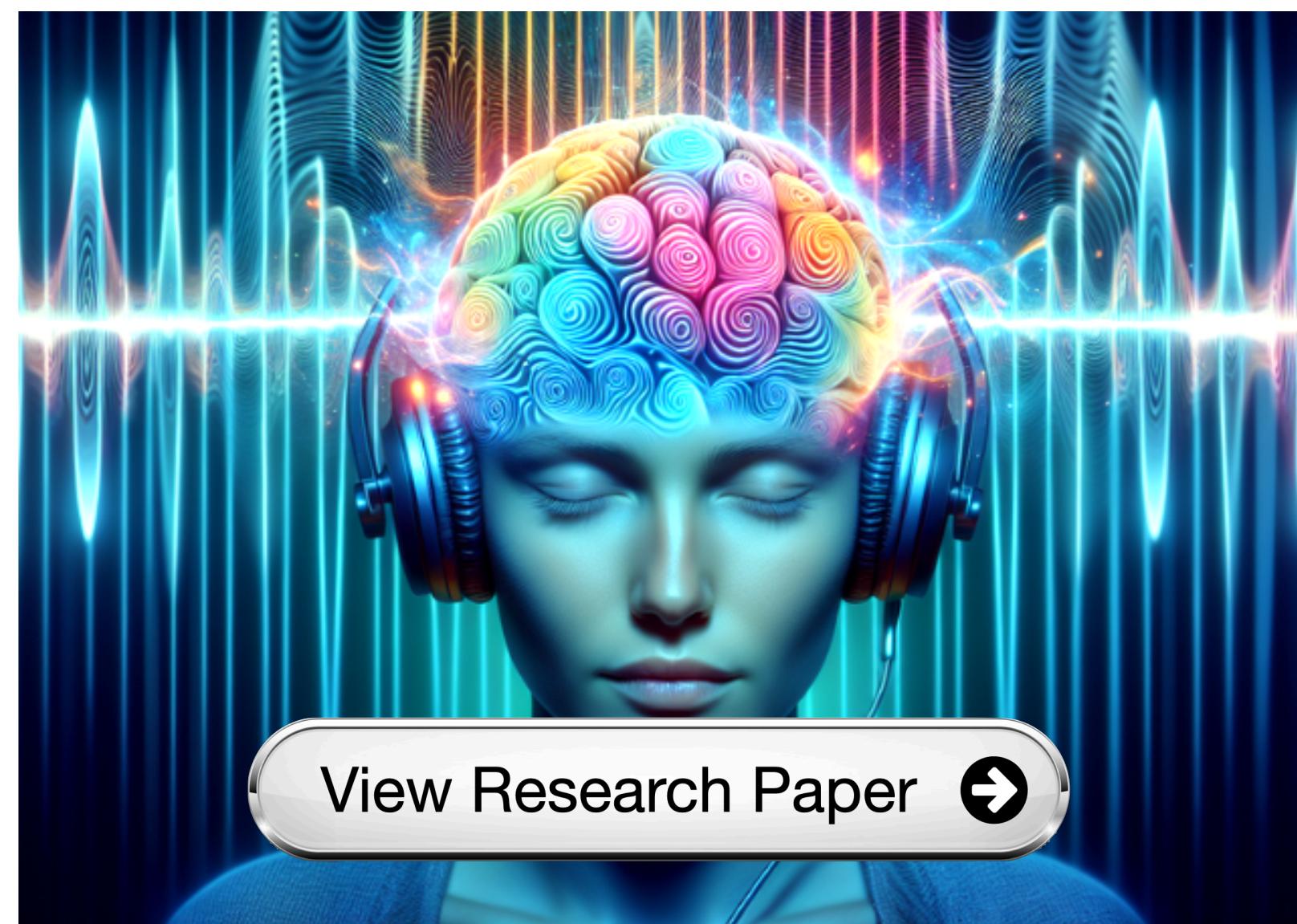


The Global Telepathy Study

Published Research for Haptic Stimulation



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Rhythm perception is shared between binaural audio and haptic stimulation

– Nature: Scientific Reports • Dec, 2022

In this study, we show striking similarities between the audio and haptic perception of rhythmic changes, and demonstrate the interaction of both modalities below 60 Hz. Using a new surface-haptic device to synthesize arbitrary audio-haptic textures, psychophysical experiments demonstrate that the perception threshold curves of audio and haptic rhythmic gradients are the same. These findings suggest that audio and haptic signals are likely to be processed by common neural mechanisms for the perception of rhythm, and provide a framework for audio-haptic stimulus.



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Haptic feedback in a virtual crowd scenario improves the emotional response

– Frontiers in Virtual Reality • Nov, 2023

This study aims to investigate the impact of kinesthetic haptics on eliciting emotional responses within virtual reality (VR) scenarios. Specifically, we examined the influence of haptic feedback on the perception of positive and negative emotions. We designed and developed different combinations of tactile and torque feedback devices and evaluated their effects on emotional responses. The results suggest that varying the type of haptic feedback can evoke different emotional responses, and we observed that participants' sense of touch being real was enhanced.



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Comparing vibrotactile stimulation to visual and auditory stimuli for 40 Hz gamma wave entrainment

– University of Colorado • Jan, 2026

In this study, we compared another sensory modality—vibrotactile stimulation delivered with a glove—to visual and auditory stimulation in 15 participants in terms of EEG responses and subjective experience. We found that vibrotactile stimulation could evoke 40 Hz EEG responses in the central, frontal and occipital cortices. We also observed distinct patterns of functional connectivity between the two stimulation modalities. Participants preferred the vibrotactile stimulation over the visual and auditory stimulation. Our study supports future investigations on vibrotactile stimulation.

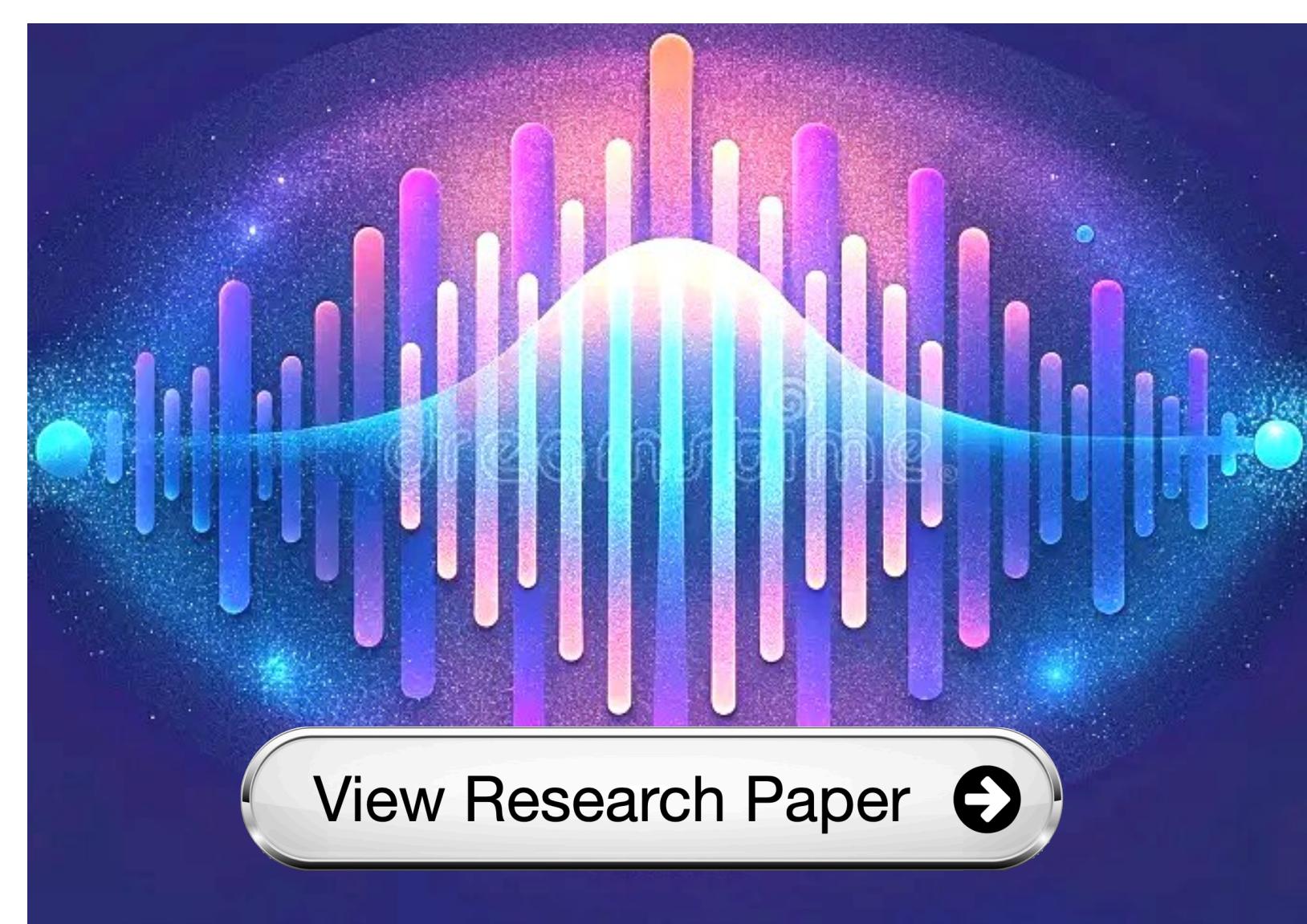


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Synchronization of sensory gamma oscillations promotes multi-sensory communication

– eNeuro Journal • Sept, 2019

In this study, congruent stimuli are proposed to be mediated by increased binding between sensory cortices through coherent gamma haptic oscillations. We tested this hypothesis by applying 4-in-1 multi-electrode transcranial alternating current stimulation (tACS) with 40 Hz over visual and somatosensory cortices. Our results favor the perspective that processing multi-sensory congruence involves corticocortical communication rather than feature binding. Furthermore, we found control stimulation over the irrelevant hemisphere to speed responses under alpha stimulation.



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Preliminary study on haptic-stimulation based brain wave entrainment

– IEEE Xplore • Dec, 2013

Auditory and visual stimulation have been widely used for brainwave entrainment, and in this study, we determine whether similar phenomena exists with haptic stimulation. By using a Phantom desktop to provide sinusoidal force stimulation and using a Nexus EEG device for real-time brain signal monitoring, we test how the Sensory Motor Rhythm (SMR) signal of the subject responds to the haptic stimulation. Our experiments show that the energy level of SMR tends to increase 10~30% after 10-15 minutes of haptic stimulation with a 15Hz stimulation signal.



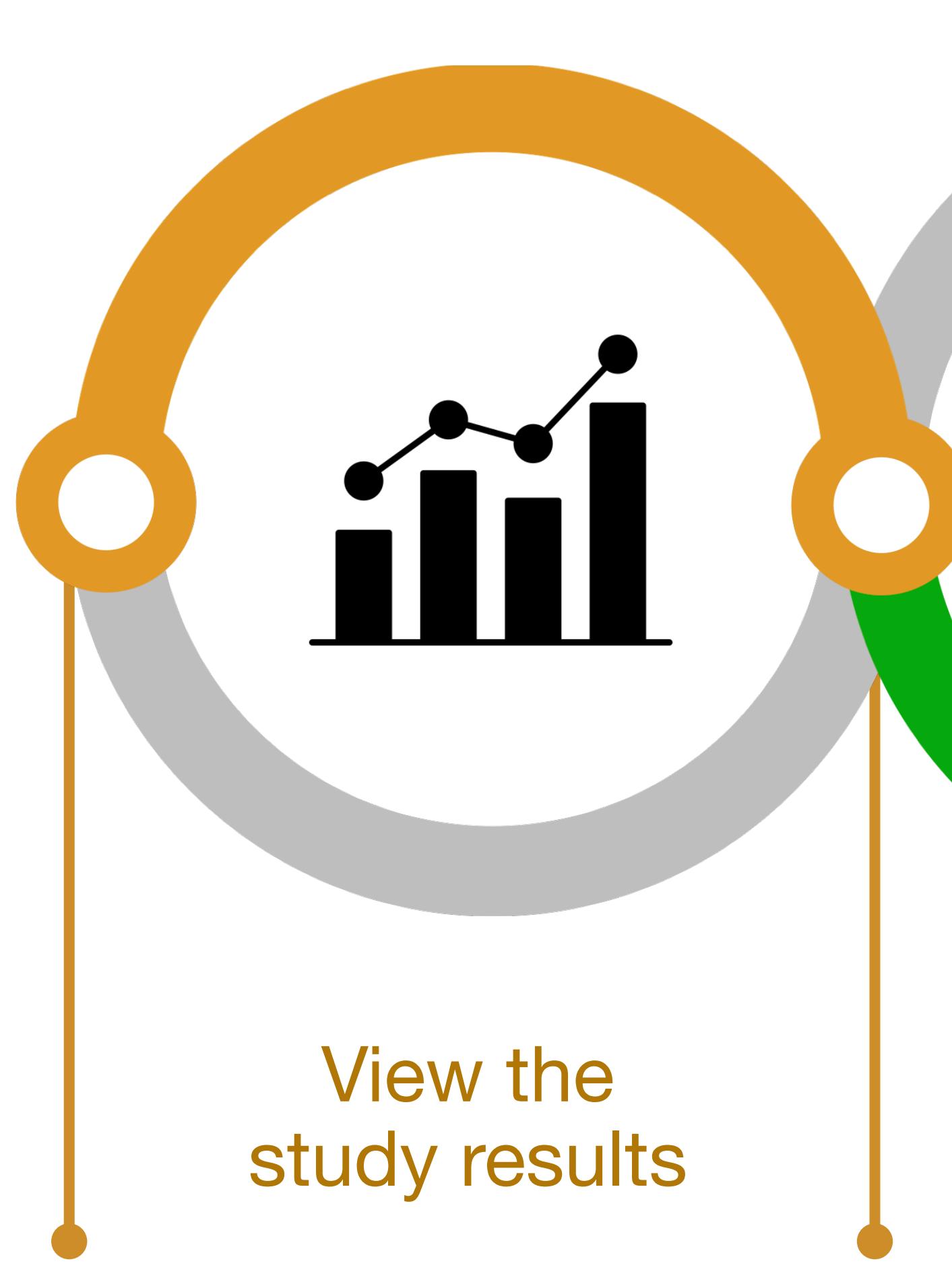
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Affective haptics: current research and future directions

– IEEE Journal • Feb, 2016

Affective haptics is an emerging field, which focuses on the evaluation of systems that can capture or display emotions through the sense of touch. We first introduce affective haptics as a multidisciplinary field that integrates computing, haptic technology, and user experience. Second, we provide a thorough discussion about the effectiveness of using the haptic channel to communicate affective information. We present the conclusions that haptic stimulation can be successfully used to achieve a high level of emotional telepresence, and have demonstrated that it is effective in communicating an emotional response.

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