

Supplementary Table S1. Data extraction.

| Study Title | Author(s) | Year of publication | N. of participants | Outcomes |
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| A Deep-Dream Virtual Reality Platform for Studying Altered Perceptual Phenomenology | Suzuki, K., Roseboom, W., Schwartzman, D.J. <i>et al.</i> | 2017 | 34 | Initially, the study demonstrates that the system elicits visual phenomenology akin to that induced by classical psychedelics. Subsequently, it is observed that the simulated hallucinations fail to elicit the temporal distortion frequently linked with altered states of consciousness. Collectively, the Hallucination Machine presents a significant advancement, furnishing a novel methodology for simulating altered phenomenology while circumventing direct manipulation of the underlying neurophysiological mechanisms. |
| A predictive coding approach to psychedelic virtual-induced hallucinations and creative cognition in aging | Magni G., Tuena C. and Riva G. | 2023 | N/A | The paper suggests that psychedelic hallucinations induced by VR may help optimize the balance between top-down expectations and bottom-up sensory information. Therefore, enhanced CF and creativity may be crucial during the aging process for maintaining cognitive functions and preventing pathological conditions. |
| Deep-dream 360° Virtual Reality videos for stimulating creativity: A pilot study | Brivio E., Di Lernia D., Chirico A., Caroli F., , Luisi A., Palomba G., Telazzi I., Blandi A., Riva G. | 2021 | 28 | The results show that both deep-dream 360° videos generate higher levels of creativity and higher emotional arousal than the non-modified control video. |
| Employing Synergistic Interactions of Virtual Reality and Psychedelics in Neuropsychopharmacology | M. Moroz and R. L. Carhart-Harris | 2018 | N/A | It is hypothesized that the most effective interventions necessarily arise from a composite approach that employs both virtual reality therapies and psychedelic treatments. |
| Facilitating real-life creative insight through psychedelic virtual reality | Siimon, T., Tulver, K., Kaup, K. K., Vasser, M., & Aru, J. | 2023 | 18 | both groups reported that the VR experience elicited affective effects. The finding that the simulated psychedelic experience elicited positive emotions and evoked aesthetic appreciation is significant |

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| Group VR experiences can produce ego attenuation and connectedness comparable to psychedelics | Glowacki, D.R., Williams, R.R., Wonnacott, M.D. <i>et al.</i> | 2022 | 109 | This study demonstrates that distributed VR can be used to design intersubjective STEs where people dissolve their sense of self in the connection to others. |
| Isness: Using Multi-Person VR to Design Peak Mystical-Type Experiences Comparable to Psychedelics | lowacki, David R. and Wonnacott, Mark D. and Freire, Rachel and Glowacki, Becca R. and Gale, Ella M. and Pike, James E. and de Haan, Tiu and Chatziapostolou, Mike and Metatla, Oussama. | 2023 | 64 | The study revealed that within a supportive setting and conceptual framework, VR phenomenology can create the conditions for MTEs from which participants derive insight and meaning. |
| Psychedelic replications in virtual reality and their potential as a therapeutic instrument: an open-label feasibility study | Kaup KK, Vasser M, Tulver K, Munk M, Pikamäe J and Aru J | 2023 | 13 | Preliminary results suggest that VR psychedelic experiences combined with psychological support show potential in treating depressive symptoms. |
| Psychedelic VR Experience: An Exploratory Study on Cosmic Flow | Sangwon Jung, Oğuz 'Oz' Buruk, and Juho Hamari | 2022 | 13 | Analysis of user interviews revealed three main themes that articulate different aspects of the experience: moderate interaction, reflections on personal experience, and VR ergonomics. The study contributes to design researchers and practitioners working on related experiences. |
| Psychedelics and virtual reality: parallels and applications | Aday JS, Davoli CC, Bloesch EK. | 2020 | N/A | This article outlines a number of connections between psychedelics and VR, and, more broadly, is representative of growing scientific interest into the interactions among technology, psychopharmacology, and mental health. |
| Simulated visual hallucinations in virtual reality enhance cognitive flexibility | Rastelli, C., Greco, A., Kenett, Y.N. <i>et al.</i> | 2022 | 52 | This study suggests that simulated altered perceptual phenomenology enhances cognitive flexibility, presumably due to a reorganization in the cognitive dynamics that facilitates the exploration of uncommon decision strategies and inhibits automated choices. |

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| Virtual Reality as a Moderator of Psychedelic-Assisted Psychotherapy | Sekula AD, Downey L and Puspanathan P | 2022 | N/A | This study conclude that the potential application of VR in modulating psychedelic-assisted psychotherapy demands further exploration and an evidence-based approach to both design and implementation. |
| Virtual reality and neuromodulation in the induction of out-of-body experience (VR-NIOBE): A proof-of-concept new paradigm for psychological and neuroscientific study of an altered state of consciousness | Chen, G., Bao, Z., Babin, M., & Frewen, P. | 2024 | 30 | The research provides proof of concept of a promising new paradigm that combines VR and neuromodulation in the induction of OBE (VR-NIOBE). |
