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Editorial: Sensory interactions in digital and virtual realities: new frontiers for the user experience

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Editorial on the Research Topic
Sensory interactions in digital and virtual realities: new frontiers for the user experience

In the era of increasing digitalization, organizations are shifting toward investments in digital transformation, relying more on technologies such as artificial intelligence (AI) and virtual reality (VR). Sensory interactions in digital environments are certainly a Research Topic to explore in this evolving context. Compared to sight and sound, other senses like taste, touch, and smell are less incorporated into the ever-growing scope of digitalized user experiences. However, emerging Sensory-Enabling Technologies (SETs) are changing this landscape, facilitating the incorporation of multisensory approaches in digital environments.

Existing research suggests that SETs can positively impact online behavior, influencing decisions as well as promoting healthier and sustainable habits. Most SETs commercial solutions still predominantly emphasize visual and auditory dimensions, neglecting the potential of other senses in digital environments. There is a general call for more comprehensive research into how sensory interactions, including taste, touch, and smell, can influence behavior, especially in decision-making processes such as shopping.

Inspired by the above, this Research Topic entitled "*Sensory interactions in digital and virtual realities: new frontiers for the user experience*," delved into the role of sensory interactions in digital environments, exploring SETs and their connection mainly to online, but also to offline, experiences. We welcomed research on multisensory simulation in digital contexts and their implications across various sectors like education, healthcare, and retail.

The first studied welcomed in this Research Topic assessed the replicability of 10 influential sensory marketing studies through a pre-registered, high-powered replication in non-WEIRD consumers (Motoki and Iseki). The findings that were successfully replicated relied on larger samples, sound symbolism, and within-participants.

The second study examined how pre-touch reactions of humanoid avatars in virtual reality impact perceptions and preferences, filling a gap in the literature by analyzing reactions before touch together with gaze behavior (Cuello Mejía et al.).

The third study assessed how multisensory stimulation with VR and smell can improve learning experiences (Andonova et al.). This work aimed to offer practical advice for educators using multisensory stimulation, combining VR and scent to enhance teaching strategies, learning experience, recall, and creativity in traditional learning settings.

The fourth study analyzed the effects of appearance and gender on pre-touch proxemics in VR (Kimoto et al.), measuring the pre-touch reaction distances to the face and body, which are the distances at which a person starts to feel uncomfortable before being touched. Results revealed that the appearance of the avatar indeed had an impact on pre-touch reaction user distance.

The fifth studied included in this Research Topic assessed whether a mindfulness practice could be enhanced through a multisensory experience design (Finck et al.). The authors argue that the design of multisensory experiences using technology to create an interactive connection with the sensory stimulus is a promising field in mindfulness, especially when it comes to practices involving sensory awareness through the monitoring of parasympathetic activity.

The last study accepted to be part of this Research Topic aimed to expand the existing understanding of quality assessments of VR experiences, introducing a model that provides theoretical grounding for an updated assessment of the quality of such VR experiences (Hameed and Perkis).

As users and organizations are increasingly involved in online experiences, further is evidently needed in this Research Topic. Indeed, this Research Topic highlights how there is room for further investigation on touch and smell sensations applied in virtual and digital realities in light of new technologies (expanding the prevalent focus on sight and auditory stimuli), which allows augmented sensory experiences to be experienced in online environments. The studies gathered in this Research Topic add new elements of reflection on how the knowledge about consumer behavior and consumer psychology can be expanded, not only with regards to cross-modality, but also in terms of further analysis on self-concept (e.g., the role of avatars) and as new insights into how virtual and digital experiences can have an impact on perception, cognition, and emotions. New and intriguing research questions will certainly arise inspired by these articles, opening a world of possibilities across new and different approaches from the multisensory perspective.

Understanding sensory Interactions in Digital and Virtual Realities can lead to innovative strategies across the most diverse industries. As digital technologies evolve, there's a growing need to meaningfully incorporate all of the senses into online experiences. Through advanced research and development of SETs, novel immersive and personalized digital landscapes can be developed to reshape the frontiers for innovation in the field of user experiences.

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