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Development and implementation of VR-simulated experiences to train communication skills

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**RESPONSE TO COMMENTS
ON “PATIENT-EMBODIED VIRTUAL
REALITY AS A LEARNING TOOL
FOR THERAPEUTIC COMMUNICATION
SKILLS AMONG ANAESTHESIOLOGISTS:
A PHENOMENOLOGICAL STUDY”**

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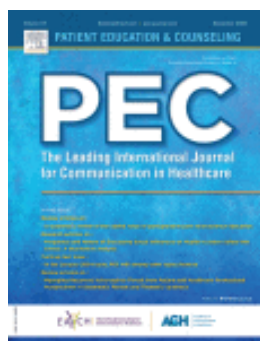
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ABSTRACT

This correspondence responds to criticisms of the phenomenological approach used in the article 'Patient-embodied VR as a learning tool for therapeutic communication skills among anaesthesiologists: a phenomenological study', defending the methodological choices and interpretive framework.

We express our gratitude to Michael Ting and colleagues for their insightful remarks on our recent article (1). Their comments address critical aspects of phenomenological qualitative research.

The authors raise three comments with respect to the used methods of our study. Firstly, the authors highlight important points on validity of our VR experiences. They express concerns with respect to selection bias and applicability of the scripts, an omnipresent bias that needs to be taken into account interpreting study results and their applicability. Within the immersive scenarios, we deliberately incorporated nuanced shifts in language and interactions, informed by conceptual frameworks and prior scientific investigations as referenced in our manuscript. Notably intricate are patient-physician interactions, a complex interplay of empathetic conduct, sociocultural cues, and rapport often founded on non-verbal cues, surpassing verbal communication (2, 3).

Neurobiological mechanisms can implicitly make one feel at ease or uncomfortable. Patients may not be able to recall specific moments allowing them to identify exact factors contributing to a particular sense of (dis)comfort. As outlined in our manuscript, the ultimate lived experience arises from complex subjective neural networks, interactions, and the intricate web of Cortico-Limbic-Thalamic connections (4, 5). The objective of our study was not to explore the lived experience of patients, but to explore the impact of a lived patient experience on healthcare providers concerning therapeutic communication. Patient perspectives are very valuable and study results of several patient-centered studies have been incorporated in the scripts elevating validity. For the final touch of specific contextual factors of our hospital setting, the narratives and patient journeys have been co-developed by a team of healthcare professionals working in the operating room. They have seen many patients and were able to recall several interesting elements enhancing authenticity of the storyboards and scripts.

Furthermore, the authors raise queries on the long-lasting skill retention among study participants. Our study meticulously established how VR can simulate a real-life experience, adhering to Kolb's Experiential Learning Cycle (6). Yet, as the discussion section of our papers describes, it remains critical to converge (*think and do*) and accommodate (*feel and do*) to complete the learning experience as shown in **Figure 1**. We concur on the necessity for subsequent research incorporating these elements to assess long-term skill retention and its impact on the healthcare environment.

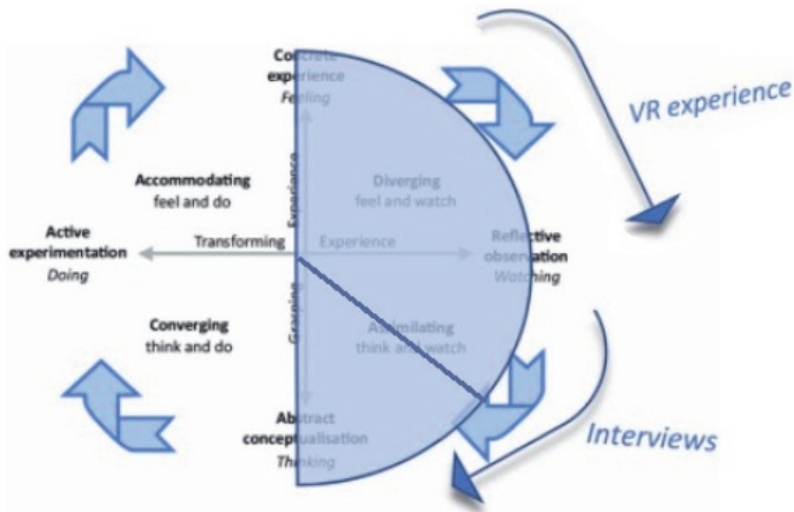


Figure 1. Kolb's Cycle (6) with 4 phases: Diverging, Assimilating, Converging and Accommodating. In the colored section is shown what parts of the cycle have been accounted for during our study (1).

Finally, concerns were raised on the sequence of the VR experiences. Our manuscript delineates how patient-embodied VR can replicate lived experiences and influence the attitudes and convictions of anaesthesiologists regarding therapeutic communication. Our methodological choices aligned with our research questions, beginning with an initial VR experience displaying current standard practices and deliberately lacking content explanations to mitigate influence of availability heuristic. We hypothesized that altering the sequence would amplify confirmation bias, leading participants to actively seek 'negative cues' in the negative experience. We did consider a randomized presentation of VR experiences to our participants, and we believe it would have complicated our thematic analysis given the relatively low number of participants.

We emphasize once more the two versions varied minimally, refraining exaggerated behaviors or communication styles. Both versions entailed the same procedures, duration, and persona with only subtle adjustments. One version portrayed standard care, drawing from real-world examples, while the second version portrayed a potential reality using therapeutic communication styles.

In summary, we believe our findings contribute to the field of educational VR development and we look forward to more exciting research on this topic. The overall aim of this area of development is to uncover patient-embodied VR's potentials and drawbacks, and determine its role in training therapeutic communication in the medical field.

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