Measurement of cognitive load and heart rate variability during a Video-Based Learning for the Acquisition of History Taking and Physical Examination Skills

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Video-based learning represents an effective way to reduce cognitive load (CL) when teaching a complex task. However, how best to assess the effects of different CL measures is unknown. In this preliminary study, we assessed the impact of subjective or objective CL measures on learning experiences and outcomes with a video-based learning for history taking and physical examinations. Twenty undergraduate medical students were prospectively enrolled and randomly assigned to a 360° virtual reality (VR) video group and 2-dimensional (2D) video group with different visual angles and self-determinations. Standard deviation of normal to normal R wave intervals in the 360° VR video group were significantly higher than those in the 2D video group. Difference in learning experiences and Mini-CEX scores between both groups were not statistically significant whereas global satisfaction of the 360° VR video group was significantly better than that of the 2D group. Temporal demand could independently predict overall clinical competence whereas the 360° VR video independently predicted global satisfaction in multivariate analyses. Our preliminary results suggested that subjective and objective CL measures have considerable potentials when assessing the role of CL/autonomic nervous system fluctuations in video-based learning for the acquisition of history taking and physical examination skills.

Recent Publications


Biography

Dr. Lee has completed his MD from Kaohsiung Medical University (Kaohsiung, Taiwan), residence from Linkou-Chang Gung Memorial Hospital (Taoyuan, Taiwan), and MSc (Medical Education) from Graduate Institute of Clinical Medical Science, Chang Gung University (Taoyuan, Taiwan). He is the director of Division of Laryngology, Department of ORL-HNS, Linkou-Chang Gung Memorial Hospital and professor of Faculty of Medicine, Chang Gung University (Taoyuan, Taiwan). He has published more than 97 papers in reputed journals and has been serving as member of council, International College of Surgeons, Taiwan.

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