1. Abstract Title: The reliability and validity of VR (Virtual Reality) based assessment for craving in Taiwan.

2. Author:
   a. Kun-Hua Lee, Department of Educational Counseling Psychology, National Tsing Hua University
   b. Lin-Yang Lin, Department of Addiction Psychiatry, Taoyuan Psychiatric Center.
   c. Keun-hong Wu, Department of Addiction Psychiatry, Taoyuan Psychiatric Center.

3. Corresponding author:

Kun-Hua Lee,

Department of Educational Counseling Psychology, National Tsing Hua University,

Hsin-chu City, Taiwan.

Mobile phone: +886918249912

E-mail: kunhualee@mx.nthu.edu.tw

4. Objectives: In tradition, self-report instrument was applied to assess the extent of craving. Despite the reliability of craving were well-documented, the patients with substance use disorders could not honestly answer the questions about craving. Therefore, we could not easily identify the possibility of relapse by craving. However, literature indicated craving could have more impact on relapse, besides, craving also related to negative emotional status. Moreover, this study used VR technique to enhance the precision of instrument for craving.

5. Materials and methods: we developed a VR based instruments for craving, and sixty participants will be recruited in this study. After informed consent, all of them will receive VR based instrument for craving at baseline, treatment and rest phase. During three periods, they also need to complete self-report scale for craving and be assessed by biofeedback device.

6. Results and conclusions: We not only anticipate our results could prove the validity and reliability for craving, but also find out some biological makers for assessing craving in clinical populations. Based on our results, we can provide more precise instrument for assessing craving in future.

7. Conflict of interest: no conflict of interest.