



# The Impact of Virtual Reality Tour on the Reduction of Stress among University Utara Malaysia Students

Menakah Vicknecsvarran\*, Siti Salmi Jamali

Department of Creative Industry Management and Performing Arts, University Utara Malaysia, Malaysia

## ABSTRACT

In this digital world, globalization has created some impeccable invention which has benefitted the society in numerous ways. One of the astonishing inventions would be virtual reality tour which has proven its worth in many industries such as medical, tourisms, entertainment and many more. As such, virtual reality tour has given an opportunity to the society to enjoy the privileges of being present in an environment virtually yet able to have the sense of belonging to such environment. To narrow this down, this research will clearly portray the interactive relationship that can be created *via* virtual reality tour to reduce the students' stress to an acceptable level. In that case, the purpose of this study is to utilize tidy effect of active motivational status (enjoyment, emotional involvement, engagement) towards stress reduction using virtual reality tour among University Utara Malaysia (UUM) students.

In this study, quantitative approach is chosen due to its prominent capability to analyse the relationship between the variables that have been selected. DASS questionnaire is deployed to measure the level of stress among the participants. Around 30 UUM students will be recruited for this study. Then, the data collected will be analysed using SPSS software.

**Keywords:** Stress; Virtual reality tour; COVID-19

## INTRODUCTION

The COVID-19 pandemic has been deemed a public health emergency by the World Health Organization [1]. A few months after the illness first appeared, over 40 million cases in over 220 countries have been documented and verified, with over a million deaths as a result [2]. The disease itself and the lockdowns' stress-related symptoms must be identified, according to the Centers for Sickness Control (CDC). Detrimental psychological effects have been reported during contagious disease epidemics, including equine influenza and Severe Acute Respiratory Syndrome (SARS). It is evident that the pandemic's unwavering psychological and societal effects are unavoidable, thus developing resilience and learning how to deal with such negative effects of a pandemic is essential. As suggested, there is a pressing need for research on how COVID-19 affects students' mental health and the necessity of quick options for resolution [3]. The COVID-19's psychological

effects on society at large, students are more likely to experience difficulties in Plans and daily activities of students would probably be disrupted by university closures and possible study extensions. Additionally, they must immediately transition to online learning, which differs greatly from face-to-face, patient-based learning in the healthcare environment. These unfavourable conditions would probably make medical students more stressed, especially the ones who have trouble adjusting and coping. All of these elements could put students at risk for stress, anxiety, and depression [4].

According to a study conducted by Azizah, et al. (2020), the pandemic has led to increased stress, anxiety, and depression among UUM students. The study found that 68% of the students reported feeling stressed due to the uncertainty surrounding the pandemic, changes in academic schedules, and concerns about their future prospects. The sudden shift to online learning and the challenges of adapting to a new mode

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**Corresponding author** Menakah Vicknecsvarran, Department of Creative Industry Management and Performing Arts, University Utara Malaysia, Malaysia, E-mail: menavicky02@gmail.com

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of education have also contributed to heightened stress levels among UUM students. Many students have reported feeling overwhelmed by the demands of online classes, technological issues, and a lack of face-to-face interaction with peers and instructors.

Additionally, concerns about the health and safety of themselves and their loved ones have added to the burden of stress experienced by UUM students. Furthermore, the restrictions on social activities and the inability to engage in recreational and extracurricular pursuits have also taken a toll on the mental well-being of UUM students. The lack of outlets for relaxation and socialization has exacerbated feelings of isolation and loneliness, contributing to higher levels of stress and anxiety.

The impact of COVID-19 on the mental health of UUM students is a matter of concern that requires attention from both academic institutions and mental health professionals. It is essential for UUM to provide adequate support services, such as counseling and mental health resources, to help students cope with the challenges posed by the pandemic. Additionally, promoting open discussions about mental health and creating a supportive environment for students to seek help is crucial in addressing the psychological impact of COVID-19 on UUM students.

A Virtual Reality (VR) tour can be an effective tool for reducing stress among university students during the COVID-19 pandemic. Research has shown that VR experiences can provide a sense of escapism and relaxation, offering a much-needed break from the stress and anxiety caused by the ongoing crisis. According to a study by Smith et al. (2020), VR-based interventions have been found to significantly reduce stress levels and improve overall well-being in university students.

Moreover, data from a pilot study conducted at a university in the United States revealed that participants who engaged in a VR-based relaxation experience reported a 30% reduction in self-reported stress levels and a 25% increase in feelings of relaxation and calmness. These findings demonstrate the potential of VR as an effective stress reduction tool for university students during these challenging times [5].

The objective of the research is to investigate the effectiveness of Virtual Reality (VR) tours in reducing stress among university students at University Utara Malaysia (UUM) during the COVID-19 pandemic. The study aims to assess the impact of VR-based interventions on stress levels and overall well-being, specifically focusing on how this technology can be utilized as a tool for stress reduction in the context of the pandemic.

## LITERATURE REVIEW

### Virtual Reality Tour in Stress Reduction

Numerous research papers have investigated how VR affects stress reduction. According to a study that used a mobile VR application, VR can effectively and affordably lower stress levels. Another VR study evaluated the objective and subjective benefits of using natural sceneries in virtual reality for relaxing with scenes set in indoor environments. When certain relaxation techniques were learned through immersive natural scenarios, there was a decrease in chronic trait anxiety and an

increase in coping abilities in a high-stress job population. A study that experimented with VR mindfulness demonstrated how VR might be used for mindful attention and relaxation [6].

Virtual Reality (VR) has proven effective in addressing mental health issues such as depression, pain, stress, and phobias. In VR, users can immerse themselves in a virtual environment, experiencing a genuine sense of presence. The use of virtual natural environments has been suggested by researchers to induce relaxation, bolster resistance to stress, and alleviate symptoms of anxiety and depression [7]. Scholars have advocated for leveraging VR's capability to simulate natural settings to mitigate psychological challenges, such as the impact of the Coronavirus, promoting relaxation.

Researchers have discovered that Virtual Reality (VR) can replicate the effects of tourism and exposure to nature by stimulating various human senses, such as visual and auditory stimuli, tricking the brain into responding to a virtual experience can offer a nature exposure experience for individuals in isolated or confined environments, contributing to stress reduction and mood improvement. As early as 2001, VR technology was already being utilized to enhance individuals' health, often serving as a distraction tool to alleviate patients' stress. Comparing the impact of visual stimuli and found that natural environments can rapidly reduce stress levels within a minute of the stressor being removed. Hence, amid the unprecedented circumstances of the COVID-19 pandemic, a virtual tour emerges as a potential solution for stress reduction. The challenge lies in determining how to create compelling 360° virtual tour content that effectively diminishes stress [8].

## METHODOLOGY

### Research Design

This study uses a quantitative research design, and to be more precise, survey research method will be deployed. This survey research method will be used to gather data and information through the execution of questionnaire. In this case, the survey research method is the most appropriate method that is widely used in multimedia studies.

### Participants

30 healthy UUM students' volunteers with high stress were recruited, age 19 or more, from April to June 2023. We defined high stress as a score of 14 or more on the DASS 21. Inclusion criteria were healthy persons who voluntarily participated in this study and who had no problem in understanding the study. They signed an informed consent, and they were asked not to take any relaxant or stimulant the day before the study. All the participants were students from the University Utara Malaysia, they participated voluntarily in this study, and did not receive any reward. Each participant was conducted through a single session that lasted approximately 15 min. During the session, participants had the chance to end their involvement in the study at any time in case they felt uncomfortable. The full data capture was completed in a week.

### Research Instrument

Quantitative way will be deployed using the survey method as a study approach *via* online using Google Form application.

Survey questionnaires are used as a method of data collection extensively due to various advantages they have in terms of their flexibility, versatility, economy, time, ease of construction and data analysis [9]. The survey questionnaires would most probably be using Likert scale with 5 points to investigate the 28 items. Besides, there will be 21 items in DASS-S questionnaire.

### Data Collection Procedure

In this study, quantitative research design will be deployed throughout the research. Before the data collection procedure, the 30 participants will be given induction on the research and explained by the researcher. This is the segment where information and concern letter will be given to each participant to authorize participation of them on a self-volunteer basis. First and foremost, students experienced 15 minutes virtual reality tour with VR goggles. Thereafter, survey questionnaires distributed to the participants.

## RESULTS AND DISCUSSION

### Reliability

According to the rule of Cronbach alpha scale, internal consistency  $\alpha > 0.9$  denotes excellent,  $0.9 > \alpha > 0.8$  denotes good,  $0.8 > \alpha > 0.7$  denotes acceptable,  $0.7 > \alpha > 0.6$  denotes questionable,  $0.6 > \alpha > 0.5$  denotes poor, and  $\alpha < 0.5$  denotes unacceptable

### Enjoyment

- Reliability Statistics
- Cronbach's Alpha: 0.959
- N of Items: 5
- Reliability: Excellent

The reliability analysis using Cronbach's Alpha scale yielded a value of .959 for Enjoyment, indicating excellent internal consistency. This suggests that the items within the Enjoyment construct are highly consistent in measuring the intended concept, enhancing the credibility of the study's results.

### Emotional Involvement

- Reliability Statistics
- Cronbach's Alpha: 0.922
- N of Items: 5
- Reliability: Excellent

The Cronbach's Alpha value of .922 for Emotional Involvement also indicates excellent internal consistency. This suggests that the measurement tool effectively captures the construct of Emotional Involvement, further supporting the robustness of the study's design.

### Engagement

- Reliability Statistics
- Cronbach's Alpha: 0.888
- N of Items: 5

- Reliability: Good

The reliability analysis revealed a Cronbach's Alpha value of .888 for Engagement, signifying good internal consistency. While slightly below the threshold for excellent reliability, this still suggests a satisfactory level of consistency in measuring the construct of Engagement.

### Satisfaction

- Reliability Statistics
- Cronbach's Alpha: 0.943
- N of Items: 5
- Reliability: Excellent

The reliability analysis produced Cronbach's Alpha value of .943 for Satisfaction, indicating excellent internal consistency. This suggests that the measurement tool for Satisfaction effectively captures the intended construct, bolstering the validity of the research findings.

### Stress

- Reliability Statistics
- Cronbach's Alpha: 0.868
- N of Items: 5
- Reliability: Good

The reliability analysis yielded a Cronbach's Alpha value of .868 for Stress, indicating good internal consistency. This suggests that the instrument used to measure stress levels among UUM students is reliable and effectively captures the concept of stress. The high reliability of the independent variables (enjoyment, emotional involvement, engagement, and satisfaction) suggests that these constructs are accurately captured by the measurement tools, supporting the credibility and robustness of the study's design. Additionally, the good reliability of the dependent variable (stress) indicates that the instrument effectively measures stress levels among UUM students. This enhances the trustworthiness and validity of the research findings.

## CONCLUSION

The findings from the reliability analysis provide confidence in the quality of the data collected and support the validity of the research on the effect of virtual reality tours for stress reduction caused by COVID-19 among UUM students. The high reliability of the independent variables and good reliability of the dependent variable suggest that the data collected is reliable and accurately measures the intended constructs.

While the reliability analysis demonstrated strong internal consistency for the measures used in this study, it's important to acknowledge potential limitations. One limitation is that the study focused on UUM students, which may limit generalizability to other populations. Additionally, self-report measures may introduce response bias. Future studies could consider using a more diverse sample and incorporating objective measures of stress. Furthermore, as with any self-report measures, there is a potential for social desirability bias, which could impact the

accuracy of responses.

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## CONFLICT OF INTEREST

The authors declare no competing financial interest.

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