Personalized Nature Virtual Reality (PnVR): A Novel Personalized Virtual Reality Nature Therapy via a Triple Combination Computational Software for Worldwide Mental Health Benefit

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Mental health disease is a global public-health epidemic affecting 1.88 billion people worldwide. Nature deprivation (ND) exacerbates this issue by increasing anxiety by 38%, depression by 33%, and mortality by 5%. Virtual reality nature therapy (VRNT) mitigates these risks through exposure to 360° nature content. However, no universal systems exist to personalize this therapy. This research sought to develop a novel personalization software system that curates the first personalized VRNT (Personalized Nature Virtual Reality — PnVR). PnVR's personalization system is a user-friendly web application consisting of three interactive preference assessment tasks and a complex background software that outputs a personalized therapy. PnVR was created on Visual Studio Code using HTML, CSS, and JavaScript. Twenty-one participants completed the Randomized This or That, Targeted This or That, and Biome Ranking tasks within the personalization system. Participants then completed two therapeutic interventions, one personalized (via PnVR) and one non-personalized, after experiencing a stress inducing task. Self-reported mental health levels were collected before and after each therapy. The system was found to have a positive usability and accuracy rating of 95.24%. Additionally, PnVR significantly reduced negative mood ($p < 0.05$, $r = 0.67$) and stress ($p < 0.01$, $r = 0.53$) greater than the current non-personalized therapy. These results suggest that PnVR is both a highly accurate personalization method and outperforms the current non-personalized therapy regarding increasing mental health levels. The application of PnVR has the potential to transform current virtual reality mental health therapies while aiding vulnerable populations who suffer from mental disease.

Awards Won: