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The Effects of Stress on Prospective Memory

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The Effects of Stress on Prospective Memory
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Introduction
• The purpose of the study is to use an immersive virtual reality (VR) experience to create fear to examine the effects of induced acute stress on an individual’s prospective memory, which deals with remembering to do something in the future.
• Past research exploring the impact of acute psychosocial stress has shown that higher levels of stress improves performance of prospective memory tasks.
• Other studies examining the effects of acute stress on prospective memory have required participants placing their hands in ice water, and placed participants in a face-to-face simulated job interview to induce stress.
• Other research on acute stress and prospective memory appears to be at odds with the Yerkes-Dodson Law, which suggests an inverted “U” pattern with respect to anxiety/stress/arousal and performance.

1. Glienke & Piefke, 2016; Nater et al., 2006; Szőllősi, Pajkossy, Demeter, Kéri, & Racsmány, 2018
2. Glienke & Piefke; Szőllősi et al.
3. Nater et al.

Hypothesis
• Higher levels of stress will lead to increased prospective memory performance up to the apex of the Yerkes-Dodson curve, but will then result in a decline in performance as stress continues to increase.

Method
• A fictitious story is read about the VR maze to prime the participants.
• One group of participants wear a head mounted display (HMD) and navigate a 3D VR maze while encountering computer-animated monsters and other situations that are specifically designed to induce stress.
• Another group of participants serve as a control group and experience the same maze but without the stress-inducing components.
• A Galvanic Skin Response (GSR) unit is used to measure the stress levels of each participant.
• Immediately after the participants complete the maze, they are asked to play a board game testing their prospective memory.

Predicted Results
• Participants in the stress-induced condition will pass the apex of the Yerkes-Dodson curve and score lower on the prospective memory task.
• Participants in the control condition will score higher on the prospective memory task.

Discussion
• In the university setting, students often experience large amounts of stress due to coursework, extracurricular activities, and social life. This may lead them to experience issues with their prospective memory causing them to forget course content, to complete particular tasks, or to attend events.
• Better understanding the effects of stress on prospective memory will enable universities to support student success by avoiding negative impacts and harnessing positive ones.
• The study explores the application of VR technology in the field of psychological research. It paves the way for VR use in future studies that require high-fidelity recreations of real experiences such as dangerous or non-replicable environments.