

significantly lower reported overall pain (VAS score, 24.9 [95% CI, 12.2–37.6]) compared with participants in the control group (VAS score, 47.1 [95%CI, 32.1–62.2]; p -value=0.02). Our at-home repeated burn dressing RCT study (sample size $n=24$) found participants in the VR group showed a clinically meaningful ($\geq 30\%$) reduction in child-reported overall pain (33.3%) and caregiver reported worst pain (31.6%) in comparison with subjects in the control group. Our findings support the scientific hypothesis that VR could insert changes in brain via affective and sensory network. Future research of VR for cognitive assessment/rehabilitation as well as for pain management during medical procedures needs to focus on discovering the brain neuro mechanism of VR.

Declaration of Interest Statement: None

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Topic: AS13 Emotion, Memory and Cognition

EXPLORING THE LINK BETWEEN TRAVEL-RELATED ACTIVITIES AND HUMAN SPATIAL NAVIGATION PERFORMANCE

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To explore navigation ability in a large population we developed the video game app Sea Hero Quest (SHQ), which has been used to test navigation ability of 3.9 million participants globally, revealing a significant impact of age on navigation ability. SHQ has good test-retest reliability and ecological validity from real-world testing. SHQ can classify those at genetic-risk of Alzheimer's disease (AD) by detecting sub-optimal navigation performance, highlighting its potential as disease monitoring tool or outcome measure for AD. Because a lack of exercise and lower daily activity levels may be modifiable risk factors for AD, we sought to explore these in a new population of participants. 903 participants (median age 24 yrs) living in the U.S.A. were tested remotely with SHQ and answered questions about travel-related lifestyle factors, including hours per week spent exercising, driving, using public transport, and biking, as well as the metric they use to think about travel: time, distance or blocks. Multivariate linear regression models were used to identify whether these travel-related variables were significantly associated with SHQ navigation performance, accounting for variables known to influence navigation, including age, gender, education and video gaming (Coutrot et al., 2022). We found no reliable evidence that for these young participants the levels of exercise or travel were related to their navigation ability. Those who used distance when thinking about travel, were slightly older (~2.2 years older) and had significantly worse navigation than those thinking in blocks or time. Additionally, those who started driving alone later than most people

(>18 yrs of age) were slightly older (~1.6 years older) and had worse navigation. Future studies using wearables to record travel and activity levels as well as testing non-US and older participants would be useful approaches to explore these factors linked to navigation.

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ANTIDEPRESSANT EFFECT OF FERMENTED PORCINE PLACENTA IN REPEAT-ED IMMOBILIZATION STRESS-INDUCED OVARECTOMIZED FEMALE MICE

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Background: Postmenopausal women under stress condition exacerbates mood disorder and neuroimmune systems. Porcine placenta is known to relieve several menopausal symptoms, but its underlying mechanisms on anti-inflammatory functions remain poorly defined. The present study was designed to examine the depression-associated inflammatory effects of fermented porcine placenta (FPP) on LPS-induced levels of nitric oxide (NO), prostaglandin E2 (PGE2), corticosterone (CORT), and pro-inflammatory cytokine interleukin-1 beta (IL-1 β) in RAW 264.7 cells. Neurite outgrowth of PC12 cells was evaluated to examine the effects of FPP on depressive inflammation. To mimic the symptoms of women with menopause-related depression, stressed ovariectomized (OVX) female mouse models were used to evaluate the antidepressant effects of FPP.

Material and Methods: Female mice were OVX and repeatedly immobilization-stressed for 2 weeks (2 h/day). Thirty minutes before immobilization stress, mice were administered saline (OVX), estradiol 0.2 mg/kg (positive control; PC), FPP 300 mg/kg (FPP 300), or FPP 1500 mg/kg (FPP 1500). A tail suspension test (TST) and forced swimming test (FST) were conducted to assess the antidepressant effects of FPP. After the behavioral tests, the levels of CORT, PGE2, and IL-1 β were evaluated. In addition, c-Fos expression in the paraventricular nucleus (PVN) was evaluated using immunohistochemistry (IHC).

Results: The concentrations of NO, PGE2, and IL-1 β stimulated by LPS were significantly reduced by the addition of FPP to RAW 264.7 cells. FPP significantly promoted neurite outgrowth in PC12 cells compared to that of the controls. In the TST, the duration of immobility was reduced in mice treated with FPP 1500 compared to the OVX group. The FPP 1500 group had significantly decreased c-Fos-positive neurons in the PVN and reduced levels of CORT and IL-1 β in the serum of the Sham group. Conclusions: These results indicate that FPP could be effective in the improvement of depression via the regulation of inflammation.

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