

stressors, and whether stressor type, are associated with cognitive problems. The coronavirus pandemic, and societal changes to prevent and respond to it, have created novel stressors, including unemployment, social isolation, and health risks. While prior research has focused on the physical and psychological consequences of these stressors, these stressors may also be associated with cognitive impairments. Individuals who have been infected with SARS-CoV-2 and individuals who experience chronic stress are at risk for cognitive impairments, however, research has not yet examined whether pandemic-related stressors not specifically related to infection but to the experience of the pandemic overall, are associated with cognitive deficits. This study evaluated whether pandemic-related psychosocial stressors (financial, health, role/responsibility, and social) were related to cognitive functioning. We hypothesized that individuals with a higher number of pandemic-related stressors will perform worse on cognitive domains of attention, memory, and executive functions, than those with fewer stressors.

Participants and Methods: An online survey recruited participants ($N=19$), of whom 89.5% were female, and the average age was 34 years ($SD=15.7$), to complete an online neuropsychological battery. Participants first completed questionnaires on the coronavirus pandemic, demographic characteristics, and completed the BDI-II and the BAI. An online neuropsychological battery was administered to participants over Zoom consisting of various neuropsychological tests, including the RAVLT, story memory, digit span, FAS, animal fluency, a go-no/go task, the Stroop, and the NAART-R.

Results: A majority of participants (89.5%) experienced one or more coronavirus pandemic stressors, with only two participants reporting no coronavirus stressors. A majority of participants experienced at least one social stressor (57.9%), role/responsibility stressor (63.2%), and health stressor (52.6%), with financial stressors (47.4%) experienced by just fewer than half of participants. Pearson's correlations showed significant negative correlations between stressors and performance on several neuropsychological tests. Specifically, social, health, and total stressors were associated with significantly poorer performance on digit span backwards and trials of the RAVLT (i.e., Trials 1-5, delayed recall, recognition) ($ps<.05$). Social stressors, health stressors, and total pandemic stressors were significantly associated with

poorer performance on measures of working memory, processing speed, verbal learning, and verbal memory.

Conclusions: While small sample size limits the power and generalizability of these findings, this study highlights the need to investigate the cognitive effects of pandemic-related stressors. An expanded coronavirus questionnaire would be beneficial as the current questionnaire may have not captured all stressors of the pandemic, or level of severity, that could potentially contribute to changes in neuropsychological function. Pandemic-related stressors have spread into many areas of everyday life and the consequences that have stemmed from these stressors seem to play a negative role on the general wellbeing of individuals and also show an effect on psychological and neuropsychological functioning. This study illustrates the need for an expanded response to health crises, as the negative results of this pandemic have not been solely affecting physical health.

Categories: Teleneuropsychology/ Technology

Keyword 1: neuropsychological assessment

Keyword 2: executive functions

Keyword 3: teleneuropsychology

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87 Virtual Driving Relates to Real-World Risky Driving

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Objective: Driving is a cognitively demanding activity commonly affected by brain injury and illness. Accurate driving assessment is essential for reducing risk, optimizing independence, and informing driving-related interventions. Virtual reality driving simulation (VRDS) enables safe, sensitive, objective, and standardized measurement of driving abilities. VRDS has been validated in relation to self-reports and driver records. However, self-reports are subjective, and driver records include only major events (collisions, violations). Video telematics platforms can measure naturalistic driving in a

more objective and sensitive manner. The present study used video telematics to examine relationships between VRDS performance and directly observed naturalistic driving.

Participants and Methods: 20 healthy adult drivers (ages 23-61, mean age=36; 75% women) completed a VRDS assessment that included 1) driving on a straight road, 2) following a truck on a highway, and 3) reacting to a child running into a street to retrieve a ball. Primary VRDS measures were 1) speed and lane management on the straight road; 2) speed and following distance management in the truck-following task; and 3) reaction time, stopping, and distance from the child in the child-ball task. Participants also completed 28 days of naturalistic driving with a video telematics platform in their vehicle. Driving events were detected automatically using accelerometer, GPS, and video data, and driving behaviors were coded by driving risk analysts. The primary naturalistic measure was the number of unsafe driving behaviors per hour driven; specific driving behaviors served as exploratory variables. We examined correlations between VRDS and naturalistic driving variables. Given limited statistical power, we reported correlations that were small-to-medium or greater ($r > .2$) in primary analyses and medium-to-large or greater ($r > .4$) in exploratory analyses.

Results: On average, drivers exhibited approximately one unsafe driving behavior per hour ($M=0.9$, $SD=0.9$, $range=0.1-2.7$). Common behaviors were failing to stop, unsafe following distance, speeding, and cell phone use. No collisions occurred. Average lane position in VRDS (specifically, leftward deviation from the center of the lane) was correlated with more real-world unsafe driving behaviors per hour ($r=.35$, $p=.13$), as were higher average straight road speed ($r=.26$, $p=.27$), greater straight road speed variability ($r=.28$, $p=.24$), and failing to stop for the child in the child-ball task ($r=.22$, $p=.36$). In exploratory analyses, failing to stop for the child was associated with real-world distracted driving ($r=.45$, $p=.047$), greater lane position variability in VRDS was associated with real-world unsafe following distance ($r=.57$, $p=.009$), and greater speed variability in VRDS was associated with real-world seat belt non-use/misuse ($r=.49$, $p=.03$).

Conclusions: The present findings provide preliminary evidence that VRDS variables are related to directly observed naturalistic driving, supporting the potential utility of VRDS as a sensitive, ecologically valid driving evaluation

tool. As the present study used a small sample of healthy drivers, further research will explore this topic in larger samples and in clinical populations, such as acquired brain injury. Future work will also investigate whether incorporating VRDS with conventional driving evaluation tools (e.g., neuropsychological tests, behind-the-wheel assessments) can enhance the ability of clinical driving evaluations to predict real-world risky driving.

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88 REASmash: A serious game in immersive virtual reality for the evaluation of spatial and non-spatial attention impairments in post-stroke individuals.

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Objective: Stroke results in various cognitive and motor impairments. The most frequent cognitive problem is spatial and non-spatial attention, typically caused by unilateral brain lesion. Attention is typically assessed with several different paper-and-pencil tests, which have long been criticized for their lack of theoretical basis, their limited ecological validity to deficits experienced in daily life, and their lack of measurement sensitivity (Appelros et al., 2004; Azouvi, 2017). Here, our global aim was to develop an innovative integrative serious game in an immersive environment. The REASmash, combines the evaluation of spatial attention, non-spatial attention, and motor performance. We present the spatial and non-spatial cognitive attention evaluation results.

Participants and Methods: Eighteen first stroke individuals and 40 age-match healthy