

the disease, and thirteen were not. Subjects from individual groups did not differ demographically. Participants were examined with a set of neuropsychological tests to assess: a) general cognitive functioning - Montreal Cognitive Assessment (MoCA), b) attention - d2 Test of Attention, memory - Rey-Osterieth Complex Figure – delayed recall, and c) visuospatial functions - Rey-Osterieth Complex Figure - copy, Block Design – subtest of WAIS-R and three experimental tasks consisting of: incomplete pictures, rotating puzzles, counting cubes in a 3D tower.

Results: Subjects who had a history of COVID-19 achieved significantly lower scores in the MoCA test ($p = 0.033$) compared to those who did not suffer from COVID-19. They also needed more time in mental rotation task ($p = 0.04$). Statistically significant differences were also found in the d2 Test of Attention GP score ($p = 0.001$).

Moreover, in group of adults who had a history of COVID-19, statistically significant differences were found between the vaccinated and unvaccinated subjects. It turned out that those who were vaccinated during their illness performed significantly better than those who were unvaccinated in the following cognitive domains: attention (d2 Test of Attention) and visuospatial functions (Rey-Osterieth Complex Figure test – copy, Block Design from WAIS-R, as well as experimental trials: incomplete pictures, rotating puzzles, counting cubes).

Conclusions: Among adults who have been infected with COVID-19, there is a decrease in general cognitive performance, but also in individual cognitive abilities, including visuospatial functions. Vaccination significantly reduces the risk of cognitive impairment.

Categories: Infectious Disease (HIV/COVID/Hepatitis/Viruses)

Keyword 1: visuospatial functions

Keyword 2: infectious disease

Keyword 3: cognitive functioning

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47 The Impact of COVID-19 Infection on Objective and Subjective Cognitive Functioning: Resilience as a Protective Factor

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Objective: Growing evidence indicates that COVID-19 infection adversely impacts cognitive functioning, with COVID-19 patients demonstrating high rates of objective and subjective cognitive impairments (Daroische et al., 2020; Miskowiak et al., 2021). Given the prevalence and potentially debilitating nature of post-COVID-19 cognitive symptoms, understanding factors that mitigate the impact of COVID-19 infection on cognitive functioning is paramount to developing interventions that facilitate recovery.

Resilience, the ability to cope with and grow from challenges, has been associated with improved cognitive performance in healthy adults and linked to decreased perceived cognitive difficulties in post-COVID-19 patients (Connor & Davidson, 2003; Deng et al., 2018; Jung et al., 2021). However, resilience has not yet been examined as a potential attenuator of the relationship between COVID-19 and either perceived or objective cognitive function. This study aims to investigate the role of resilience as a protective factor against experience of cognitive function difficulties in COVID-19 patients by probing the role of resilience as a moderator of the relationship between COVID-19 diagnosis and cognitive functioning (both perceived and objective).

Participants and Methods: Participants (mean age=36.93, 30.10% male) were recruited from British Columbia and Ontario. The sample included 53 adults who had never been diagnosed with COVID-19 and 50 adults diagnosed with symptomatic COVID-19 at least three months prior and not ventilated.

Participants completed online questionnaires ($n=103$) to assess depression (the Center for Epidemiological Studies Depression Scale), anxiety (7-item Generalized Anxiety Disorder Scale), subjective cognitive functioning (The Subjective Cognitive Decline Questionnaire), and resilience (2-item Connor-Davidson Resilience Scale). Participants then completed neuropsychological tests ($n=82$) measuring attention, processing speed, memory, language, visuospatial skills, and executive function via teleconference, with scores averaged to create a

global objective cognition score. Moderated multiple regression was employed to assess the impact of resilience on the relationship between COVID-19 diagnosis and both objective and perceived cognition, controlling for gender, ethnicity, income, age, anxiety, and depression.

Results: Average scores in the COVID-19 group exceeded diagnostic cut-offs for clinical depression ($M=16.67$, $SD=10.77$) and mild anxiety ($M=5.27$, $SD=4.99$), while the control group scored below diagnostic thresholds for depression ($M=11.96$, $SD=9.76$) and mild anxiety ($M=4.48$, $SD=5.07$). Controlling for sociodemographic and mental health characteristics, COVID-19 diagnosis was not associated with objective global cognitive functioning ($b=-.07$, $se=1.71$, $p=.624$) or subjective cognitive functioning ($b=.16$, $se=1.32$, $p=.12$), nor was resilience associated with objective global cognitive functioning ($b=.19$, $se=1.50$, $p=.44$) or subjective cognitive functioning ($b=-.02$, $se=1.09$, $p=.89$).

Conclusions: Findings indicate that COVID-19 patients may be at risk for depression and anxiety. Results of this study fail to support a relationship between COVID-19 and cognitive functioning beyond the impact of sociodemographic and mental health variables. Thus, the role of resilience as a protective factor against COVID-19 related cognitive difficulties could not be fully explored. However, findings should be considered in the context of study limitations, including a small sample size. Future research should employ larger samples to further examine the relationship between COVID-19 infection and cognition, focusing on mental health characteristics and resilience as potential risk and protective factors.

Categories: Infectious Disease (HIV/COVID/Hepatitis/Viruses)

Keyword 1: cognitive functioning

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48 A Case of an Extremely Rare CNS *C. Bantiana* Infection with Cognitive Sequela in an Immunocompetent Patient

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Objective: Central nervous system (CNS) infections with the dematiaceous fungus *Cladophialophora bantiana* (*C. bantiana*) are extremely rare, with approximately 120 confirmed cases reported as of 2016. *C. bantiana* is a highly neurotropic and thermotolerant fungus found in soil worldwide. The mode of entry into the CNS remains unknown, but inhalation of fungal spores or subcutaneous trauma have been suggested. Entry of fungal spores can cause cerebral phaeohyphomycosis with the main clinical manifestation of a brain abscess. Symptoms are non-specific and can include headache, fever, hemiparesis, aphasia, visual disturbances, and confusion. *C. bantiana* cerebral phaeohyphomycosis occurs in both immunocompetent and immunocompromised individuals, with a slightly higher prevalence in immunocompetent males for unknown reasons. Diagnosis is often delayed due to its non-specific presentation and prevalence in individuals without pre-existing immunological disease. Prognosis is poor, with mortality rates of approximately 70% despite aggressive treatment. Treatment is not standardized but may include several anti-fungal agents and surgical intervention. Case reports documenting the variability seen with cerebral phaeohyphomycosis by *C. bantiana* can provide valuable insight into this emerging disease. *C. bantiana*'s neurotropic propensity also warrants cognitive investigation of the disease; however, there are currently limited descriptions of cognitive findings in published case reports of *C. bantiana* CNS infections.

Participants and Methods: Here, we describe a case of a 35-year-old immunocompetent, college educated male with a CNS *C. bantiana* infection, presumably following a fall while biking in Costa Rica. First symptoms included left sided facial palsy, headache, and hand weakness, prompting extensive diagnostic workup, with diagnosis of *C. bantiana* infection confirmed 8 months after symptom onset. Initial treatment included anti-fungal agents and steroids, but his course of infection was complicated by infectious vasculitis with posterior circulation infarcts and obstructive hydrocephalus requiring ventriculoperitoneal shunt placement two years following the fungal infection diagnosis. The