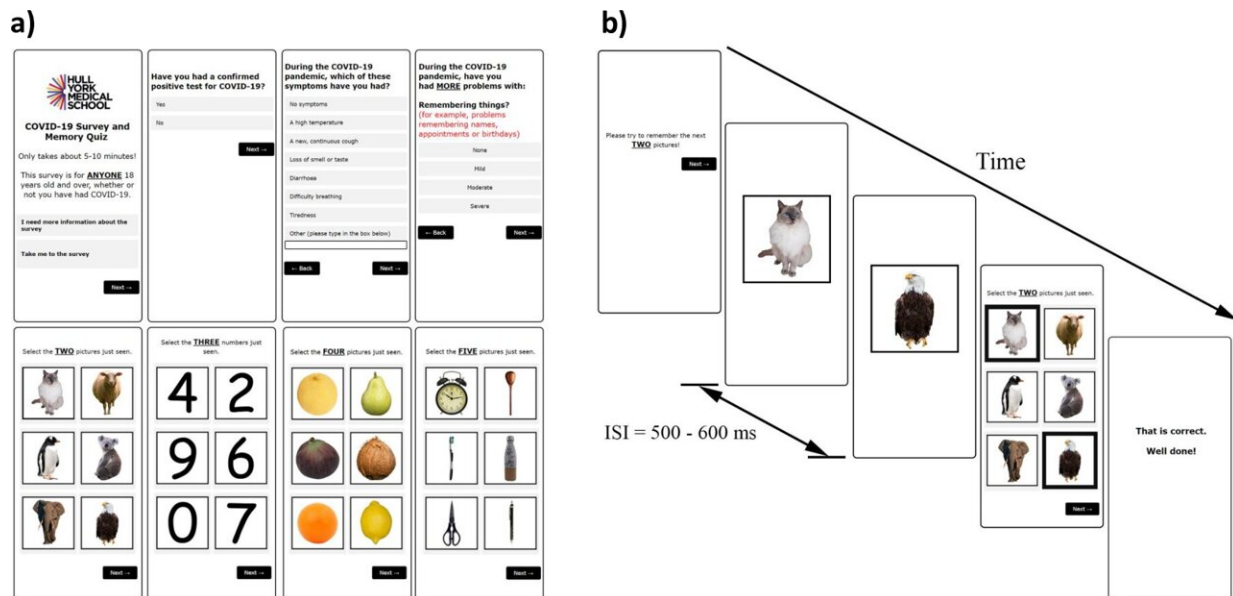


New research shows that COVID-19 negatively impacts memory function

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The COVID-19 Online Rapid Objective Neuro-Memory Assessment (CORONA) as presented on a smartphone. a) Selected sample questions from the survey, and image examples of the animal, number, fruit and object categories presented in the memory quiz. b) Example showing the timing of a single trial presentation during the objective memory quiz. Credit: *PLOS ONE* (2022). DOI: 10.1371/journal.pone.0269353

COVID-19 can negatively impact short-term memory function, the results of a new study have revealed.

The researchers say memory function can recover over time, but those with ongoing COVID symptoms may continue to experience difficulties.

The team, from Hull York Medical School, used an online anonymous survey which included a memory quiz that could be completed quickly using [smart phones](#), tablets and PCs.

Brain fog

Many people with COVID-19 say they experience what is often described as 'brain fog' with problems remembering, concentrating, and performing daily tasks. In addition, there is growing concern about long COVID—where people suffer continued symptoms for months after infection.

More than 5,400 participants took part in the study between December 8, 2020 and July 5, 2021 with 68.6% of respondents never having had COVID-19 and 31.4% having had the disease.

The researchers say it was clear from the analysis that there was a significant reduction in memory scores in all COVID-19 groups (self-reported, positive-tested and hospitalized) compared to non-COVID-19 groups.

The factors which significantly affected memory scores were found to be COVID-19 status, age, time post COVID-19 and whether individuals were experiencing ongoing symptoms.

Memory scores for all COVID groups combined were significantly reduced compared to the non-COVID group in every age category 25 years and over, but not for the youngest age category, 18-24 years old.

The study also found that memory scores gradually increased over a

period of 17 months post-COVID-19. However, those with ongoing COVID-19 symptoms continued to show a reduction in memory scores.

Neurological consequences

Dr. Heidi Baseler, Senior Lecturer in Imaging Sciences at Hull York Medical School, University of York, who was first author on the study, said, "Although it is well known that COVID-19 affects the respiratory system, it is perhaps less well known that it can also have neurological consequences and affect cognitive function, such as memory."

Dr. Aziz Asghar, senior lecturer in neuroscience at Hull York Medical School, University of Hull, and co-author on the study, added, "While previous studies have demonstrated a relationship between COVID-19 and cognitive function, they have involved lengthy surveys with multiple tasks."

"We wanted to develop a survey which would engage as wide an audience as possible, to allow us to rapidly assess the impact of COVID-19 specifically on working memory function."

Working memory is a form of short-term memory. It is essential for [daily life](#) and allows us to store and retrieve information while performing a task such as [problem solving](#), reading, and having a conversation. The impact on an individual of reduced working memory function is significant.

Dr. Heidi Baseler added, "What the study demonstrates is that COVID-19 negatively impacts working memory or short-term memory function, but only in adults aged 25 years and over."

"While the survey suggests that [memory function](#) with COVID-19 can recover over time, our findings indicate that those with ongoing

symptoms may continue to experience difficulty with short-term memory."

Dr. Abayomi Salawu, Consultant in Rehabilitation Medicine at the Hull University Teaching Hospital NHS Trust, said, "These results will inform current clinical practice on how to assess memory dysfunction in COVID patients. Since the survey/memory quiz can be completed quickly, it could also be used in patients who have limited attention spans or those with other conditions affecting [memory](#) such as dementia."

The research was published in *PLOS ONE*.

More information: Heidi A. Baseler et al, The negative impact of COVID-19 on working memory revealed using a rapid online quiz, *PLOS ONE* (2022). [DOI: 10.1371/journal.pone.0269353](https://doi.org/10.1371/journal.pone.0269353)

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