EFFECT OF SARS-COV-2 ON COGNITIVE AND BRAIN MEASURES: FINDINGS FROM TWO DATASETS.

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PREREGISTERED

BACKGROUND

- 10-30% of non-hospitalized cases of SARS-CoV-2 infection are estimated to suffer from some Long Covid symptoms [1,2].
- Up to 50% of individuals with other Long Covid symptoms reported also having problems with memory, cognition or concentration [3,4-7].
- In most cases, multiple cognitive domains are affected, and symptoms last for less than 1 year [8].
- Effect on executive functions and episodic memory tests found across multiple studies [8,9].
- Brain studies report reduced hippocampal volumes, structural abnormalities in grey and white matter, fronto-parietal hypometabolism [10].

AIMS

- Replicate results of previous studies (directly or conceptually).
- Evaluate the effect of Covid-19 infection on cognitive performance.
- Evaluate the effect of Covid-19 infection on brain measures.

INTERIM CONCLUSIONS

- Covid-19 has long-term symptoms, including those affecting cognitive function.
- Replicated an effect on long-term memory which seems to be general across memory and stimulus type.
- Effect on long-term memory further corroborated on the UK Biobank dataset.

STUDY 1

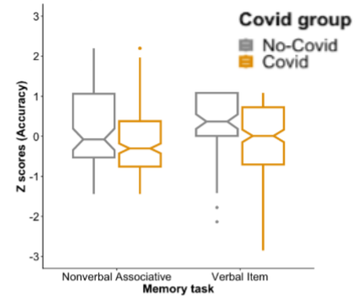
Online data:
Collected by Cambridge Cognition and Motivated Behaviour Lab.

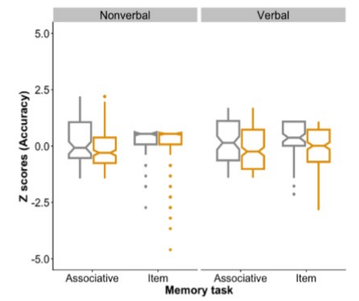
Participants:
296 participants (18-77 years, mean age = 42.26), 209 had Covid-19, 87 did not.

AIMS	HYPOTHESES
Aim 1: replication of Guo et al. (2022)	1. Covid group will have worse performance in the 2 memory tasks originally used in Guo et al. (2022).
Aim 2: Extend analysis of memory effects	2. Covid group will have worse performance at the Nonverbal associative memory task than on the verbal item memory task.
	3. Main effect of Covid-19 status on all the memory tasks and interaction with memory type (item vs. associative). Potential interaction with stimulus type.
Aim 3: Analyze the effects of vaccination status	4. Main effect of vaccination status on cognitive tasks.

Findings:

- Replicated effect on memory accuracy (but not reaction times) found in [6].
- Impairment specific to long-term memory, no interaction with memory type or stimulus type.





STUDY 2

Longitudinal data:

- UK Biobank Covid-19 dataset (N=2096, 51-83 years, 53% females).
- Pre-pandemic control group (N=2360, 49-82 years, 49.9% females).

- Linear mixed effects model, interaction between time and group is the main effect of interest.