Memory and Metamemory Performance in Individuals With and Without Post-COVID-19 Subjective Cognitive Complaints

Breanna K. Nelson[a,c,d]*, Edwina Picon[b], Lia Sayers[a], Lea N. Farah[a,c,d], Sidney A. Saint[a,c,d], Johnson Chen[e], Vesna Sossi[a,c,f], Mypinder S. Sekhon[a,e,f], A. Jon Stoessl[a,f], Cheryl Wellington[a,c,f], William G. Honer[a,c,d], Donna Lang[a,c,d,f], William J. Panenka[a,c,d,f], and Noah D. Silverberg[b,f]

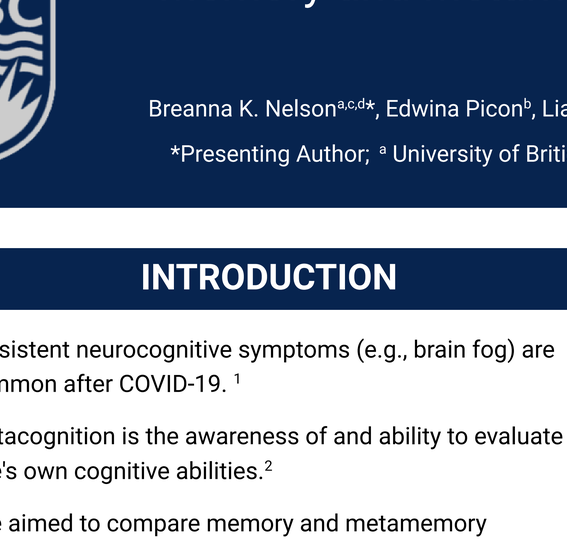
*Presenting Author; [a] University of British Columbia, Faculty of Medicine; [b] University of British Columbia, Faculty of Arts; [c] BC Children's Hospital Research Institute; [d] BC Mental Health and Substance Use Services

INTRODUCTION

- Persistent neurocognitive symptoms (e.g., brain fog) are common after COVID-19. [1]
- Metacognition is the awareness of and ability to evaluate one's own cognitive abilities.[2]
- We aimed to compare memory and metamemory performance between those with and without persistent cognitive symptoms after COVID-19.

METHODS

- Individuals with a history of COVID-19 were recruited.
- n = 47 with persistent cognitive symptoms; n = 87 without persistent cognitive symptoms.



d' = memory accuracy

meta-d' = alignment between memory and confidence

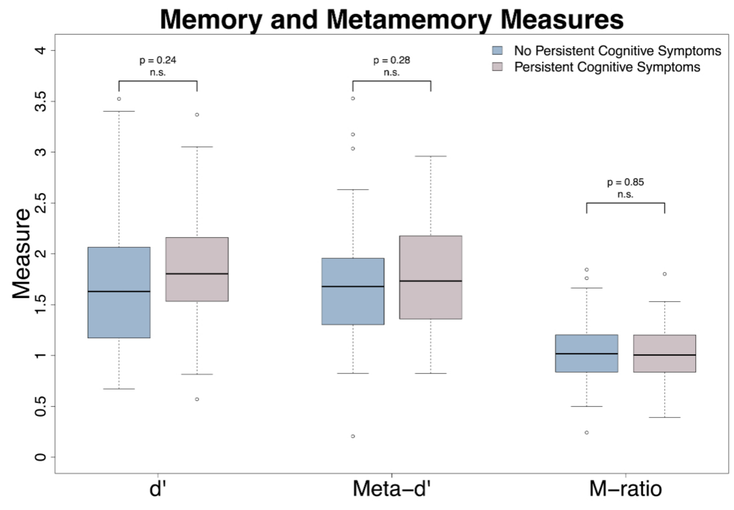
M-ratio = meta-d' / d' = metamemory efficiency

- Signal detection theory was used to quantify memory and metamemory performance.[2]
- Measures were compared using a linear regression, covarying for age and time since COVID-19.

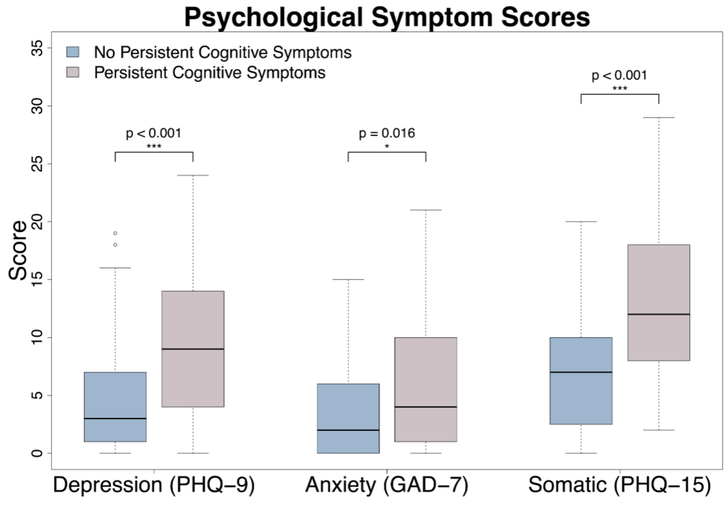
RESULTS

- Participants with persistent cognitive symptoms had a lower prevalence of diabetes (p=0.046) than those without persistent cognitive symptoms.
- Those with persistent cognitive symptoms had a longer time between COVID-19 and metamemory assessment than those without persistent cognitive symptoms (p=0.025).
- There were no other group differences on any demographic or clinical variables.

- There were no group differences on any of the memory or metamemory measures:
  - Memory performance (d': p=0.24)
  - Metamemory performance (meta-d': p=0.28)
  - Metamemory efficiency (M-ratio: p=0.85)



- Those with persistent cognitive symptoms had significantly higher symptom scores than those without persistent cognitive symptoms for:
  - Anxiety (GAD-7; p=0.016)
  - Depression (PHQ-9; p<0.001)
  - Somatic Symptoms (PHQ-15; p<0.001)



CONCLUSION

- Persistent self-reported cognitive symptoms were not explained by impaired metacognition.
- All participants demonstrated awareness of their memory performance.
- Psychological distress may be a perpetuating factor of cognitive symptoms.
- Further research is needed to examine the disconnect between global and local metacognition.

REFERENCES

1. van der Feltz-Cornelis, C., Turk, F., Sweetman, J., Khunti, K., Gabbay, M., Sheperd, J., .. . Banerjee, A. (2024). Prevalence of mental health conditions and brain fog in people with long COVID: A systematic review and meta-analysis. General Hospital Psychiatry, 88, 10-22.
2. Fleming, S. M., & Lau, H. C. (2014). How to measure metacognition. Front. Hum. Neurosci., 8.

ACKNOWLEDGEMENTS

I would like to thank BCCHRI and CIHR for their funding and the CONOS Study Team and Panenka Lab for their contributions to the project.

Created with BioRender Poster Builder