

continued to report moderate-severe fatigue, worse medical outcomes, and higher PTSD symptom severity scores at six months.

Conclusions: Most participants were cognitively normal or experienced cognitive recovery following SARS-CoV-2 infection. The 25-30% of participants who showed cognitive impairment cluster into two different neurophenotypes. The dysexecutive phenotype was associated with socioeconomic factors and medical comorbidities that are non-specific to COVID-19, while the amnesic phenotype was associated with COVID-19 severity and anosmia. These results suggest that cognitive sequelae following SARS-CoV-2 infection are not uniform. Deficits may be influenced by distinct patient- and disease-specific factors, necessitating differentiated treatment approaches.

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

Keyword 1: neuroimmunology

Keyword 2: memory disorders

Keyword 3: anoxia

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5 Meta-Analysis of Cognitive Functioning Following Non-Severe COVID-19 Infection

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Objective: To effectively diagnose and treat cognitive post-COVID-19 symptoms, it is important to understand objective cognitive difficulties across the range of acute COVID-19 severity. The aim of this meta-analysis is to describe objective neuropsychological test performance in individuals with non-severe

(mild/moderate) COVID-19 cases in the post-acute stage of infection (>28 days after initial infection).

Participants and Methods: This meta-analysis was pre-registered with Prospero (CRD42021293124) and utilized the PRISMA reporting guidelines, with screening conducted by at least two independent reviewers for all aspects of the screening and data extraction process. Inclusion criteria were established before the article search and were as follows: (1) Studies using adult participants with a probable or formal and documented diagnosis of COVID-19 in the post-acute stage of infection; (2) Studies comparing cognitive functioning using objective neuropsychological tests in one or more COVID-19 groups and a comparison group, or one group designs using tests with normative data; (3) Asymptomatic, mild, or moderate cases of COVID-19. Twenty-seven articles (n=18,202) with three types of study designs and three articles with additional longitudinal data met our full criteria.

Results: Individuals with non-severe initial COVID-19 infection demonstrated worse cognitive performance compared to healthy comparison participants (d=-0.412 [95% CI, -0.718, -0.176]), p=0.001). We used meta-regression to examine the relationship between both average age of the sample and time since initial COVID-19 infection (as covariates in two independent models) and effect size in studies with comparison groups. There was no significant effect for age (b=-0.027 [95% CI (-0.091, 0.038)], p=0.42). There was a significant effect for time since diagnosis, with a small improvement in cognitive performance for every day following initial acute COVID-19 infection (b=0.011 [95% CI (0.0039, 0.0174)], p=0.002). However, those with mild (non-hospitalized) initial COVID-19 infections performed better than did those who were hospitalized for initial COVID-19 infections (d=0.253 [95% CI (0.372, 0.134)], p<0.001). For studies that used normative data comparisons, there was a small, non-significant effect compared to normative data (d=-0.165 [95% CI (-0.333, 0.003)], p=0.055).

Conclusions: Individuals who have recovered from non-severe cases of COVID-19 may be at risk for cognitive decline or impairment and may benefit from cognitive health interventions.

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

Keyword 1: cognitive functioning

Keyword 2: infectious disease

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Poster Session 10: Late Breaking Science

10:45am - 12:00pm
Saturday, 4th February, 2023
Town & Country Foyer

1 The Influence of Depression and Anxiety on Working Memory in Children with ADHD

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Objective: Previous research has explored the performance of working memory in children with ADHD and individual co-occurring disorders, finding that internalizing disorders such as depression and anxiety, both independently negatively impact working memory performance (Saarinen, Fontell, Vuontela, Carlson, & Aronen, 2015; Kofler, Rapport, Bolden, Sarver, Raiker, & Alderson, 2011; Skogan, Zeiner, Egeland, Rohrer-Baumgartner, Urnes, Reichborn-Kjennerud & Aase, 2013). However, there is limited research on the impact of co-occurring depression and anxiety on working memory, which are common in children with ADHD. When depression is present, parts of the prefrontal cortex regions are hypoactive and therefore lead to impairment in executive functioning abilities (Snyder, 2013). In regard to anxiety, previous literature (Moran, 2016) has found that anxious arousal competes with processes located in the prefrontal cortex leaving limited neural resources for executive functioning skills (Moran, 2016). The current study will evaluate the influences of depression and anxiety on working memory in children with ADHD.

Participants and Methods: Participants were from an archived data set, which included 849 individual children ages 7-15 years old and their biological parents, recruited between 2009 and

2015. The 849 children included 76 sibling pairs. Families were part of an ongoing longitudinal study.

The children completed a computerized version of a spatial working memory task identical to the spatial span task from CANTAB (De Luca et al., 2003). In regard to verbal working memory, children completed Digit Span from the WISC-IV, including both forward and backward conditions. Depression was measured by the Children's Depression Inventory, 2nd edition (Kovacs, 2004) and anxiety was measured by the Multidimensional Anxiety Scale for Children, 2nd edition (MASC-2) (March, 2012). ADHD was measured by having the parents and teachers complete two questionnaires: the ADHD rating scale (ADHD-RS; DuPaul et al. 1998), the Connor's Rating Scale, 3rd edition (CRS-R, Connors 2003), and an in person semi-structured diagnostic interview (Kiddie Schedule for Affective Disorders and Schizophrenia – KSADS, Kaufman et al. 1997).

A best estimate DSM-IV ADHD (American Psychiatric Association [APA], 1994) diagnosis was established by a multidisciplinary diagnostic team (ADHD diagnosis agreement kappa = .88). On cases where consensus was not achieved, they were excluded from the participant pool, and this became the clinical referred control group for the study.

Results: The results indicated that children with ADHD and a co-occurring diagnosis of depression experience more difficulties with working memory abilities than those who do not have a co-occurring diagnosis of depression. Additionally, depression has a greater impact on verbal working memory in children with ADHD than anxiety does alone. This study also found that there were no significant gender differences between children with ADHD who identify as males and females on verbal or visual working memory tasks.

Conclusions: The findings of this study indicate the importance of addressing depressive symptoms in children with ADHD. With a holistic understanding of working memory deficits in children with ADHD as well as potential gender differences, caretakers and providers can integrate more effective intervention plans to help mitigate significant working memory deficits.

Categories: ADHD/Attentional Functions

Keyword 1: depression