Brain Fog and Neurocognitive Assessment in ME/CFS

Carsten Finke
Charité – Universitätsmedizin Berlin

COGNITIVE NEUROLOGY LAB
Charité - Universitätsmedizin Berlin

CHARITÉ
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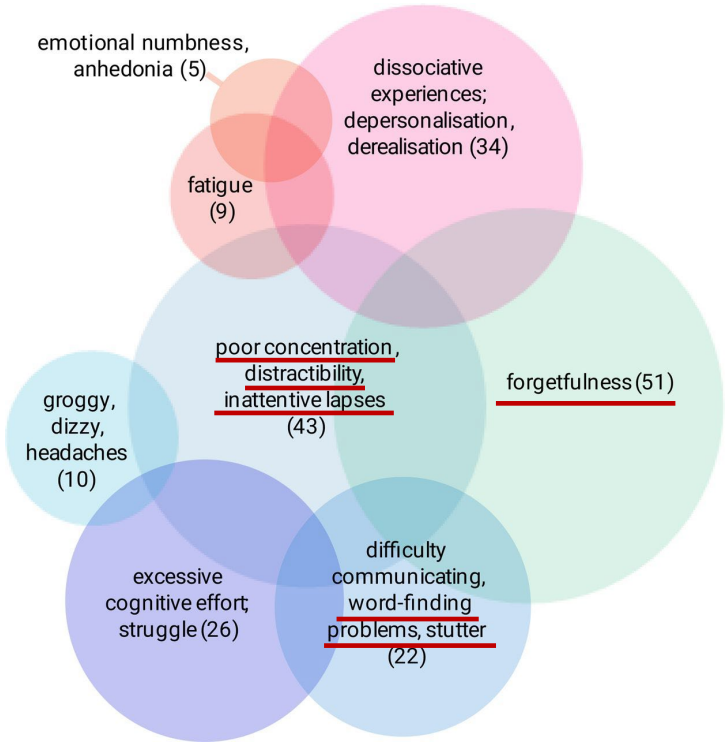
Brain fog

The distribution and overlap of different types of ‘brain fog’ experience in 141 first person descriptions



McWhirter et al., JNNP, 2022

ME/CFS
DEUTSCHE GESELLSCHAFT FÜR ME/CFS E.V.

Brain Fog (deutsch: Gehirnnebel) ist die von ME/CFS-Betroffenen verwendete Bezeichnung für die häufig zusammen auftretenden neurokognitiven Symptome. **Typisch für die kognitiven Einschränkungen bei ME/CFS sind eine verlangsamte Informationsverarbeitung, erhebliche Wortfindungs- und Sprachstörungen, ein gestörtes Kurzzeitgedächtnis sowie eine eingeschränkte Konzentrationsfähigkeit.** Die Kognition wirkt wie „verklebt“, die richtigen Worte werden nicht gefunden und die Erkrankten vergessen im Satz, was sie sagen wollten. Multitasking ist nicht mehr möglich. Dazu können Wahrnehmungs- und sensorische Störungen wie **Desorientierung, räumliche Unsicherheit, verschwommene Sicht und Fokussierungsprobleme** kommen (siehe Internationale und Kanadische Konsenskriterien).

CAMINO

Cognition and MRI in post-COVID

N = 50 patients with neurological post-COVID

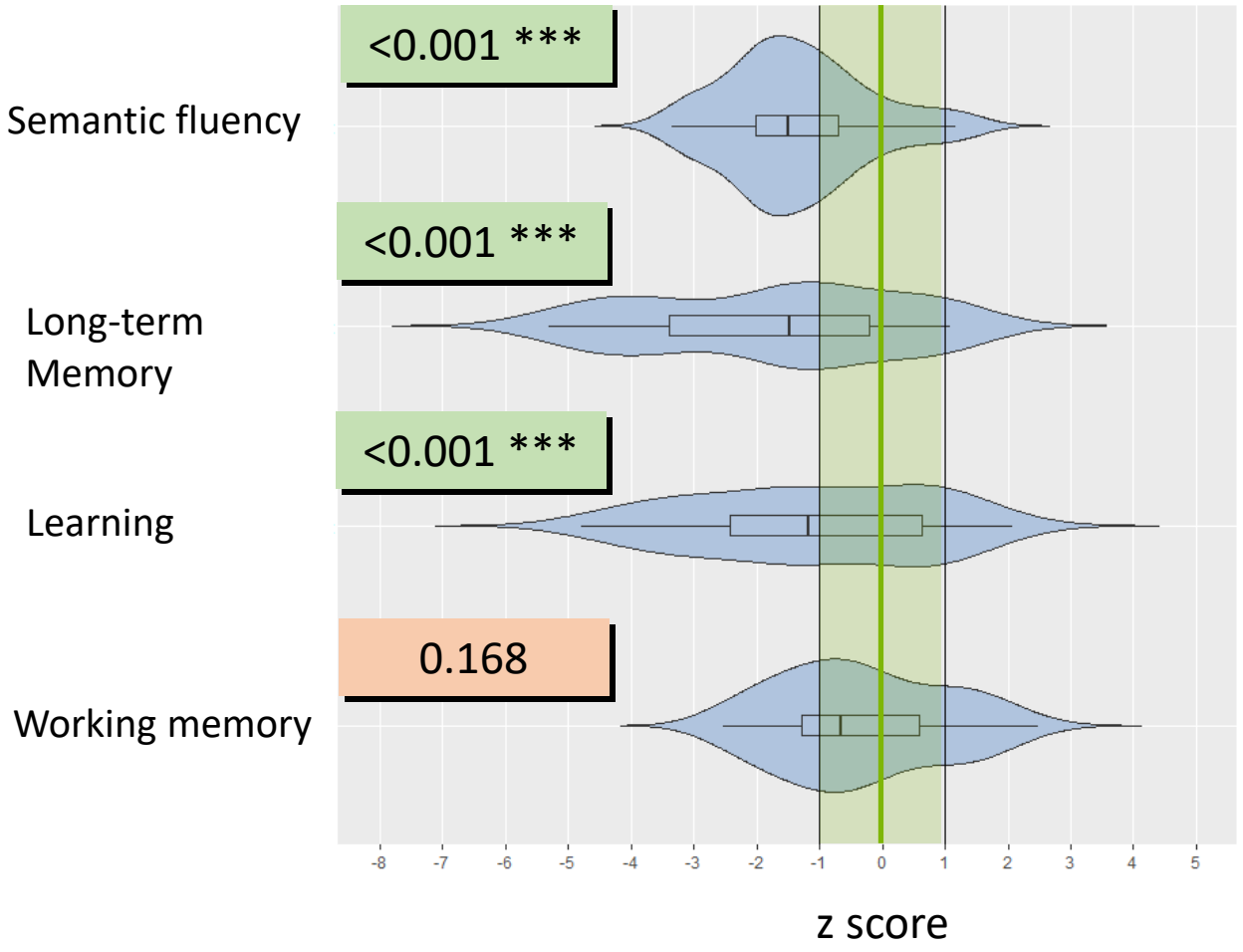
- Mean age: 44.0 years, 80% female
- Time since COVID-19: 8 ± 3 months
- Subjective cognitive impairment
- Recruiment via post-COVID outpatient clinic at the Dept. of Neurology at Charité

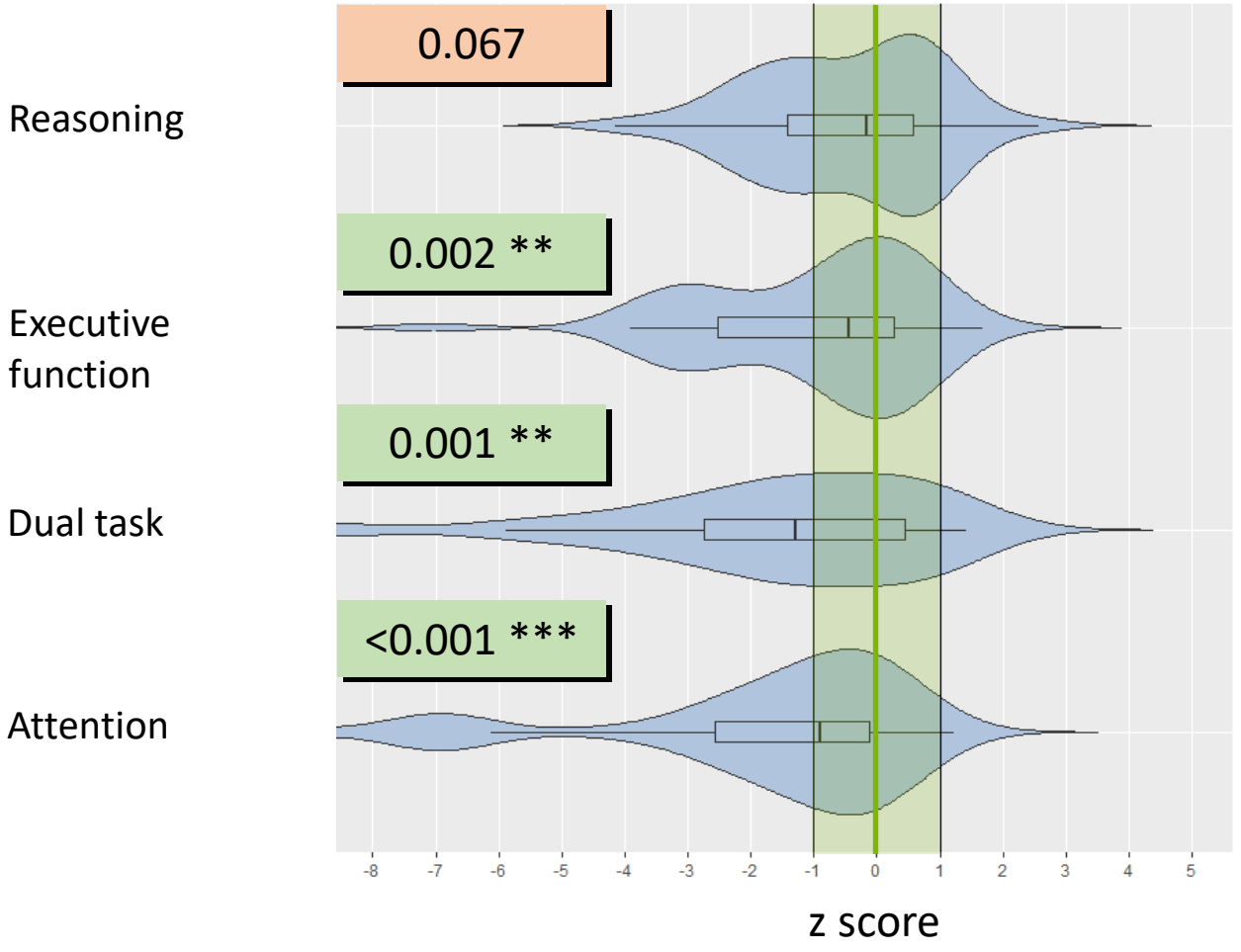
N = 50 sex-, age- and education-matched healthy controls

- Mean age: 42.5 years, 81% female

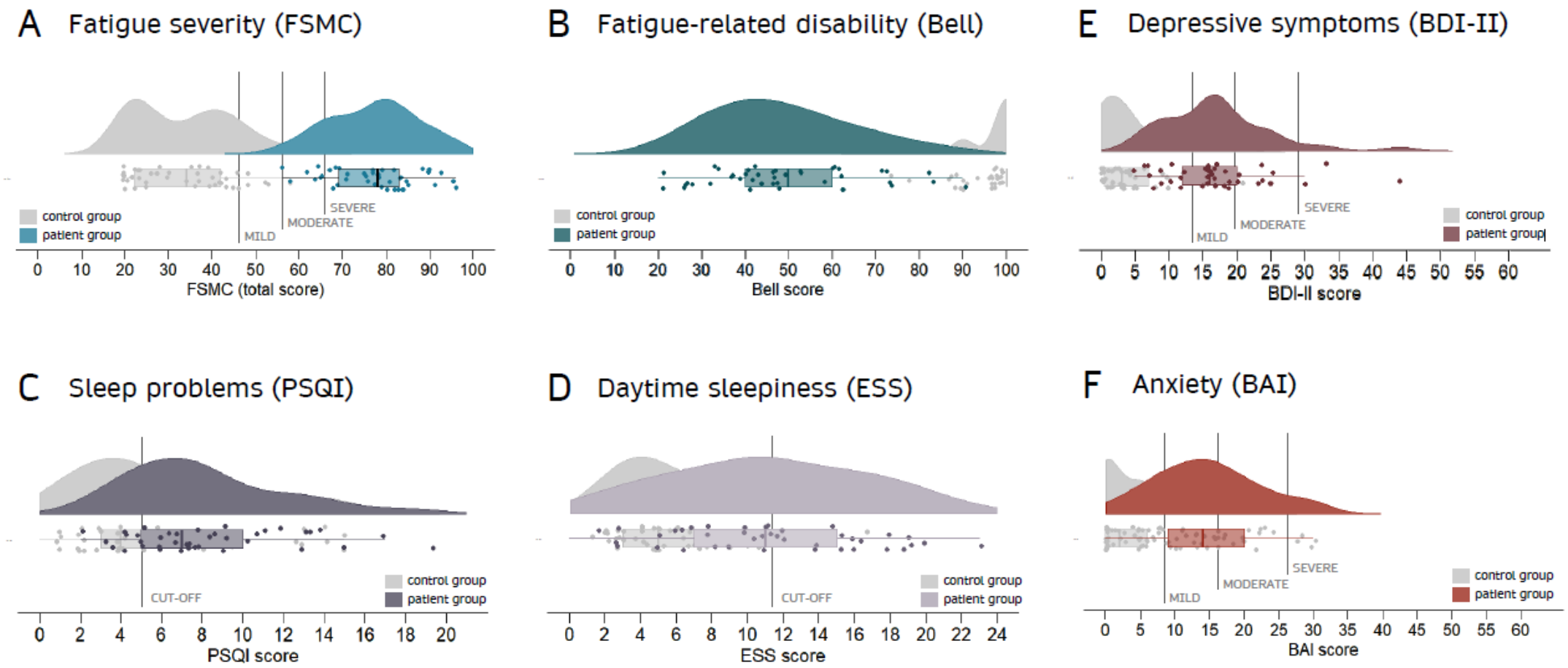
Cognitive performance

Patients (relative to controls)





Psychosocial outcome

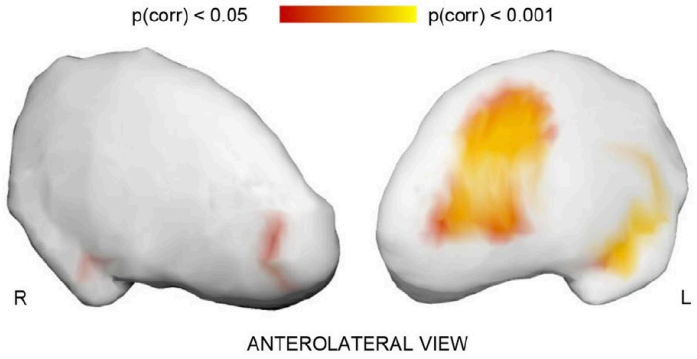


Heine et al, eClinical Medicine, 2023

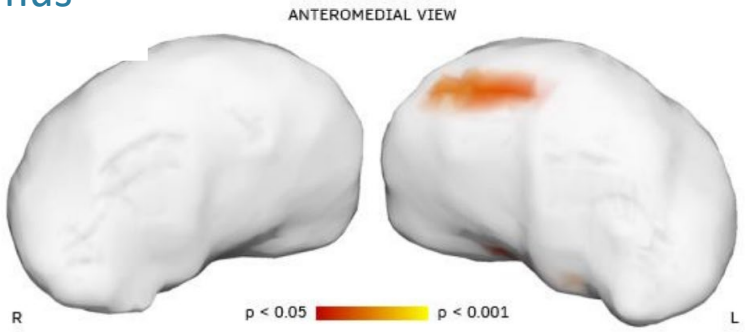
Basal ganglia & Thalamus

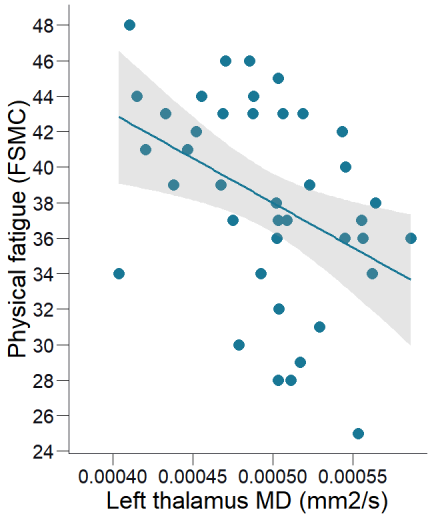
Atrophy & impaired microstructural integrity

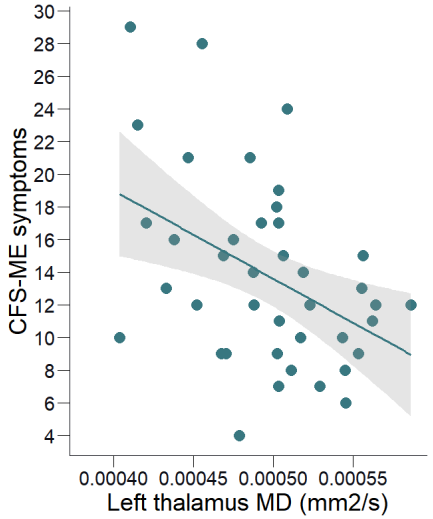
Putamen



Thalamus







Heine et al, eClinical Medicine, 2023

NAPKON
NATIONALES
PANDEMIE
KOHORTEN
NETZ

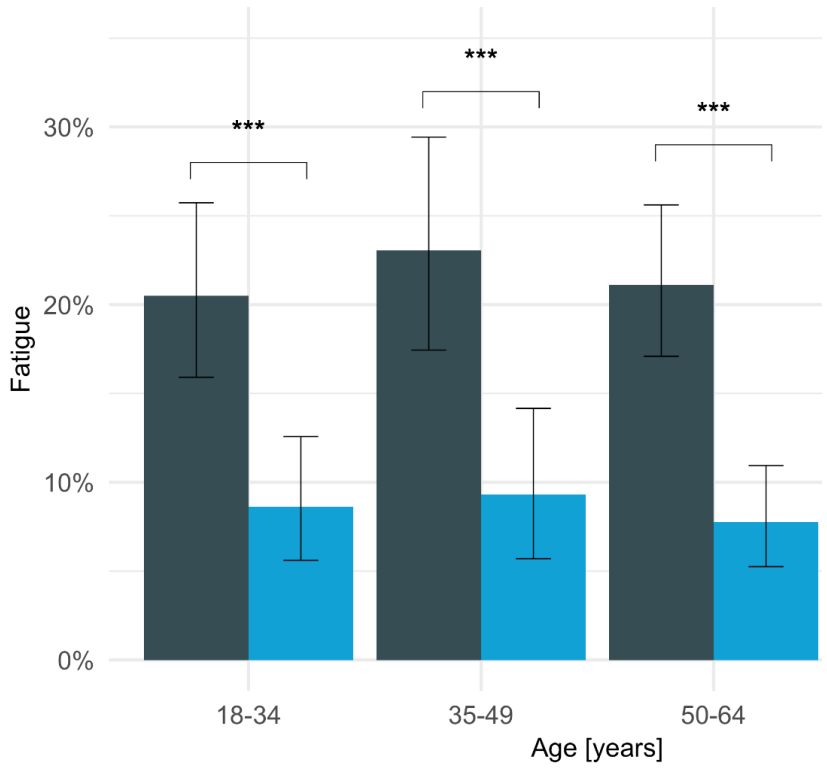
Cohort

- All PCR+ invited
- 03/2020 – 02/2021
- >6 months after infection
- N = 1000

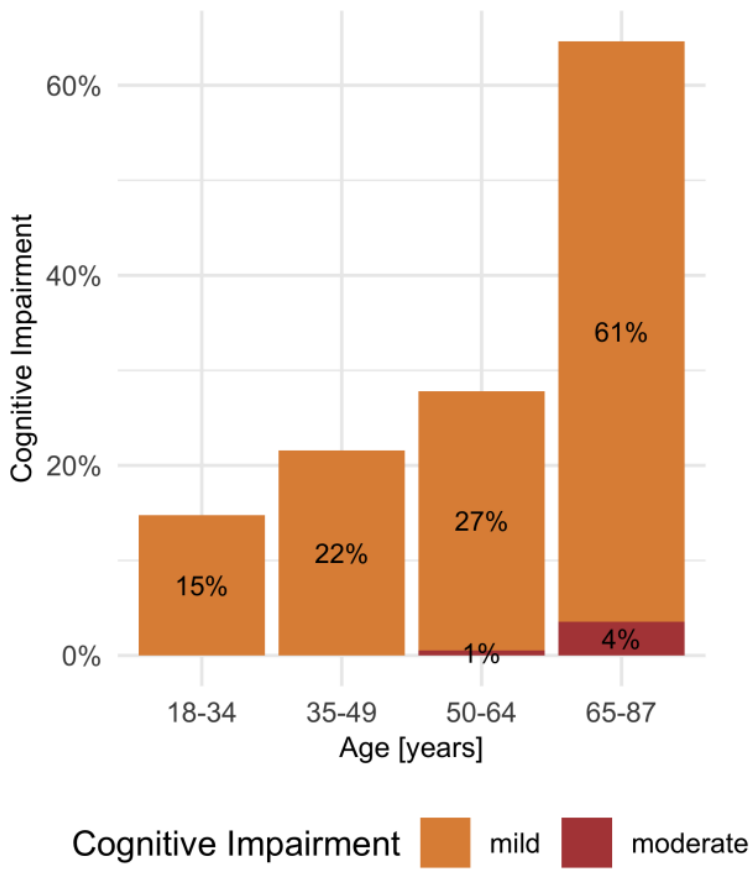
Controls

- N = 1000

Post-COVID Fatigue



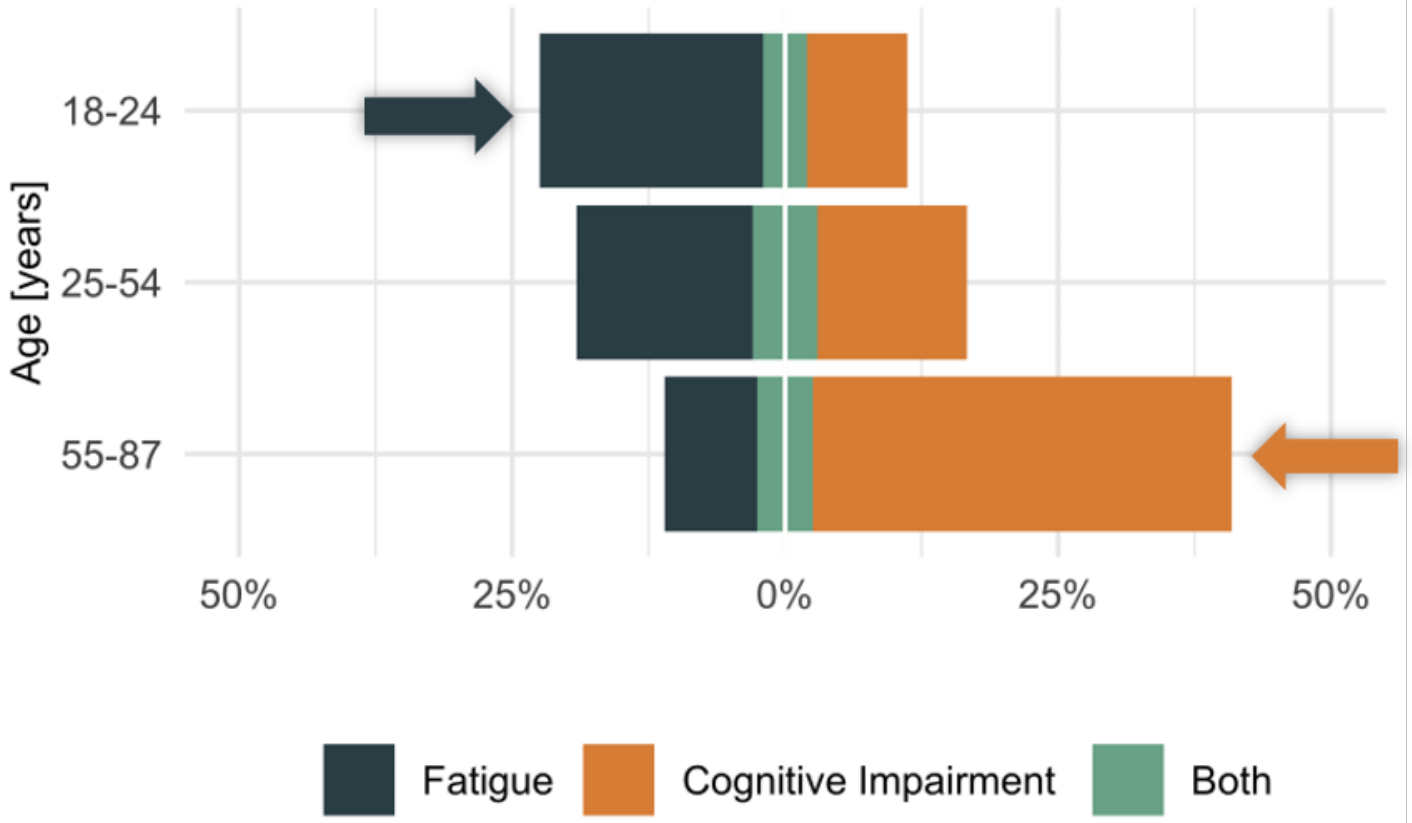
Cognitive deficits



Hartung et al, eClinical Medicine, 2022

Post-COVID Fatigue

Cognitive deficits



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Predictors: post-COVID fatigue

- Number of acute COVID symptoms
- Depression disorder
- Female gender
- Younger age
- Any neuropsychiatric disease

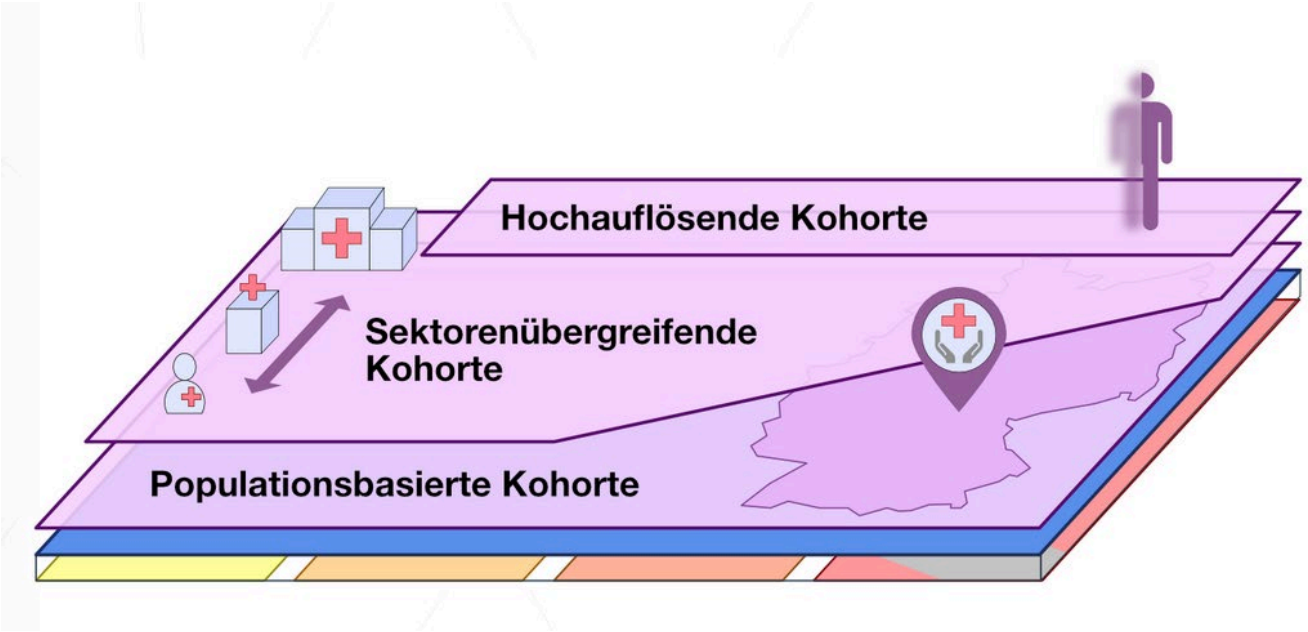
Predictors: post-COVID cognitive deficits

- Older age
- Shorter education
- Any neuropsychiatric disease
- Male gender

Hartung et al, eClinical Medicine, 2022

Longitudinal Study

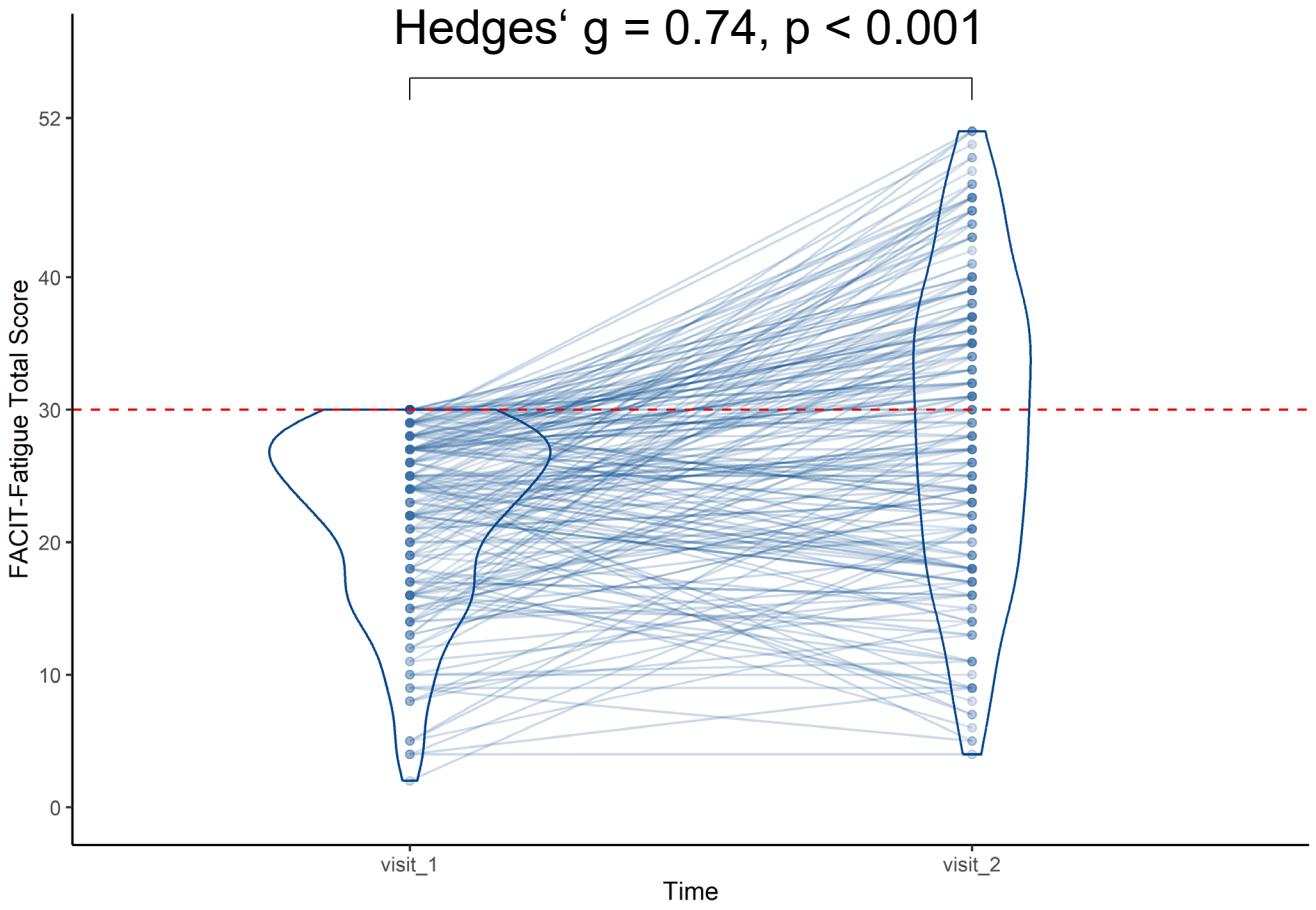
- All PCR+ invited
- >6 months after infection
- Baseline: n ~ 3300
- Follow-Up: n ~ 900



Longitudinal Study

Patients with relevant fatigue at baseline (FACIT < 31; n = 401)

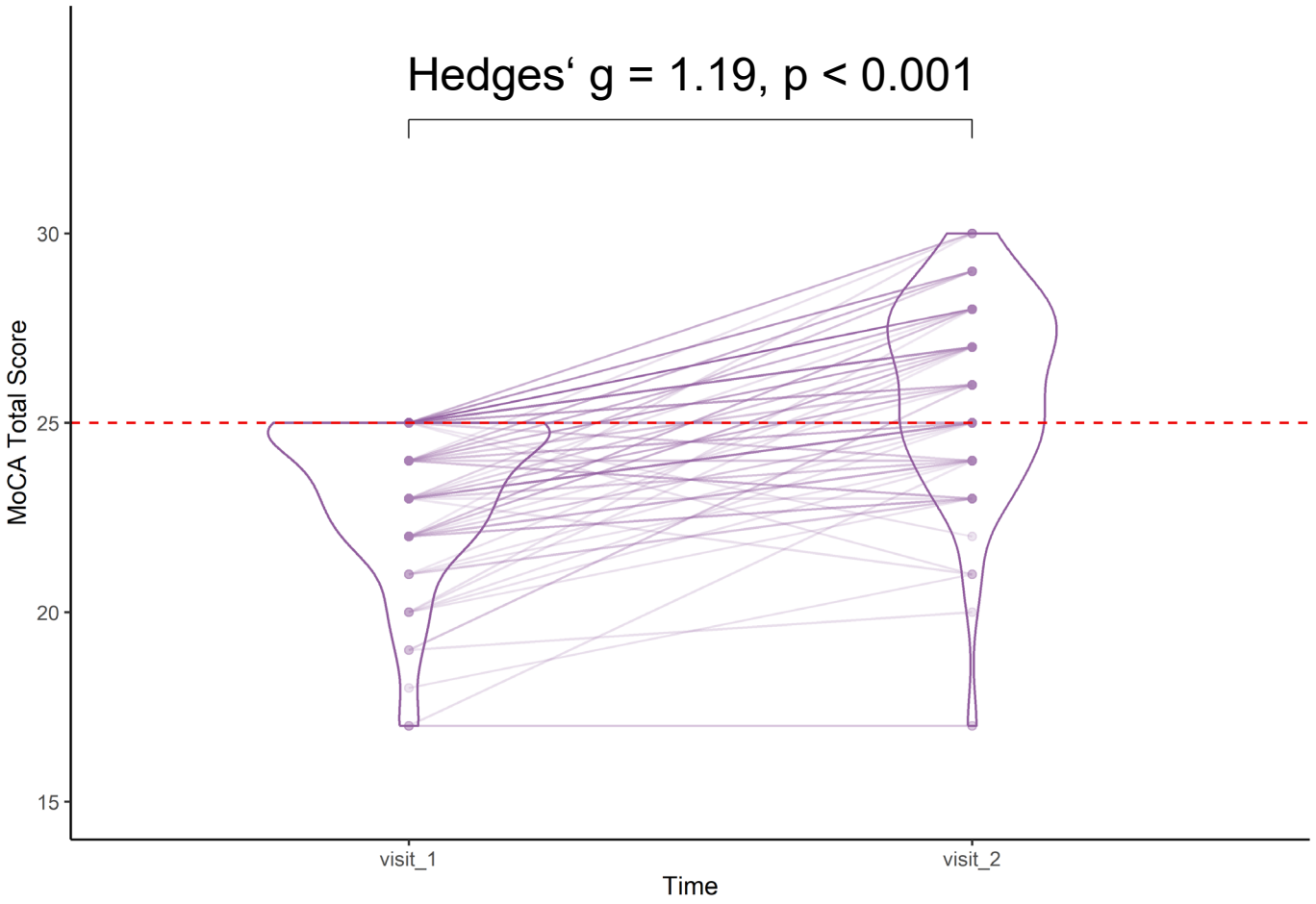
→ significant improvement with large effect size



Longitudinal Study

Patients with relevant cognitive deficits at baseline (MoCA < 26; n = 230)

→ significant improvement with large effect size



Conclusion

- Post COVID syndrome is associated with deficits of attention, memory, executive function
- Structural MRI shows reduced volume & impaired microstructural integrity of basal ganglia and thalamus in assocation with fatigue in Post COVID syndrome
- Population-based study: high prevalence of fatigue and cognitive impairment, with significant improvement at follow-up one year later

COGNITIVE NEUROLOGY LAB
Charité - Universitätsmedizin Berlin

Dr. Tim Hartung
Dr. Stephan Krohn
Dr. Katharina Wurdack
Sophia Rekers
Dr. Josephine Heine
Katia Schwichtenberg
Pia Klabunn
Lars Schlenker
Maron Mantwill

Dr. J. Bellmann-Strobl.
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Dr. Fabian Boesl
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Prof. Kathrin Reetz
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Dr. Christian Hohenfeld
Dr. Ana Costa

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FREUNDESKREIS DER CHARITÉ

EUROPEAN JOINT PROGRAMME RARE DISEASES

SFB 1315 Mechanisms and Disturbances in Memory Consolidation: From synapses to systems

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