

WELLNESS TEAM CULTURE

Evidence-based wellness, leadership, and team dynamics

RESEARCH BRIEF · THE EVIDENCE, PLAINLY

The Fog Is Measurable

ISSUE 90 · AUGUST 18, 2026 · BURNOUT & RECOVERY

Brain fog is one of the most commonly reported symptoms of burnout, and one of the least trusted by the people who have it. The evidence says the distrust is misplaced. Across pooled studies, people with clinical burnout show measurable deficits in memory, attention, and executive function on standardized tests. The deficits are small to moderate at the group level, they are largest in attention and processing speed, and follow-up work suggests they lift slowly, often trailing behind emotional recovery.

WHAT WAS ACTUALLY STUDIED

01 Gavelin et al. (2022), Work & Stress

TIER 1 · SYSTEMATIC REVIEW AND META-ANALYSIS

A systematic review and meta-analysis pooling 17 studies that compared 730 patients with clinical burnout (help-seeking or diagnosed populations, largely Northern European samples where stress-related exhaustion is a clinical diagnosis) against 649 healthy controls on standardized neuropsychological tests. Pooled effects showed significantly worse performance in patients across episodic memory (Hedges' $g = -0.36$, 95% CI -0.57 to -0.15), short-term and working memory ($g = -0.36$, 95% CI -0.52 to -0.20), executive function ($g = -0.39$, 95% CI -0.55 to -0.23), and attention and processing speed, the largest and most precise estimate ($g = -0.43$, 95% CI -0.57 to -0.29). Fluency also came in lower ($g = -0.53$) but with a confidence interval wide enough (-1.04 to -0.03) to span near-trivial to large. All comparisons are cross-sectional: patients versus controls at one point in time.

02 Eskildsen et al. (2015, 2016), Stress

TIER 1 · PROSPECTIVE MATCHED COHORT

A Danish cohort of 59 outpatients on sick leave with prolonged work-related stress complaints (major depression excluded), each matched pairwise to a healthy control on sex, age, and education, tested with a comprehensive neuropsychological battery at first care-seeking and again one year later. At baseline the clearest deficits were in prospective memory, processing speed, and complex working memory, with generally small to medium effects. At one year, after adjusting for practice effects, patients had improved on prospective memory and processing speed, yet still performed worse than controls on all tests, with about half of the comparisons reaching statistical significance. Notably, self-reported stress level did not correlate with test performance at baseline.

03 Nelson et al. (2021), BMC Psychology

TIER 1 · CROSS-SECTIONAL CLINICAL COMPARISON

One hundred three patients with diagnosed stress-related exhaustion disorder compared with 58 matched healthy controls on the type and magnitude of subjective cognitive complaints, alongside objective cognitive testing. Patients reported considerably more everyday cognitive failures than controls, and were specifically more likely to report memory failures in situations offering few external cues or reminders. In both groups, the level of complaint tracked demographic and psychological factors (depression, anxiety, burnout levels) rather than objective test performance. The authors conclude that complaints and test scores measure different aspects of cognitive functioning, and point to external cognitive aids as a potentially valuable component of stress rehabilitation.

04 Gavelin et al. (2017), Psychiatry Research: Neuroimaging

TIER 2 · CROSS-SECTIONAL FMRI

Fifty-five patients with clinical exhaustion disorder performed a working-memory task (n-back) during fMRI scanning. Higher burnout levels were associated with greater activation in the rostral prefrontal cortex, posterior parietal cortex, and striatum, primarily at the higher memory load, while burnout level showed no significant association with task performance itself. The authors' interpretation: patients with more severe burnout appear to recruit additional cognitive resources to uphold the same level of performance. A small embedded training comparison (10 versus 11 patients) is too underpowered to support conclusions and is not leaned on here.

05 Nelson et al. (2025), BMC Psychiatry

TIER 2 · QUALITATIVE LONG-TERM FOLLOW-UP

Semi-structured interviews with 38 people (32 women, mean age 52) diagnosed with exhaustion disorder 6 to 10 years earlier, exploring how cognitive functioning and recovery were experienced over the long term. Participants described meaningful improvement in everyday cognitive functioning alongside remaining symptoms, most often centered on upholding executive control under load. Barriers and facilitators varied: restorative and compensatory strategies, external conditions, and the degree of worry all mattered, and several participants described an accepting, self-compassionate stance toward their own cognition as part of what allowed recovery to proceed. Experiences, not measurements: this study reports how recovery felt from the inside.

WHAT THEY FOUND

The fog is measurable at the group level. Pooling 17 studies, patients with clinical burnout performed measurably worse than healthy controls on standardized tests of episodic memory, short-term and working memory, executive function, and attention with processing speed. The effects are small to moderate, and the largest and most precisely estimated deficit sits in attention and processing speed ($g = -0.43$), which fits the lived report: reading without retaining, losing the thread mid-task, needing more passes to do the same work (Gavelin et al., 2022).

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patients with clinical burnout across 17 studies, tested against 649 healthy controls on standardized neuropsychological instruments. Every pooled cognitive domain came back lower in the burnout group (Gavelin et al., 2022).

The impairment can be invisible from the outside, because performance is often held up at extra cost to the system. In the fMRI study, patients with higher burnout levels showed greater activation in prefrontal, parietal, and striatal regions during a working-memory task while performing at the same level as patients with lower burnout. The scanner picture is consistent with a system recruiting more machinery to deliver the same output, which is also how patients describe it from the inside: everything still gets done, and everything takes more effort (Gavelin et al., 2017).

What people feel and what tests show are related but distinct. Patients with exhaustion disorder report far more everyday cognitive failures than controls, and their failures cluster in situations with few external cues, but the size of a person's complaints tracks their psychological distress rather than their objective test scores. Complaints and test performance appear to measure different layers of the problem, and the practical implication the authors draw is direct: build external cues and aids into daily life rather than trusting an overloaded internal system (Nelson et al., 2021).

The recovery curve is real and slower than most people expect. In the Danish cohort, patients retested one year after seeking care had genuinely improved, particularly in processing speed and prospective memory, and still performed below their matched controls on every test in the battery, with about half of those gaps reaching significance. Memory differences became more visible at follow-up even as other domains improved (Eskildsen et al., 2016).

Six to ten years out, the picture is mostly good. People interviewed years after rehabilitation for exhaustion disorder described substantial recovery of everyday cognitive functioning, with residual strain most often showing up as difficulty upholding executive control under load. Worry about one's own cognition was described as a barrier to recovery, while accepting, self-compassionate stances and well-fitted compensatory strategies were described as facilitators (Nelson et al., 2025).

Five sources, and the honest reading holds three ideas at once.

First, the deficits are real. This is not a story about oversensitive people misreading normal forgetfulness. Across 730 patients and 17 studies, clinical burnout comes with measurable group-level deficits on standardized instruments, largest in attention and processing speed (Gavelin et al., 2022). The fMRI data adds a mechanism-shaped detail: performance can be held level while the system underneath recruits more resources to hold it, which is why the fog can be severe from the inside and invisible from the outside (Gavelin et al., 2017).

Second, the deficits are moderate, and the felt experience is not a gauge of the measured one. Small-to-moderate group effects do not mean any individual is impaired, and the complaint data shows that how bad the fog feels tracks distress more closely than it tracks test scores (Nelson et al., 2021). That cuts in a specific, useful direction: intense worry about cognitive decline in burnout is usually tracking the load on the system, not documented decline, and in the long-term interviews that worry was itself named as a barrier to recovery (Nelson et al., 2025).

Third, the timeline is long and the endpoint is mostly good. One year after seeking care: improved, not yet back to matched controls (Eskildsen et al., 2016). Six to ten years after rehabilitation: substantially recovered, with residual executive strain under load for some (Nelson et al., 2025). Nothing in these data supports the fear of a permanently damaged brain, and nothing supports the expectation of a quick rebound either. The practical stance the evidence points to is the one the newsletter builds on: treat the fog as a symptom with a timeline, offload memory to external structure while it lifts, and grade recovery on trend rather than against a peak-year baseline.

WHAT THIS DOES NOT PROVE

Every patient-versus-control comparison here is observational. Cross-sectional designs cannot establish that burnout caused the cognitive differences, and the meta-analysis pools studies that defined clinical burnout in different ways across different healthcare systems, mostly in Northern Europe, where stress-related exhaustion is a formal diagnosis. Group-level effects of this size describe populations, not individuals, and cannot diagnose anyone.

The one-year cohort followed patients with prolonged work-related stress complaints rather than a single uniform diagnosis, excluded major depression at intake, and improved-but-below-controls rested on roughly half of the test comparisons reaching significance. Practice effects were adjusted using the control group, which is the right move, but residual confounding in a 59-pair observational cohort cannot be ruled out.

The fMRI finding is a cross-sectional association in 55 patients. Reading elevated activation as compensatory extra recruitment is an interpretation consistent with the data, not a demonstrated mechanism, and the embedded training comparison was far too small to establish anything about interventions.

The long-term picture rests on 38 self-selected interviewees, mostly women, recalling a 6-to-10-year arc. Qualitative work of this kind maps the experience of recovery, not its measured trajectory, and people willing to be interviewed years later may differ from those who were not.

The dissociation between complaints and test performance cuts both ways. It is reassuring against catastrophic self-assessment, and it also means a reassuring test score does not settle whether someone is struggling in daily life. Both layers are real.

None of this is medical advice. Cognitive fog has many possible causes, including sleep disorders, depression, thyroid conditions, and medication effects, and nothing here distinguishes among them for any individual. Fog that is severe, worsening, or not clearly tied to a period of chronic stress belongs in front of a clinician.

WHAT IT MEANS FOR YOU

Rename the fog first, because the naming does work. The evidence supports calling it a documented, group-level, small-to-moderate, mostly reversible symptom of an overloaded stress system, and the long-term interviews suggest that worry about cognition slows recovery while an accepting stance supports it. Move memory outside your head, because the complaint data localizes failures to situations with few external cues, and the researchers themselves point to external cognitive aids in rehabilitation: one calendar, one list, alarms for anything time-bound, notes at the point of need. Single-thread the day, because executive function and attention carry the largest measured deficits and the residual long-term

strain shows up exactly when people try to uphold executive control under load. Grade recovery on trend rather than against your old baseline, because the one-year data shows genuine improvement that still trails matched controls, meaning a peak-year comparison will read as failure while a month-over-month comparison will read as progress. And if you lead someone coming back from burnout, scaffold rather than quiz: put decisions in writing, keep briefings short and single-channel, and let external structure do what an overloaded working memory temporarily cannot. The newsletter walks through those five moves. The research above is why they are the five, and where each one runs out.

GO TO THE SOURCE

TIER 1 · META-ANALYSIS Gavelin, H. M., Domellöf, M. E., Åström, E., Nelson, A., Launder, N. H., Neely, A. S., & Lampit, A. (2022). Cognitive function in clinical burnout: A systematic review and meta-analysis. *Work & Stress*, 36(1), 86-104. doi.org/10.1080/02678373.2021.2002972

TIER 1 · PROSPECTIVE COHORT Eskildsen, A., Andersen, L. P., Pedersen, A. D., & Andersen, J. H. (2016). Cognitive impairments in former patients with work-related stress complaints, one year later. *Stress*, 19(6), 559-566. doi.org/10.1080/10253890.2016.1222370

TIER 1 · BASELINE CROSS-SECTIONAL Eskildsen, A., Andersen, L. P., Pedersen, A. D., Vandborg, S. K., & Andersen, J. H. (2015). Work-related stress is associated with impaired neuropsychological test performance: a clinical cross-sectional study. *Stress*, 18(2), 198-207. doi.org/10.3109/10253890.2015.1004629

TIER 1 · CROSS-SECTIONAL Nelson, A., Gavelin, H. M., Boraxbekk, C.-J., Eskilsson, T., Josefsson, M., Slunga Järvholm, L., & Neely, A. S. (2021). Subjective cognitive complaints in patients with stress-related exhaustion disorder: a cross sectional study. *BMC Psychology*, 9, 84. doi.org/10.1186/s40359-021-00576-9

TIER 2 · FMRI Gavelin, H. M., Neely, A. S., Andersson, M., Eskilsson, T., Järvholm, L. S., & Boraxbekk, C.-J. (2017). Neural activation in stress-related exhaustion: Cross-sectional observations and interventional effects. *Psychiatry Research: Neuroimaging*, 269, 17-25. doi.org/10.1016/j.psychres.2017.08.008

TIER 2 · QUALITATIVE FOLLOW-UP Nelson, A., Aronsson, I., Tillfors, M., Neely, A. S., & Gavelin, H. M. (2025). The experienced route to cognitive health: Cognitive recovery in persons with prior stress-related Exhaustion disorder. *BMC Psychiatry*, 25, 375. doi.org/10.1186/s12888-025-06713-7

Tier 1 means peer-reviewed primary research or meta-analysis, the strongest evidence. Tier 2 means an expert framework or smaller study that traces to peer-reviewed work. We grade every source so you can see the weight behind each claim.

Pegasus Realm publishes Wellness Team Culture and the practice resources behind it.

Education, not medical advice.

