Supplementary Material

Before performing the analyses, all the data were normalized (i.e. min-max normalization). In elastic net models, the applied regularizations (L1 and L2) force shrinkage of the coefficients, which can also be estimated to zero, reducing overfitting and eliminating irrelevant or redundant variables. This, not only increases the model interpretability, but also allows dealing with multicollinearity induced by highly correlated variables (i.e. cytokines and chemokines). We implemented a non-parametric bootstrap procedure (5000 resamples with replacement) in order to provide estimates of mean log Odd Ratio, related 95% confidence intervals and variable inclusion probability (VIP) (Bunea et al., 2011b). In regularized regression, asymptotically valid p-values are not available; VIP allows providing a measure of stability of coefficient as an estimate of posterior probability of the predictors included in the model (Abram et al., 2016). We applied a threshold of 75% to VIP (Abram et al., 2016). Age, sex, and education were entered as nuisance covariates. At each bootstrap, λ values used in elastic net model was defined through a 5-folds nested cross validation procedure with the better model fitting defined as minimum expected deviance, as calculated by cross-validations. To minimize the λ deviance is equivalent to maximize the λ loglikelihood. The algorithm function was solved through the coordinate descent algorithm implemented as implemented in MATLAB (Friedman et al., 2010).

	mean± sd	Lower CI	Higher CI	VIP
Intercept	0.59±0.13	0.34	0.84	100.00
Age	-0.04±0.05	-0.13	0.05	74.34
Sex	-0.06±0.03	-0.12	0.00	96.48
Education	0.19±0.06	0.08	0.30	99.80
Oxigen Saturation Follow-up	0.01±0.11	-0.20	0.22	37.94
Glycaemia Follow-up	-0.19±0.16	-0.49	0.12	**85.56**
Duration Of Hospitalization	-0.05±0.09	-0.23	0.12	59.10
ICU	0.03±0.04	-0.06	0.12	64.78
Duration of ICU stay	0.00±0.19	-0.37	0.37	30.90
Non-Invasive Ventilation	0.01±0.02	-0.03	0.05	49.94
Hypertension	0.01±0.02	-0.03	0.04	56.14
Coronaropathy	-0.15±0.06	-0.27	-0.04	**96.58**
Diabetes Mellitus	0.04±0.05	-0.06	0.14	65.40
Chronic obstructive pulmonary disease	0.06±0.08	-0.09	0.21	58.60
Chronic Renal Insufficiency	0.00±0.04	-0.09	0.09	46.74
ZSDS	-0.04±0.06	-0.15	0.07	55.88

S_Table 1. Coefficients estimates for 5000 bootstrapped elastic net regression predicting verbal memory performance.

	mean± sd	Lower CI	Higher CI	VIP
Intercept	0.39±0.10	0.19	0.59	100.00
Age	0.03±0.04	-0.05	0.11	58.82
Sex	0.07±0.03	0.02	0.13	99.22
Education	0.15±0.05	0.04	0.25	99.26
Oxigen Saturation Follow-up	-0.01±0.09	-0.18	0.16	37.08
Glycaemia Follow-up	-0.06±0.10	-0.25	0.14	57.44
Duration Of Hospitalization	-0.04±0.07	-0.17	0.09	50.02
ICU	0.03±0.04	-0.04	0.10	67.20
Duration of ICU stay	0.02±0.09	-0.15	0.20	31.20
Non-Invasive Ventilation	-0.01±0.02	-0.06	0.03	55.66
Hypertension	0.01±0.02	-0.02	0.04	57.64
Coronaropathy	0.00±0.02	-0.03	0.03	24.98
Diabetes Mellitus	-0.01±0.05	-0.10	0.08	55.88
Chronic obstructive pulmonary disease	0.01±0.05	-0.08	0.10	46.96
Chronic Renal Insufficiency	-0.03±0.07	-0.16	0.11	57.68
ZSDS	-0.06±0.06	-0.18	0.05	**79.50**

S_Table 2. Coefficients estimates for 5000 bootstrapped elastic net regression predicting working memory performance.

	mean± sd	Lower CI	Higher CI	VIP
Intercept	0.43±0.31	-0.18	1.04	100.00
Age	-0.05±0.05	-0.15	0.06	66.30
Sex	-0.02±0.03	-0.07	0.04	45.38
Education	0.03±0.05	-0.07	0.12	49.68
Oxigen Saturation Follow-up	0.26±0.33	-0.39	0.92	62.64
Glycaemia Follow-up	-0.05±0.11	-0.27	0.17	47.74
Duration Of Hospitalization	-0.06±0.11	-0.28	0.17	40.66
ICU	0.04±0.05	-0.05	0.14	69.00
Duration of ICU stay	0.12±0.22	-0.31	0.55	46.76
Non-Invasive Ventilation	0.01±0.03	-0.04	0.06	46.60
Hypertension	0.01±0.02	-0.03	0.05	44.30
Coronaropathy	0.06±0.07	-0.09	0.20	55.96
Diabetes Mellitus	-0.02±0.05	-0.10	0.07	46.08
Chronic obstructive pulmonary disease	-0.02±0.03	-0.08	0.05	39.62
Chronic Renal Insufficiency	0.00±0.04	-0.08	0.09	33.20
ZSDS	-0.09±0.08	-0.24	0.07	70.44

S_Table 3. Coefficients estimates for 5000 bootstrapped elastic net regression predicting psychomotor coordination.

	mean± sd	Lower CI	Higher CI	VIP
Intercept	0.31±0.18	-0.03	0.66	100.00
Age	0.03±0.05	-0.07	0.12	53.44
Sex	0.02±0.03	-0.03	0.07	63.12
Education	0.19±0.08	0.04	0.34	96.78
Oxigen Saturation Follow-up	0.00±0.16	-0.31	0.30	28.98
Glycaemia Follow-up	-0.04±0.19	-0.41	0.33	52.90
Duration Of Hospitalization	0.04±0.08	-0.12	0.20	48.24
ICU	-0.03±0.05	-0.13	0.06	51.42
Duration of ICU stay	0.08±0.14	-0.19	0.35	49.96
Non-Invasive Ventilation	-0.01±0.02	-0.06	0.04	46.48
Hypertension	0.02±0.03	-0.03	0.08	65.32
Coronaropathy	-0.03±0.05	-0.13	0.07	49.58
Diabetes Mellitus	0.02±0.07	-0.11	0.15	52.74
Chronic obstructive pulmonary disease	-0.04±0.05	-0.13	0.05	56.24
Chronic Renal Insufficiency	0.06±0.09	-0.12	0.23	61.64
ZSDS	-0.07±0.06	-0.20	0.05	**80.18**

S_Table 4. Coefficients estimates for 5000 bootstrapped elastic net regression predicting verbal fluency.

	mean± sd	Lower CI	Higher CI	VIP
Intercept	0.45±0.11	0.23	0.66	100.00
Age	-0.13±0.06	-0.24	-0.02	98.52
Sex	-0.02±0.03	-0.08	0.03	68.36
Education	0.21±0.06	0.10	0.32	99.92
Oxigen Saturation Follow-up	0.00±0.08	-0.16	0.16	36.66
Glycaemia Follow-up	-0.06±0.13	-0.31	0.19	49.02
Duration Of Hospitalization	-0.02±0.05	-0.12	0.09	39.62
ICU	0.03±0.04	-0.05	0.12	64.82
Duration of ICU stay	0.02±0.14	-0.26	0.30	42.24
Non-Invasive Ventilation	-0.01±0.02	-0.05	0.03	49.68
Hypertension	0.00±0.02	-0.03	0.03	46.20
Coronaropathy	0.00±0.05	-0.09	0.09	43.70
Diabetes Mellitus	0.02±0.04	-0.06	0.10	48.64
Chronic obstructive pulmonary disease	0.01±0.03	-0.05	0.08	31.04
Chronic Renal Insufficiency	-0.04±0.09	-0.21	0.13	60.60
ZSDS	-0.10±0.07	-0.24	0.04	**87.88**

S_Table 5. Coefficients estimates for 5000 bootstrapped elastic net regression predicting attention and speed of information processing.

	mean± sd	Lower CI	Higher CI	VIP
Intercept	0.20±0.05	0.11	0.30	100.00
Age	0.00±0.01	-0.03	0.02	39.28
Sex	0.01±0.01	-0.01	0.03	53.16
Education	0.09±0.03	0.03	0.15	99.30
Oxigen Saturation Follow-up	0.00±0.05	-0.09	0.09	21.72
Glycaemia Follow-up	-0.01±0.05	-0.12	0.09	40.14
Duration Of Hospitalization	0.01±0.03	-0.05	0.07	35.62
ICU	0.00±0.02	-0.04	0.03	41.98
Duration of ICU stay	0.00±0.07	-0.14	0.15	34.48
Non-Invasive Ventilation	-0.01±0.01	-0.04	0.02	64.18
Hypertension	0.00±0.01	-0.02	0.02	42.56
Coronaropathy	0.01±0.02	-0.03	0.05	43.70
Diabetes Mellitus	0.00±0.01	-0.02	0.03	33.46
Chronic obstructive pulmonary disease	0.02±0.03	-0.03	0.07	48.54
Chronic Renal Insufficiency	-0.01±0.03	-0.08	0.05	51.48
ZSDS	-0.07±0.03	-0.14	-0.01	**97.40**

S_Table 6. Coefficients estimates for 5000 bootstrapped elastic net regression predicting executive functions.