

Description of Additional Supplementary Files

Supplementary Data 1. Summary of statistics for all measurements (GSR). Global signal regression was applied during data preprocessing. For each measurement, Bayesian Paired Samples T-Tests (two-tailed) were performed for propofol deep sedation (PDS; $n=26$), propofol general anesthesia (PGA; $n=23$), and ketamine anesthesia (KA; $n=12$) against their own baseline conditions (BL; $n=26$, $n=23$, $n=12$, respectively). Bayesian Independent Samples T-Tests (two-tailed) were performed for unresponsive wakefulness syndrome (UWS; $n=7$), schizophrenia (SCHZ; $n=44$), bipolar disorder (BD; $n=49$), and attentional deficit hyperactivity disorder (ADHD; $n=39$) against their own healthy control groups (HC; $n=16$, $n=116$, $n=116$, $n=116$, respectively). Classical Student's T-Tests (paired or independent samples) were also performed for calculating t and p values. Using the Benjamini–Hochberg procedure, p values were false discovery rate–corrected for multiple comparisons for each dataset and thresholded at $\alpha = 0.05$. Assumption checks were performed with Shapiro-Wilk test for normality and Levene's test for homogeneity of variances. For comparisons that violated either of the assumptions, non-parametric statistics are provided, i.e., Bayesian Wilcoxon Signed-Rank Tests for paired samples, and Bayesian Mann-Whitney U Tests for unpaired samples.

Supplementary Data 2. Summary of statistics for all measurements (non-GSR). Global signal regression was not applied during data preprocessing. For each measurement, Bayesian Paired Samples T-Tests (two-tailed) were performed for propofol deep sedation (PDS; $n=26$), propofol general anesthesia (PGA; $n=23$), and ketamine anesthesia (KA; $n=12$) against their own baseline conditions (BL; $n=26$, $n=23$, $n=12$, respectively). Bayesian Independent Samples T-Tests (two-tailed) were performed for unresponsive wakefulness syndrome (UWS; $n=7$), schizophrenia (SCHZ; $n=44$), bipolar disorder (BD; $n=49$), and attentional deficit hyperactivity disorder (ADHD; $n=39$) against their own healthy control groups (HC; $n=16$, $n=116$, $n=116$, $n=116$, respectively). Classical Student's T-Tests (paired or independent samples) were also performed for calculating t and p values. Using the Benjamini–Hochberg procedure, p values were false discovery rate–corrected for multiple comparisons for each dataset and thresholded at $\alpha = 0.05$. Assumption checks were performed with Shapiro-Wilk test for normality and Levene's test for homogeneity of variances. For comparisons that violated either of the assumptions, non-parametric statistics are provided, i.e., Bayesian Wilcoxon Signed-Rank Tests for paired samples, and Bayesian Mann-Whitney U Tests for unpaired samples.

Supplementary Data 3. Summary of statistics for control analyses. Control analyses were performed with matched data length, varied sparsity and varied parameter α . The original fMRI data were reanalyzed by trimming the data length with a fixed duration of 5 minutes starting from the onset of each scan, varying the sparsity from 0% to 90% (by 10% increments) with parameter $\alpha=0.5$, and varying the parameter α from 0 to 1 (by 0.1 increments) with sparsity=90%. Bayesian Paired Samples T-Tests (two-tailed) were performed for propofol deep sedation (PDS; $n=26$), propofol general anesthesia (PGA; $n=23$), and ketamine anesthesia (KA; $n=12$) against their own baseline conditions (BL; $n=26$, $n=23$, $n=12$, respectively). Bayesian Independent Samples T-Tests (two-tailed) were performed for unresponsive wakefulness syndrome (UWS; $n=7$), schizophrenia (SCHZ; $n=44$), bipolar disorder (BD; $n=49$), and attentional deficit hyperactivity disorder (ADHD; $n=39$) against their own healthy control groups (HC; $n=16$, $n=116$, $n=116$, $n=116$, respectively). Classical Student's T-Tests (paired or independent samples) were also performed for calculating t and p values. Global signal regression (GSR) was applied during data preprocessing.