

Supplementary Materials for the Second-Round Revision

HD-EMG Quality Control and CMC Sensitivity Analysis

This addendum reports only the additional analyses undertaken in response to the second-round reviewer comments. The supplementary materials submitted with the first-round revision remain unchanged.

Methods for the post hoc HD-EMG quality control audit.

The audit included 80 retained 7-s epochs from 40 participants across two task phases, yielding 2,560 HD-EMG channel epoch records. Records were screened for non-finite values, zero variance, and a descriptive 50-Hz spectral outlier criterion based on the 49.5–50.5 Hz to 45–55 Hz background power ratio (median plus six median absolute deviations). Sensitivity analyses compared the original global CMC aggregation with analyses excluding flat channels, excluding flat and 50-Hz-screened records, and removing a fitted 50-Hz component after flat-channel exclusion.

Supplementary Table S2. HD-EMG quality control and CMC sensitivity analysis

Metric	Result
Audit scope	80 retained 7-s epochs (40 participants $\times$ 2 phases); 2,560 HD-EMG channel epoch records.
Data integrity	All records were finite; 18 records (0.70%) had zero variance; 5 records (0.20%) exceeded the descriptive 50-Hz screen.
Flat-channel sensitivity	Excluding flat channels: Spearman's $r = 1.000$ versus the original global CMC.
Line-screen sensitivity	Excluding flat and line-screened channel epochs: Spearman's $r = 0.9998$.
50-Hz-removal sensitivity	Removing the fitted 50-Hz component after flat-channel exclusion: Spearman's $r = 0.9977$.
Inference	No FDR-adjusted C3/C4 comparison was significant for any sensitivity variant.

Data availability note:

The manuscript and this addendum report aggregate quality control counts and sensitivity results. Individual raw EEG/HD-EMG recordings are not included in the manuscript or Supplementary Material and may be considered upon reasonable request in accordance with the study's data governance requirements.