Supplemental information ASSC poster

Contact information

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Additional information datasets

Table 1. Overview of the three datasets that were used for this study, containing information about the participants and experimental design. N = number of participants, N.A. = not available.

	Well-Rested: Canales-Johnson et al. (2020)	Sleep-Deprived: Ezquerro Nassar (2021, p. 67)	Task-Relevance: Nuiten et al. (2021)
Participants			
N	33	33	24
Gender	18 female, 15 male	N.A.	N.A.
Age (mean ± SD)	23.1 ± 2.8	N.A.	N.A.
Language	English	English	Dutch
Experimental design			
Independent var.	Alertness (well-rested) – awake vs drowsy	Alertness (sleep deprived) – awake vs drowsy	Attention – task relevant vs task irrelevant features
Dependent var.	Auditory conflict effect – behavioural and neural	Auditory conflict effect – behavioural and neural	Auditory conflict effect – behavioural and neural
Task	Content discrimination	Content discrimination	1. Content discrimination 2. Volume oddball
Stimuli	English words “left” or “right” in left or right ear	English words “left” or “right” in left or right ear	1. Dutch words for “left” or “right” in left or right ear 2. Same but with different volumes
Total number of trials	26,045 for awake 33,306 for drowsy	15,500 for awake 62,000 for drowsy	1. 14,400 2. 48,000

Decoding

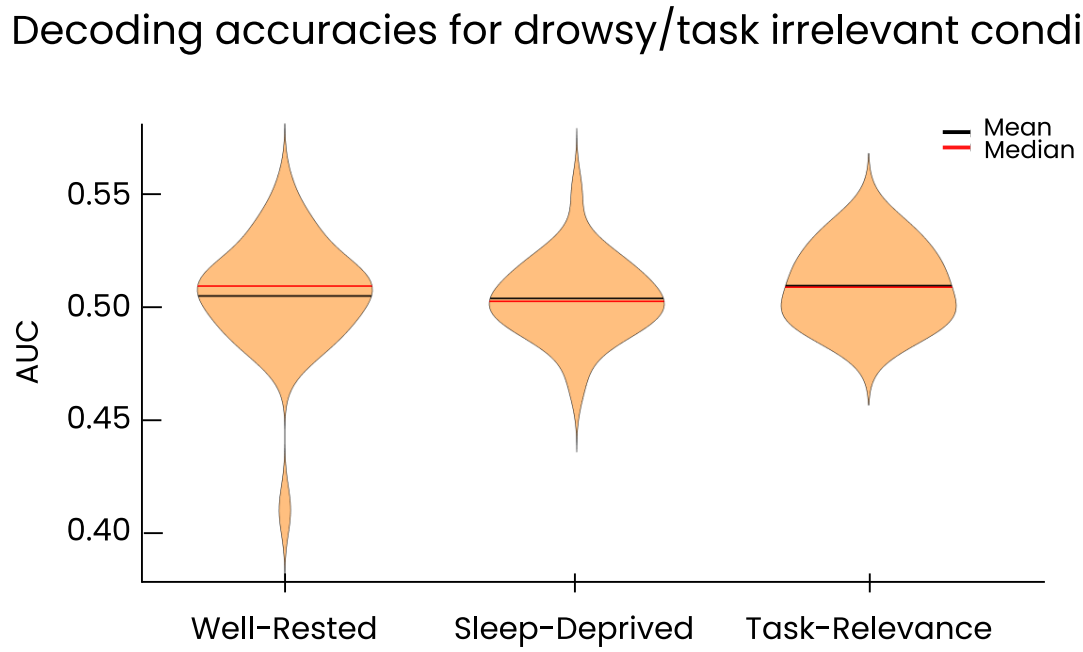

Figure 1. Decoding accuracies for drowsy/task irrelevant condition for each dataset. Accuracies are calculated as area under the curve (AUC). Black line is the mean, red is the median and the orange area represents the between-subject variability.

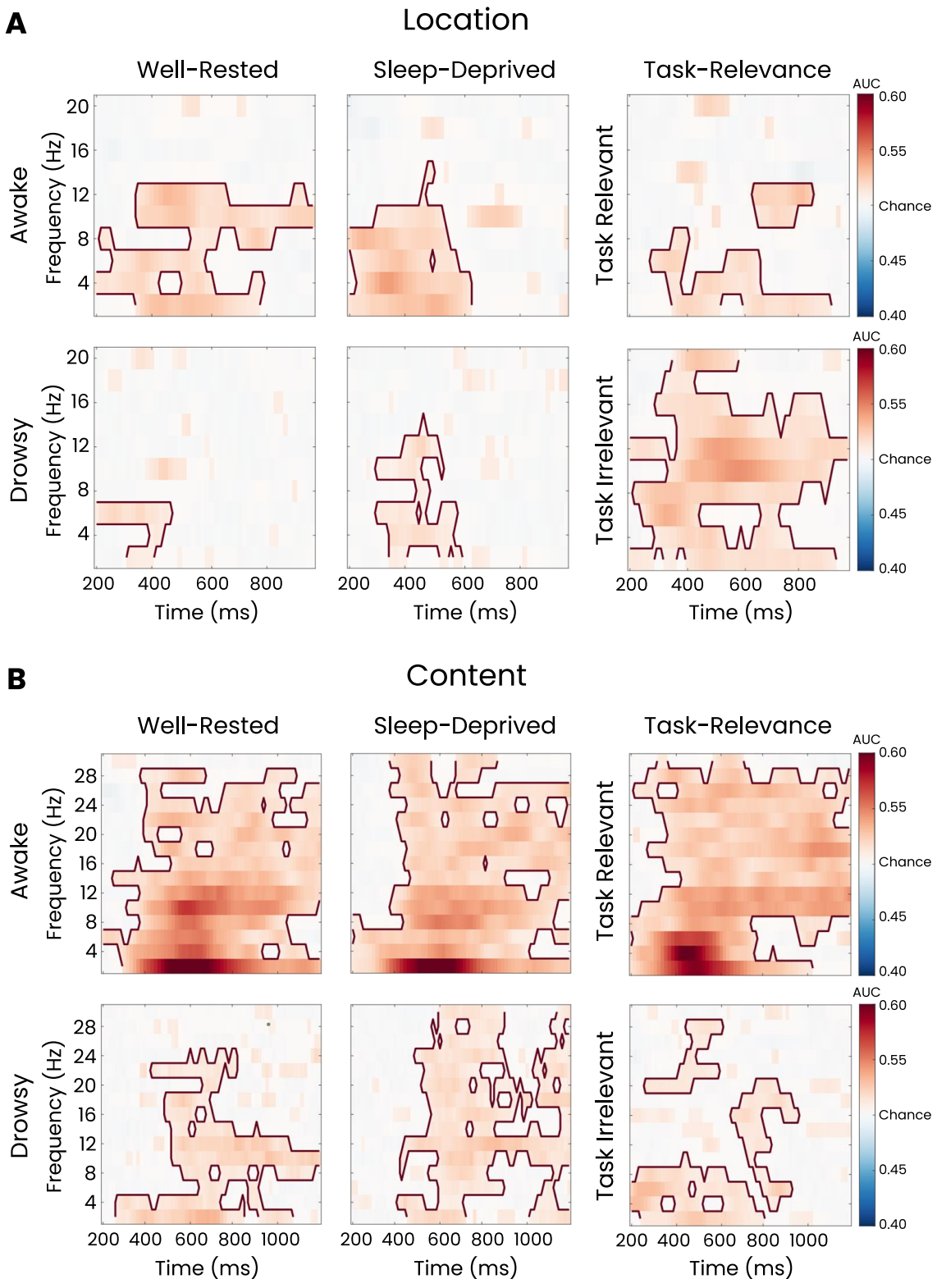

Figure 2. Multivariate pattern analysis of location **(A)** and content **(B)** stimulus features, for all datasets (WR/SD/TR) and conditions (awake/drowsy and task relevant/irrelevant). Decoding accuracies are shown across time and frequency within a specified time-frequency ROI and were thresholded with cluster-based correction ($p<0.05$). Significant clusters are outlined with a solid red line. For all conditions and all datasets, the classifier was able to decode the stimulus features location and content.

Non-linear connectivity

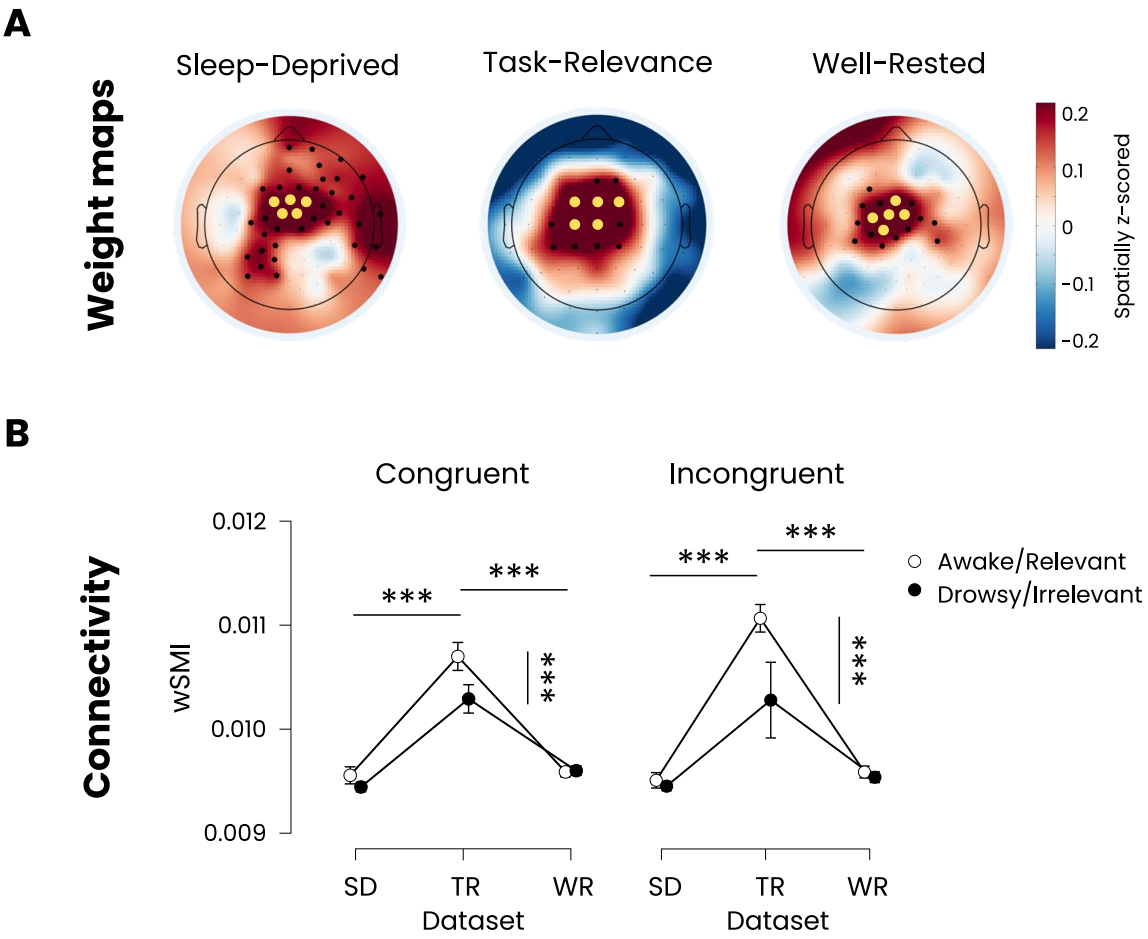

Figure 3. Topographic weight maps and non-linear connectivity for the Well-Rested, Sleep-Deprived and Task-Relevance datasets, measured by binned weighted Symbolic Mutual Information (wSMI). **(A)** Weight maps show the contribution of each electrode to the decoding effect in spatial z-scores. Significant electrodes are shown in black, and the electrodes selected to use for the ROI are shown in yellow. **(B)** wSMI is shown for congruent and incongruent trials. The two conditions of each dataset are shown in different lines, white dots are awake or relevant conditions, black dots represent drowsy or irrelevant conditions. A significant main effect of the condition (alertness/task relevance), dataset and an interaction between condition and dataset was found. Lines indicate significant post hoc tests, ***p<0.001.

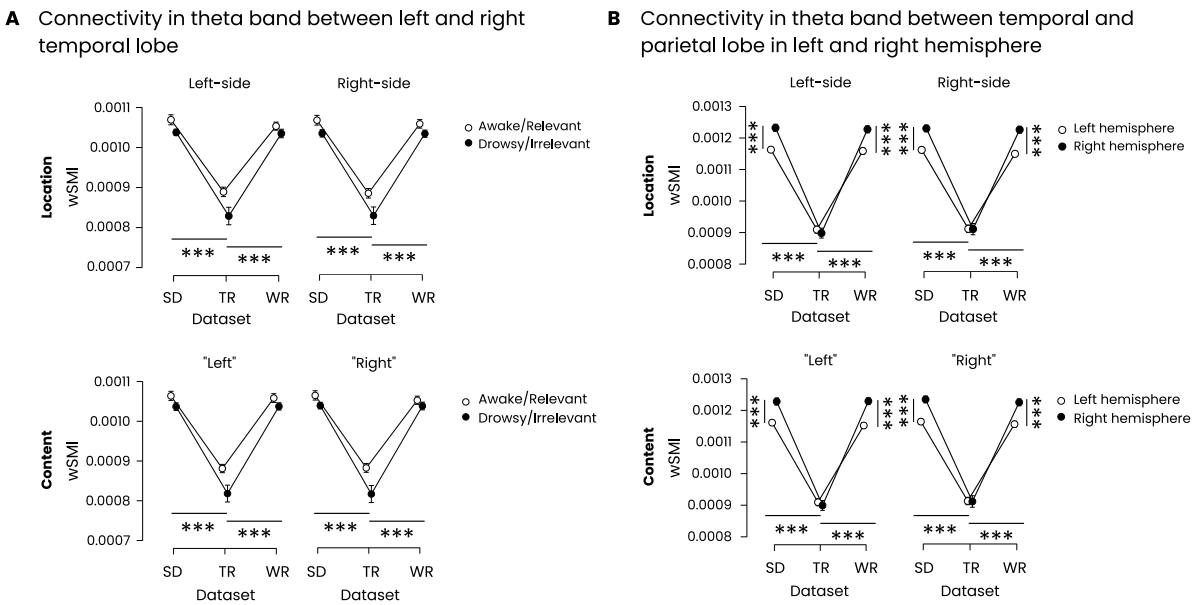

Figure 4. Non-linear connectivity for the Well-Rested, Sleep-Deprived and Task-Relevance datasets, measured by binned weighted Symbolic Mutual Information (wSMI). wSMI is shown for stimulus features Location (left- and right-side) and Content ("Left" and "Right") and was measured in the theta band. **(A)** Connectivity was measured between left and right temporal lobe. The two conditions of each dataset are shown in different lines, white dots are awake or relevant conditions, black dots represent drowsy or irrelevant conditions. A significant main effect of the condition (alertness/task relevance) and dataset was found, both in Location and Content. **(B)** Connectivity was measured between temporal and parietal lobe in the left and right hemisphere. White dots indicate the left hemisphere, black dots the right hemisphere. A significant main effect of brain side, dataset and an interaction between brain side and dataset were observed. Lines indicate significant post hoc tests, ***p<0.001.