**Theta activity and subjective sleepiness across groups**

Exploratory analysis was conducted to see if there were differences in theta spectral bands that was not captured by AAC or SR.

### Theta in Eyes-Open Condition

**Main Effect of KSS.** There were no significant cluster differences for a main effect of KSS. A cluster of 5 channels in the right temporal cortical region was identified but did not reach significance, *T* = 10.74, *p*cluster = .307.

**Main Effect of Group.** There were no significant cluster differences for a main effect of group. A cluster of 14 channels in the left central, central, left parietal and parietal cortical regions was identified but did not reach significance, *F* = 30.88, *p*cluster = .064. There were 9 additional neighbouring channels that were significant at the uncorrected level, but did not reach the statistical threshold needed for cluster formation. However, this borderline significant finding warranted further analysis. A post-hoc t-test analysing group differences between NRS and ID found a cluster of 49 channels in the left temporal, left central, left parietal, central, right parietal, and right central cortical regions, *T* = 119.50, *p*cluster = .033.

**Interaction Effect.** There were no significant cluster differences for the interaction effect between KSS and group. A cluster of 22 channels in the left central, left parietal, central, parietal, and right parietal cortical regions was identified but did not reach significance, *F* = 51.64, *p*cluster = .059.

### Theta in Eyes-Closed Condition

**Main Effect of KSS.** There were no significant cluster differences for a main effect of KSS. A cluster of 6 channels in the left frontal and prefrontal cortical regions was identified but did not reach significance, *F* = 13.96, *p*cluster = .222.

**Main Effect of Group.** There were no significant cluster differences for a main effect of group. A cluster of 6 channels in the left central, central, and parietal cortical regions was identified but did not reach significance, *F* = 12.44, *p*cluster = .118. There were 42 additional neighbouring channels that were significant at the uncorrected level, but did not reach the statistical threshold needed for cluster formation. Post-hoc T-tests did not find significant group differences between the control group and the ID or NRS group. However, a cluster of 115 channels across all cortical regions indicated a significant difference in theta activity between NRS and ID, *T* = 276.40, *p*cluster = .012.

**Interaction Effect.** There were no significant cluster differences for the interaction effect between KSS and group. A cluster of 3 channels in the right parietal cortical regions was identified but did not reach significance, *F* = 6.3`, *p*cluster = .258.

A diagram of a circular object

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