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How sleepy are you?

KSS and KDT in Insomnia and Non-Restorative Sleep

Anastasia Stuart

A thesis presented for the degree of
Bachelor of Psychology (Honours) 2024

Supervised by:
Dr Rick Wassing
Dr Julia Chapman

Macquarie University
October 2024

I, Anastasia Stuart confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

Acknowledgements

Abstract

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API	**A**pplication **P**rogramming **I**nterface
JSON	**J**ava**S**cript **O**bject **N**otation

Chapter 1

Introduction

1.1 Background

Recent research suggests there may be a distinct subtype of insomnia called non-restorative sleep, characterized by sleep-state misperception.

1.2 Sleep-state misperception

1.2.1 Subsection of the middle bit

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1.3 Self-reported sleepiness

Self-reported sleepiness can be measured by the Karolinska sleepiness scale, which correlates to neural measures of drowsiness in healthy controls (Kaida et al., 2006)

1.3.1 Subheading

1.4 Summary of chapters

Chapter 2

Method

2.1 Participants

12 participants from each clinical group (ID, NRS, HC) were recruited through referrals from the Woolcock Institute and the Royal Prince Alfred sleep clinics in addition to social media advertising. - Age and sex matched - excluded if comorbid sleep disorder - Inclusion criteria for insomnia - inclusion criteria for NRS - Remunerated $100

2.2 Measures

2.2.1 KSS

- KSS is a 1 item 9-point likert scale measure
- internal and external validity
- measures sleepiness

2.2.2 KDT

- KDT measured through HD-EEG data
- Eyes open and eyes closed conditions
- Power spectra

2.3 Procedure

The study was approved by the Macquarie University Human Research Ethics Committee. - Participants come to the Woolcock - Sleep is monitored overnight - KSS and KDT recorded at 7am and 9am - Other neurobehavioural testing also done

Chapter 3

Results

3.1 Comparing KSS scores between groups

All analyses were conducted on Matlab version R2024a and EEGprocessor *version*.

3.2 Correlation between KSS and slowing ratio scores between groups

3.3 Correlation between KSS and AAC between groups

3.4 Topography of channel-by-channel comparisons between ID and NRS groups

Chapter 4

Discussion

The study aimed to explore the relationship between self-reported sleepiness scores, as measured by the KSS, and neural markers of drowsiness measured in the KDT across a sample of people with insomnia, non-restorative sleep, and healthy controls.

4.0.1 KSS score variance

The study found that KSS scores varied across groups.

4.0.2 AAC

This is how AAC scores correlated amongst 3 groups

4.0.3 Slowing Ratio

Here I will talk about slowing ratio

4.0.4 Topographic electrode cluster differences between ID/NRS

Topographic power spectral analysis found these cluster differences which mean this

4.1 Strengths

- Age and sex matching of participants
- Strong exclusion criteria

4.2 Limitations

- Sample size

4.3 Practical implications and future directions

4.4 Conclusion

The KSS is the best measure ever and more people should use it.

Chapter 5

References

Appendix 1: Some extra stuff

Add appendix 1 here. Vivamus hendrerit rhoncus interdum. Sed ullamcorper et augue at porta. Suspendisse facilisis imperdiet urna, eu pellentesque purus suscipit in. Integer dignissim mattis ex aliquam blandit. Curabitur lobortis quam varius turpis ultrices egestas.

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Results

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Chapter 9

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Kaida, K., Takahashi, M., Akerstedt, T., Nakata, A., Otsuka, Y., Haratani, T., & Fukasawa, K. (2006). Validation of the Karolinska sleepiness scale against performance and EEG variables. *Clinical Neurophysiology: Official Journal of the International Federation of Clinical Neurophysiology*, *117*(7), 1574–1581. https://doi.org/10.1016/j.clinph.2006.03.011

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