

THE ROLE OF 20-MIN NAPS ON DECLARATIVE MEMORY PERSISTENCE

Aylin Vazquez Chenlo¹, Julia Carosi¹, Rodrigo Ramele² & Cecilia Forcato^{1,3}

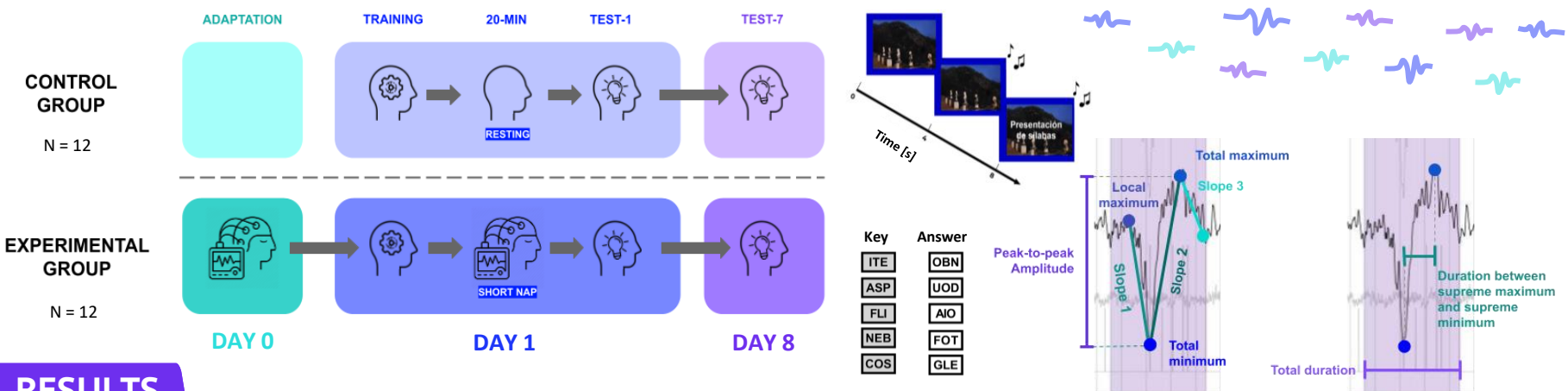
¹ Laboratorio de Sueño y Memoria, Depto. de Ciencias de la Vida, Instituto Tecnológico de Buenos Aires (ITBA).
² Centro de Inteligencia Computacional (CIC), Instituto Tecnológico de Buenos Aires (ITBA).
³ Consejo Nacional de Investigaciones Científicas y Tecnológicas (CONICET)

INTRODUCTION

- K-Complexes (KC) are events present in non-rapid eye movement (non-REM) sleep, which have cellular dynamics similar to slow waves and have 3 distinguishing components: an initial P200, a posterior N500 and a final P900. [1]
- Sleep plays a fundamental role in memory consolidation, favoring the transfer of new information from the hippocampus to the neocortex and its cortico-cortical redistribution. [2]
- KCs have been postulated as mediators of the hippocampal-cortical dialogue since they recruit distant neuronal populations that do not depend on cortical connections. [3]

METHODS

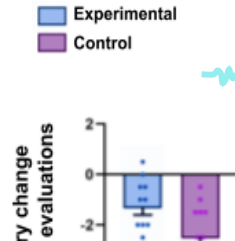
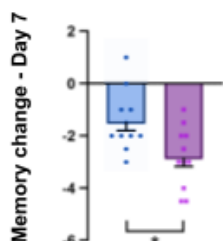
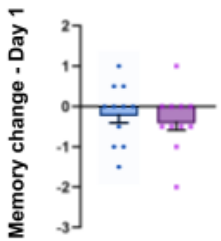
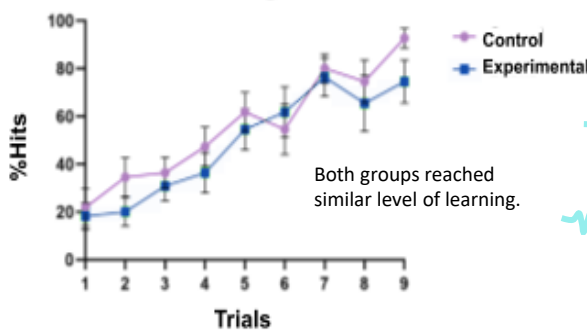
Main goal: Study the role of KCs in the consolidation of declarative memory during sleep.



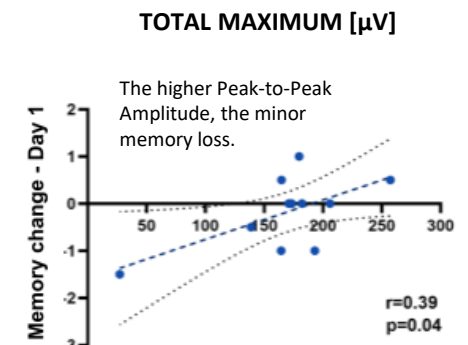
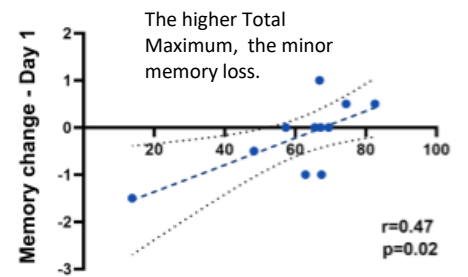
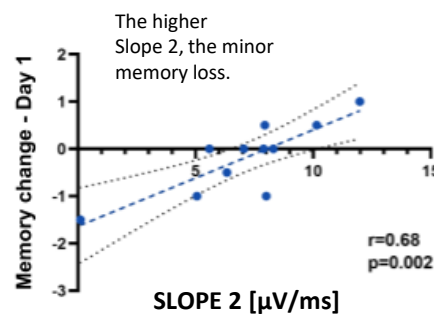
RESULTS

ROLE OF SLEEP IN MEMORY CONSOLIDATION

Learning curves



SIGNIFICANT CORRELATIONS BETWEEN KC COMPONENTS AND MEMORY CHANGE AT DAY 1



CONCLUSIONS

- Short naps increase memory persistence
- KC could be the main oscillatory events that mediate the hippocampal-cortical dialogue during sleep
- It's necessary to study more in-depth the incidence of KC in declarative memory

Future directions: Add more subjects and further studies.

REFERENCES

- [1] M. D. Manzar, M. M. Rajput, and M. E. Hussain. Spontaneous k-complex density in slow-wave sleep. 2016. doi: 10.1371/journal.pone.0150929.
 [2] Rasch, B., & Born, J. (2013). About sleep's role in memory. Physiological reviews.
 [3] B. A. Riedner & V. G. Tononi. Sleep homeostasis and cortical synchronization: Iii. high-density EEG study of sleep slow waves in humans. 2007.