


S L E E P

Sleep Deprivation Produces False Memories in the DRM Paradigm: Event-Related Potential (ERP) Evidence

Chi-Hsun Chang¹, Chun-Cheng Lin², Chien-Ming Yang^{1,3*}

¹ Department of Psychology, National Cheng-Chi University
² Department of Psychiatry, China Medical University Hospital
³ Research Center for Mind, Brain and Learning, National Cheng Chi University

Is Memory Always True?



DRM Paradigm

□ Deese-Roediger-McDermott false memory paradigm (Deese, 1959; Roediger III & McDermott, 1995)

Learning

→

Test

(睡眠)

床鋪

枕頭

打呼

⋮

⋮

Recognition

Old, ex: 床鋪 → Hit

New, ex: 麵包 → Correct Rejection

Lure, ex: 睡眠 → False Memory

Studies of Sleep and False Memory

□ *Inconsistent*

- Sleep enhanced false memory (Payne, Schacter, Propper, Huang, Wamsley, Tucker, Walker, & Stickgold, 2009)
- Sleep reduced false memory (Fenn, Gallo, Margolash, Roediger III, & Nusbaum, 2009)
- Sleep deprivation before retrieval increased false memory (Diekelmann, Landolt, Lahl, Born, Wagner, 2008)

Objects of Present Study

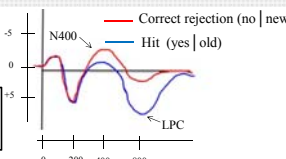
- Behavioral level
 - could not distinguish **different memory retrieval process**
- Physiological level
- **Event-related potentials (ERPs)**
- **N400**:
 - An index of *Familiarity*
- **Late Positive Complex (LPC)**:
 - An index of *Recollection*

ERP Old/New Effects Nessler et al., 2001

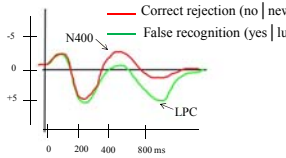
□ **True recognition old/new effects**

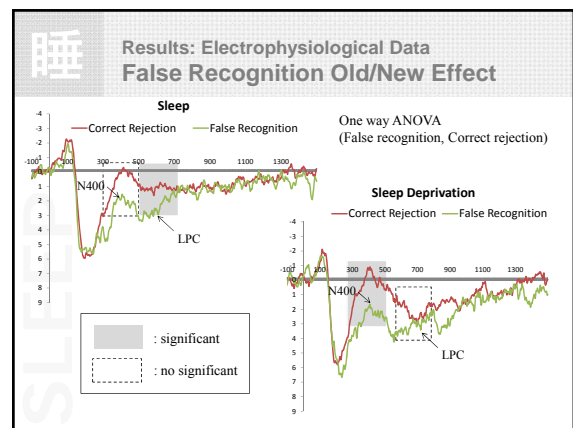
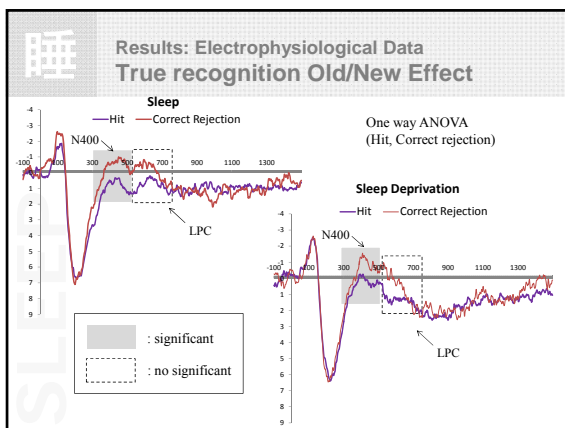
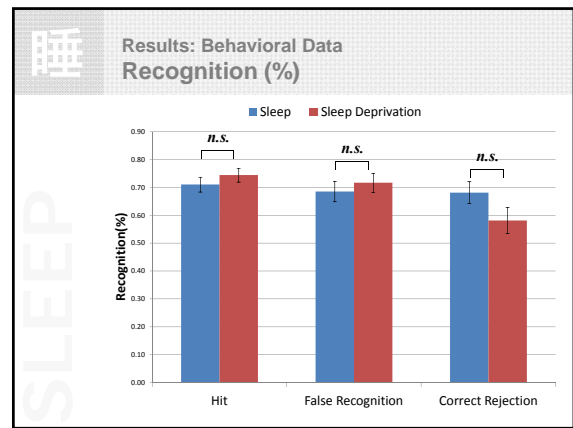
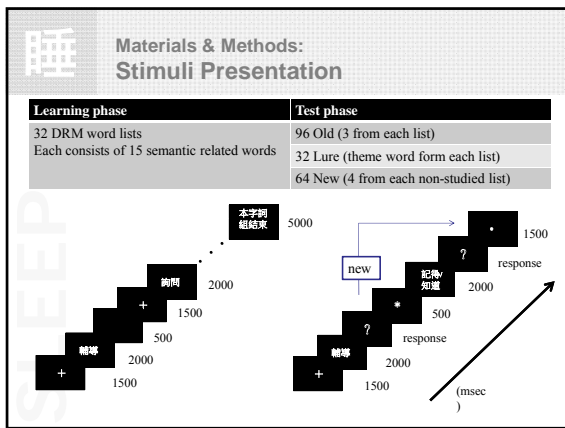
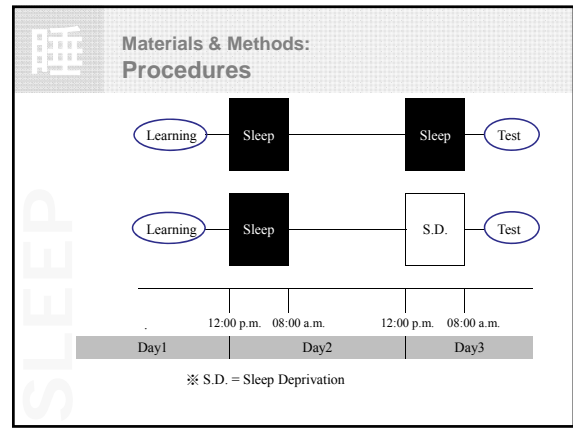
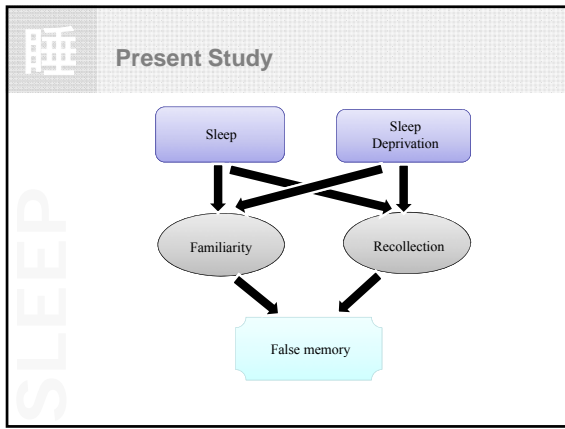
N400 sig.: Familiarity

LPC sig.: Recollection



□ **False recognition old/new effects**








Conclusions

- For True recognition
 - Both group rely mainly on **familiarity** process
- For False recognition
 - **Sleep deprivation** may **impair the recollection** process for memory retrieval

Thank for your attention



Thanks for help from all members of NCCU Sleep Lab