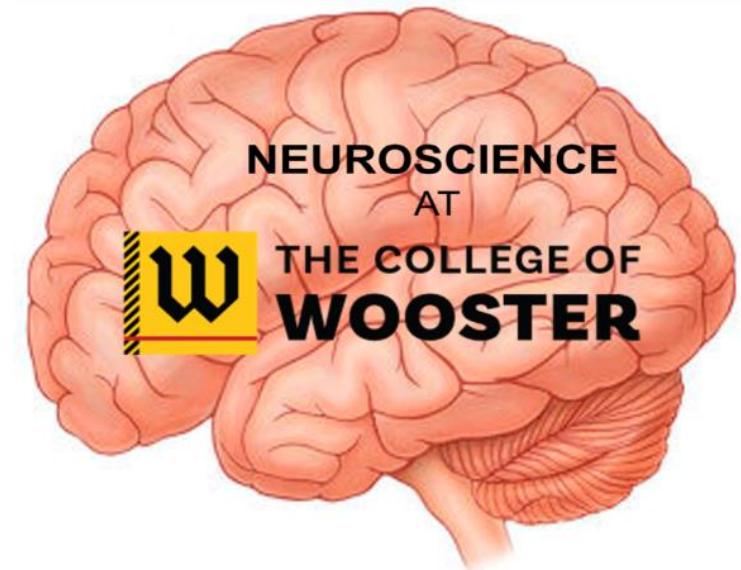

THE PE INFLUENCES MEMORY ENCODING AND RETRIEVAL: AN ERP STUDY

ALEXIS KULIN; ADVISED BY
DR. GRIT HERZMANN



What is the Production Effect??

Speaking aloud leads to better memory compared to silent reading.

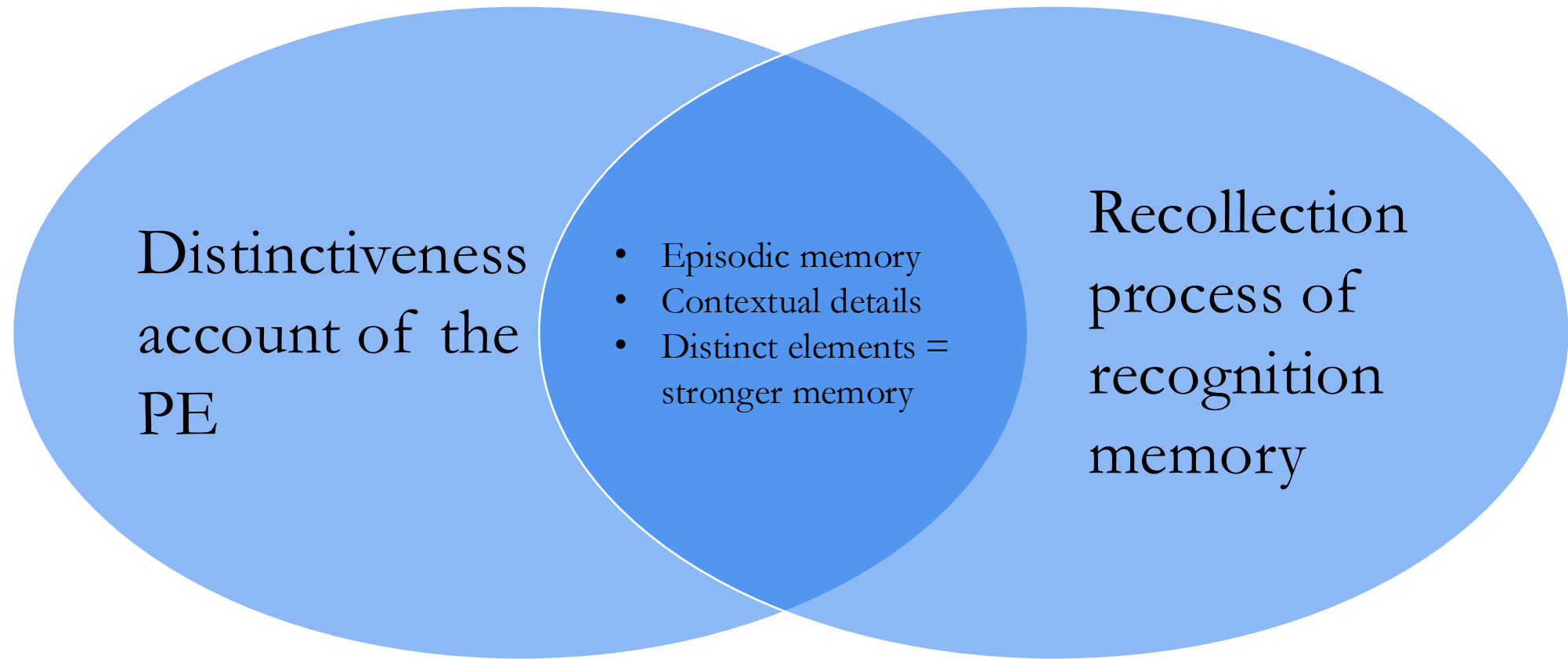
Memory encoding: memories created

Memory Retrieval: memories accessed

Seen to influence memory retrieval...what about encoding?

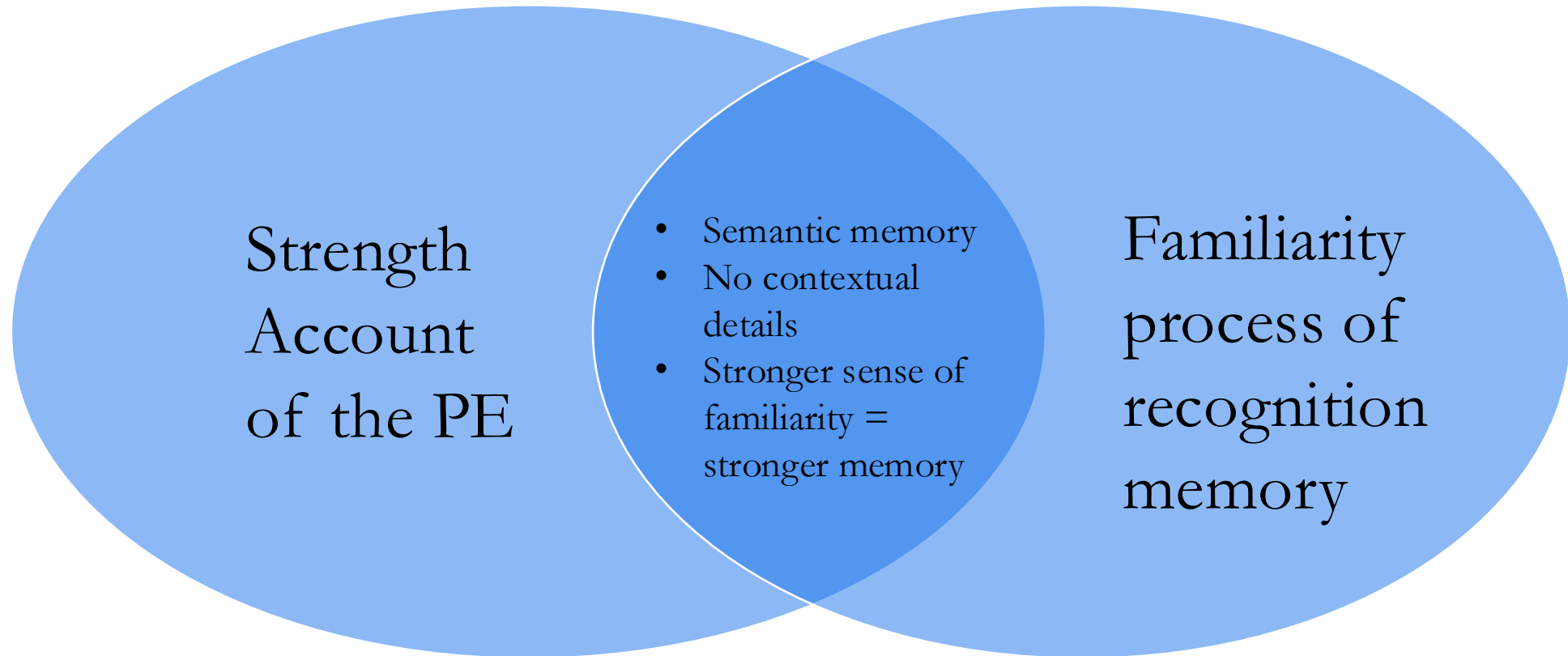


Distinctiveness & Recollection



Ex: Studying for a vocab quiz

Strength & Familiarity



Ex: Studying for a vocab quiz

Production Effect: EEG

FN400

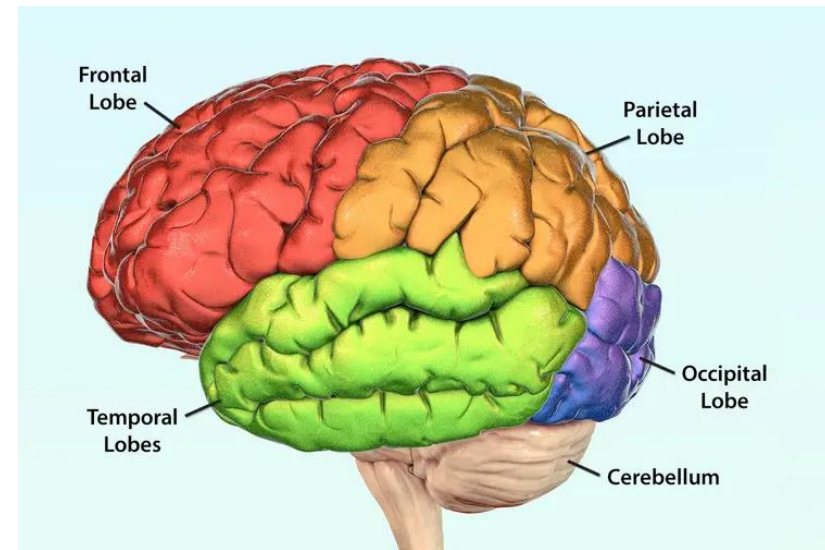
- Familiarity, strength account
- Frontal lobe

LPC

- Recollection, distinctiveness account
- Parietal lobe

Dm

- Memory encoding processes
- Remembered items – forgotten items during study phase



Study Phase

Read words on screen

Blue = aloud
Yellow = silent
Police vs Lady

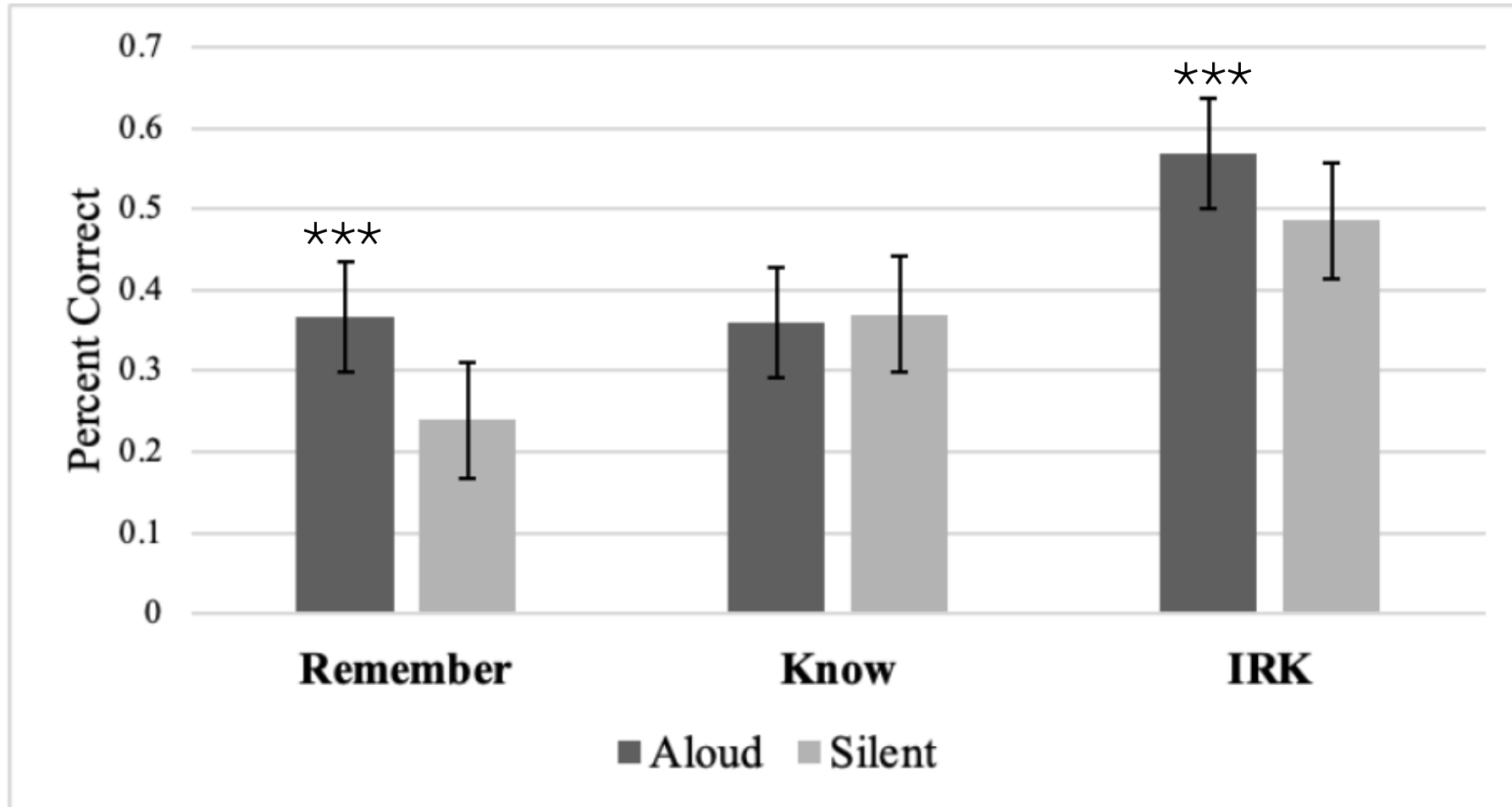


Test Phase

Is the word old or new?
(Remember, Know, or New)

240 old words
120 new words
Police vs Wife

Behavioral Results



Accuracy for 'remember' responses >>> in aloud reading compared to silent

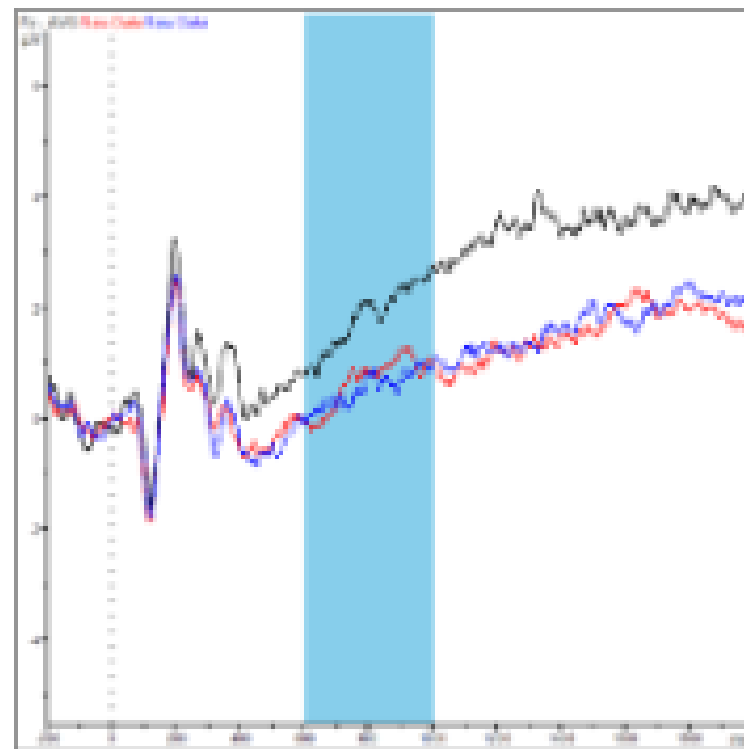
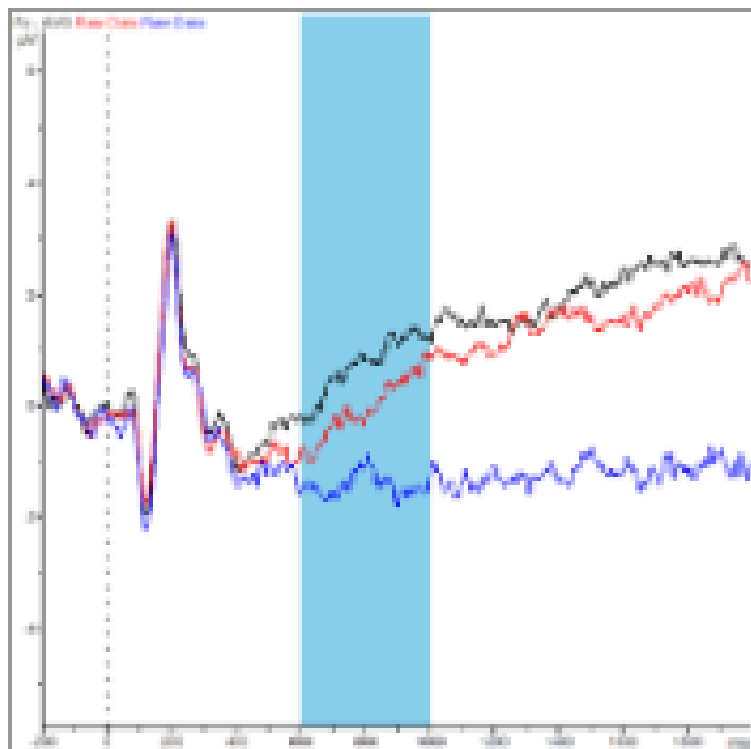
Sense of familiarity >>> in aloud reading compared to silent

ERP Results: Dm

Aloud

Silent

Fz



Remember
Know
Forgotten

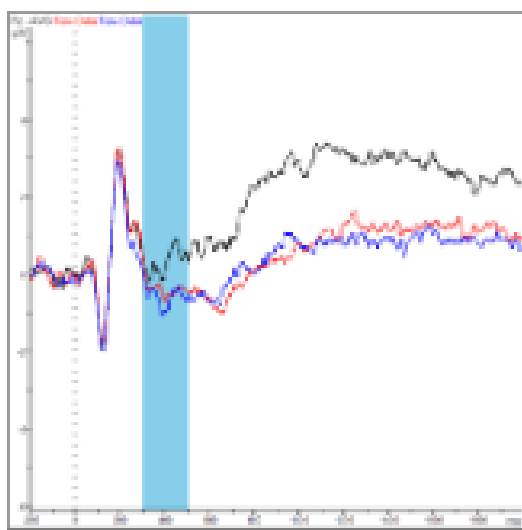
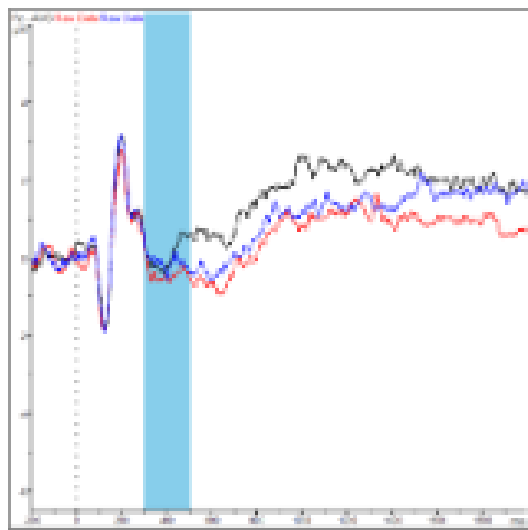
ERP Results: FN400 & LPC

FN400

Aloud

Silent

Fz



Recollection

Familiarity

Remember

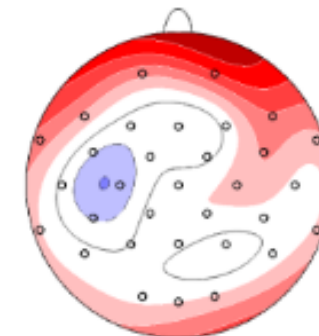
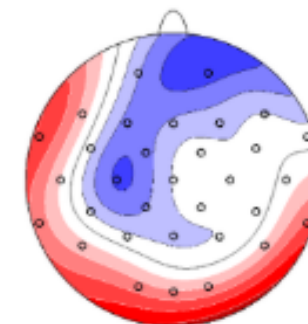
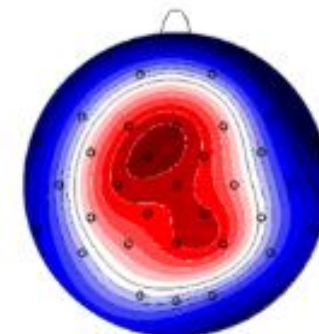
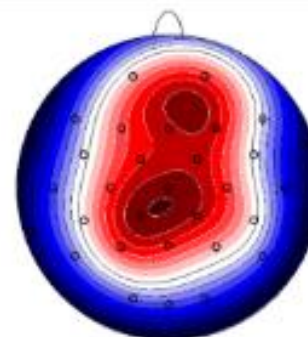
Know

Forgotten

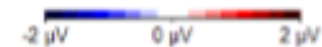
LPC

Aloud

Silent

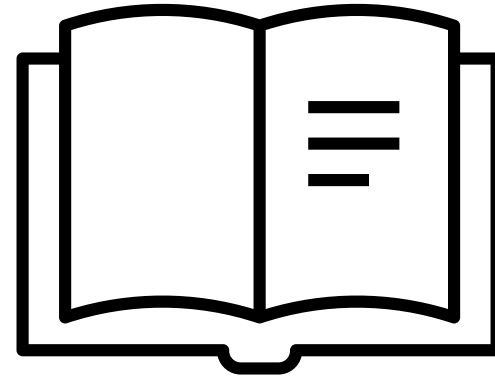


500 ms - 800 ms



Summary

- PE seen, greater memory for speaking aloud
- Larger familiarity for aloud words
- Speaking aloud = stronger memory encoding
 - Observed PE for the first time in memory encoding!!!
- LPC showed that different brain areas are used in aloud compared to silent reading



Thank you!