Free Recall

# Agenda

* Introduction
* Hypothesis
* Method
* Results
* Conclusion
* Discussion
* Grand perspective™

# Introduction

* Ebbinghaus: used nonsense words, observed primacy and recency effects
* This experiment uses real words to also investigate the concreteness effect
* Rehearsal: Atkinson-Shiffrin multi-store model and Baddeley’s model of WM

# Hypothesis

* Expect to find primacy, recency and concreteness effects
* Expect to be able to nullify recency effect through interference

# Method

* Read lists at 1 word per 2 seconds
* P recalls (alternating concrete and abstract lists)
* On one (randomly assigned) list P does interference task before recalling
* Wait 1 minute before reading next list

# Results

## Figure 1: probability of recall

* **Primacy and recency: inverse bell shape**
* Concreteness effect: curve for concrete lists follows higher path
* Repeated measures ANOVA:
* No recency effect for interference list
* **Main effect of list type and word position** -> primacy + recency effects, concreteness effect might be present -> must control for interference list
* **Interaction between list type and word position** -> interference list works
* Repeated measures ANOVA w/o interference list: main effect of list type
* Confirms concreteness effect
* Testing for concreteness effect w/o word position: repeated measures ANOVA of list type effect using only first 2 words
* **Main effect of list type** -> concreteness effect is independent of word position (not mitigated by primacy effect)-> may also be relevant for LTM

## Table 1:

Significant differences in recall probability is seen between:

* Primacy effect:
  + Concrete list: First 2 > middle 4
  + Abstract list: First 2 > middle 4
  + Interference list: First 2 > middle 4
* Recency effect:
  + Concrete list: middle 4 < last 2
  + Abstract list: middle 4 < last 2
  + Interference list: middle 4 = last 2 (non-significant difference -> interference task works)

## Individual data

* Figure 2: FP19225 recalled 5 words from the interference list, but 3 were in the latter half.
* Last 2 words (used in *t-*test to confirm function of interference) were not recalled but other “late words” were, challenging the function of the interference list if this is also true for other Ps

# Conclusion

Provides evidence for:

* Concreteness effect
* Primacy and recency effects for abstract and concrete lists
* Primacy effect for interference list.

# Grand perspective™

* **Dual-coding hypothesis** (Paivio): Concrete words are encoded twice in memory: once in terms of their verbal attributes and once again in their imaginal attributes
* **Context availability model**: More associations tied to concrete words compared to abstract
* Semantic memory, though many think it is episodic (including Radvansky + Ashcraft)
* Tulving: this is not episodic memory!
  + Memory lacks contents of where, when and the experiential flavour (autonoetic)
  + Memory for this task is noetic
* Baddeley’s multicomponent model
* Atikinson & Shiffrin: stage model
* Cowan’s model of working memory (LTM and STM operate on same tissue)
* Craik & Lockhart: levels of processing
* Forgetting: decay, interference and retrieval failure
* Ebbinghaus: Forgetting and learning curve.
* Wernicke’s area: Speech understanding
* Broca’s area: speech production
* Brown-Peterson task
  + Trigram of letters -> interference task (counting backwards in threes) -> recall trigram
  + Proactive interference: performance decreases following each trail, but when task is changed, performance increases back to baseline
* Association cortices: integration info from various modalities with higher functions (the brain is multimodal )
* Friederici & Fiebach: **Left basal temporal areas** involved in higher-level visual processing and mental imagery were more **strongly activated during processing of concrete** words, whereas a **left inferior frontal region** showed **greater activity during abstract word processing**