



Stress and Memory in Students: When Pressure Enhances and Hinders Recall

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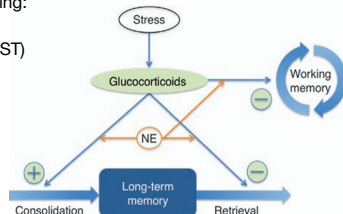
Introduction

- University students are exposed to high levels of stress, impacting their memory function during studying and exams
- Working memory and episodic memory are integral functions for exam-writing
- WM: mathematics & reading comprehension; EM: content recall
- Physiological response to stress results in the release of catecholamines and glucocorticoids
- Hormones modulate neural activity in the hippocampus, amygdala, striatum, & PFC
- Change in activity of these regions has been shown to differentially impact encoding and retrieval of memory

How does stress during encoding and retrieval impact the function of working and episodic memory for students?

Methods

- Episodic memory performance is assessed using **recall tasks** (free recall/cued recall) or **recognition tasks**
- Working memory performance is measured using the **n-back task**, **backward span task**, **reading span**, and **OSPAN/AOSPAN**
- Increase in glucocorticoid levels triggered by acute stress can be induced in a laboratory setting:

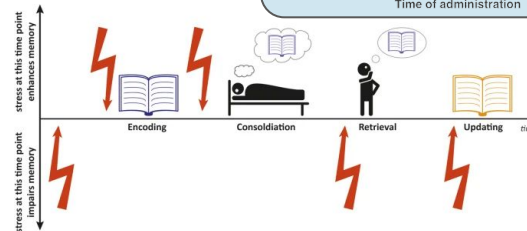
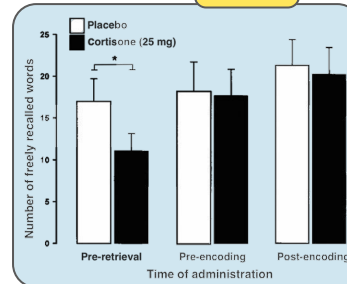


Results

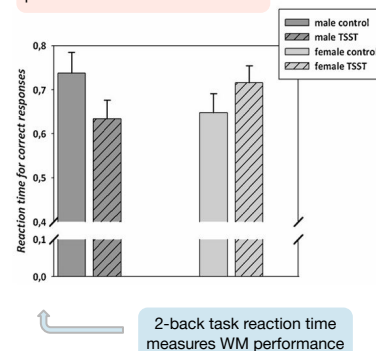


When does stress impact **episodic memory recall**?

Stress can impair or enhance episodic memory



How does **working memory** perform under stress conditions?



Conclusions

- **Limitations:** Lab stress conditions are not equivalent to real life stress -> rely on standardized tests or simplifications -> limited application to daily life & lack analysis of demographic variables (WEIRD samples)
- **Future directions:** different types of studies, i.e., longitudinal & case studies, study different demographic groups (non-WEIRD), explore possible modulators & mediators, & role of encoding specificity
- **Implications:** ability to devise better studying strategies, understand effects on real-time decision making and understand the differences between sexes, memory types, encoding and recall

Sex:	Male		Female	
Stress:	Encoding	Recall	Encoding	Recall
WM	Enhance		Impair	
Ep. M.	Enhance	Impair	Enhance	Impair