Are You Sure About That? The Impact of Semantic Relatedness on Learning Through Testing, JOLs, and Passive Restudy

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1 Introduction

Testing Effect (TE)

- Testing enhances long-term memory more than passive restudy[1,2,3]
- TE is widely replicated across materials and contexts[4,5,6,7,8]

Judgments of Learning (JOLs)

- Metacognitive ratings predicting future recall (e.g., "How likely are you to remember this?")[9]
- Immediate JOLs can enhance memory *when pairs are semantically related* compared to restudy (positive JOL reactivity)[10,11,12,13,14]
- ***Cue-strengthening hypothesis:*** JOLs boost memory by reinforcing the cue-target link during judgment[13,15,16,17]

Prior Work & Open Questions

- Higham et al. (2023): Found *restudy with retrospective memory ratings* outperformed testing; even with semantically unrelated Swahili-English pairs

2 Current Study

Goal: Compare JOL restudy to passive restudy and testing in a typical TE paradigm

Possible outcomes:

- JOLs help even without semantic links → challenges cue-strengthening
- JOLs help only with related pairs → supports cue-strengthening
- Testing may still outperform JOL reactivity; Higham's result may be task-specific

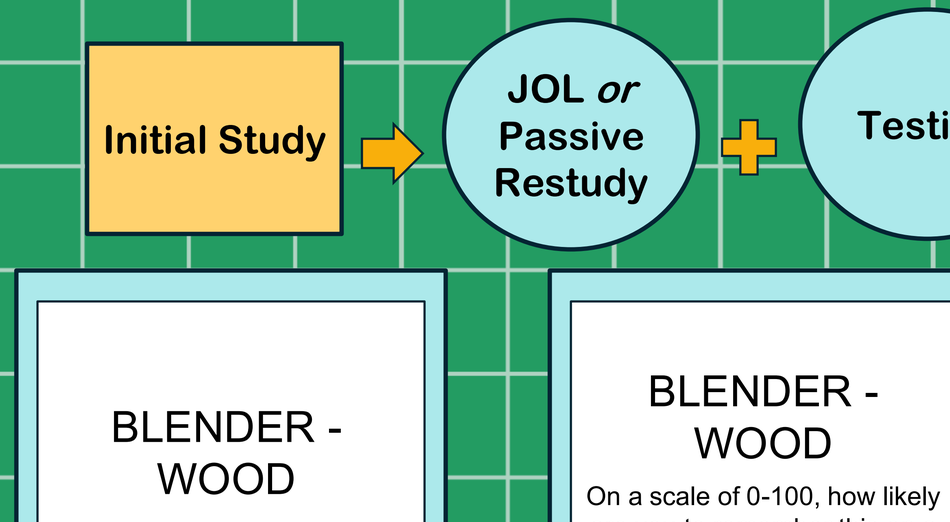
3 Methodology

Design: 2 (Restudy Type: Passive vs. JOL) × 2 (Study Method: Restudy vs. Test) mixed factorial

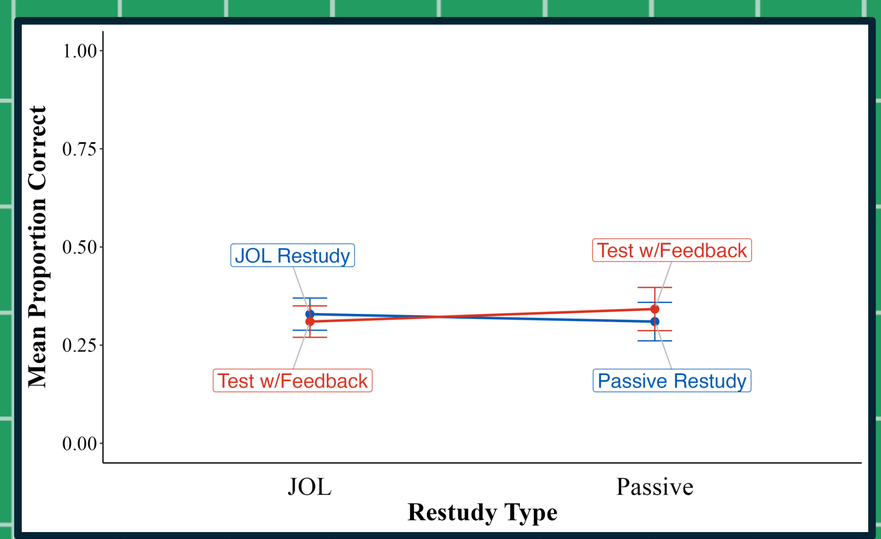
Experiment 1: Used unrelated English word pairs (72 word pairs)

Experiment 2: Used semantically related word pairs (76 word pairs)

References/ More Info!

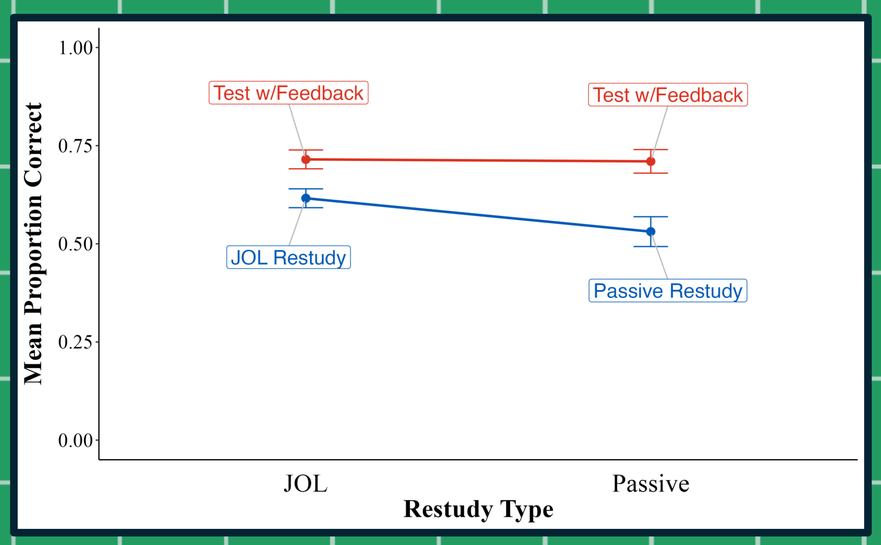


4 Results



Exp 1

- No main effect of Restudy Type or Study Method
- Significant cross-over interaction between Restudy Type and Study Method: ***F*(1,75) = 5.105, *p* = 0.03, η^2_p = 0.06**
- No pairwise comparisons were significant (all p > .09)



Exp 2

- Testing led to significantly better recall than restudy: ***F*(1,83) = 89.18, p < .001, η^2_p = .52**
- Significant interaction: Testing benefit was smaller in JOL vs. Passive group: ***F*(1,75) = 7.33, p < .01, η^2_p = .08**
- No significant effect of Restudy Type

5 Discussion

- **JOLs did not significantly outperform testing** in a typical TE paradigm, even when word pairs were semantically related
- **Semantic relatedness influenced both TE and JOL reactivity**: When pairs lacked semantic association, neither effect emerged; stronger associations produced a robust TE and modest JOL reactivity.
- **Findings support the cue-strengthening account** for JOLs and calls into question the role of semantic relatedness in TE literature