

Erring on the Side of Caution: Two Failed Replications of the Derring Effect

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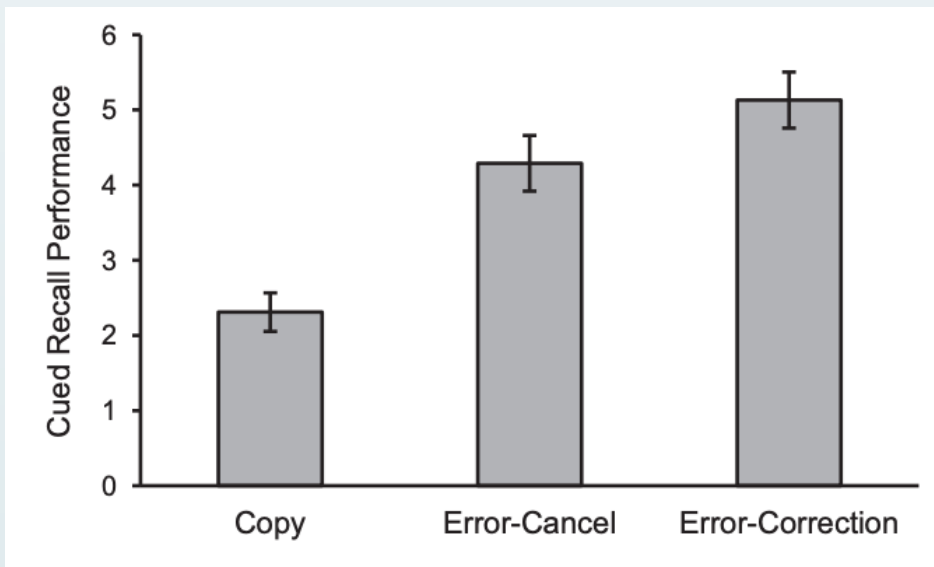
EPS Meeting, Nottingham Trent, 10-12th April 2024



Introduction

- The derring effect** is a counterintuitive phenomenon in which deliberately generating errors, even when the correct answer is known, appears to substantially improve memory.
- The derring effect was first reported by Wong and Lim (2022a), with further reports in Wong and Lim (2022b, 2023) and Yap and Wong (2024).
- In Wong and Lim's (2022a) Experiment 1, participants studied biological term-definition concepts in three conditions:
 - Error-correction** - Copy the concept, generate a plausible error, and then correct it.
 - Error-cancel** - Copy the concept, generate a plausible error, but do not correct it.
 - Copy** - Copy the concept, underline the key idea, and then rewrite that idea.
- Relative to copying, deliberate errors substantially improved subsequent cued recall, especially when participants corrected their errors (see Fig 1).

Fig 1: Wong and Lim's (2022a) Results (Experiment 1)



- For the first time, we report two independent, preregistered attempts to replicate and extend the derring effect.

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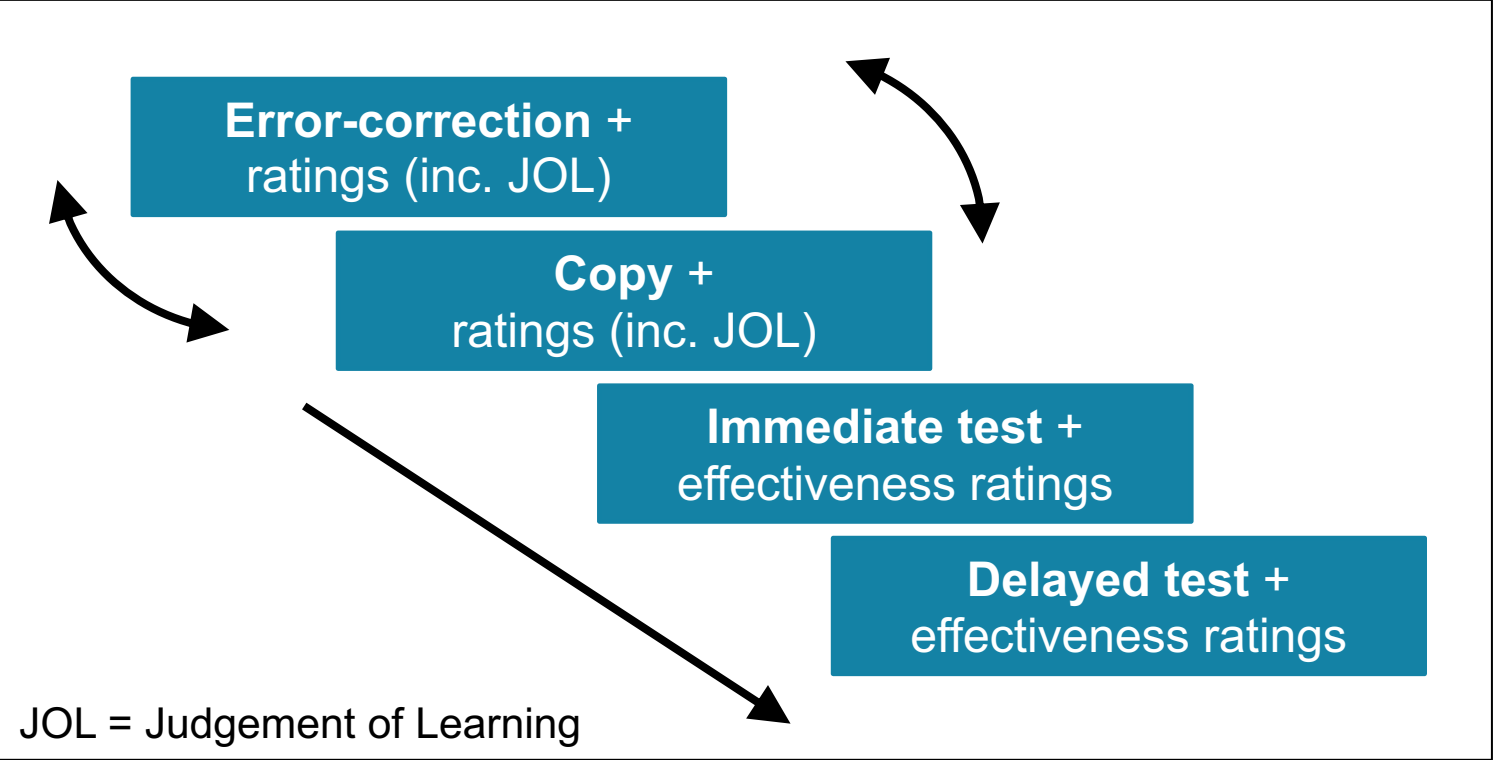
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Experiment 1 - Method

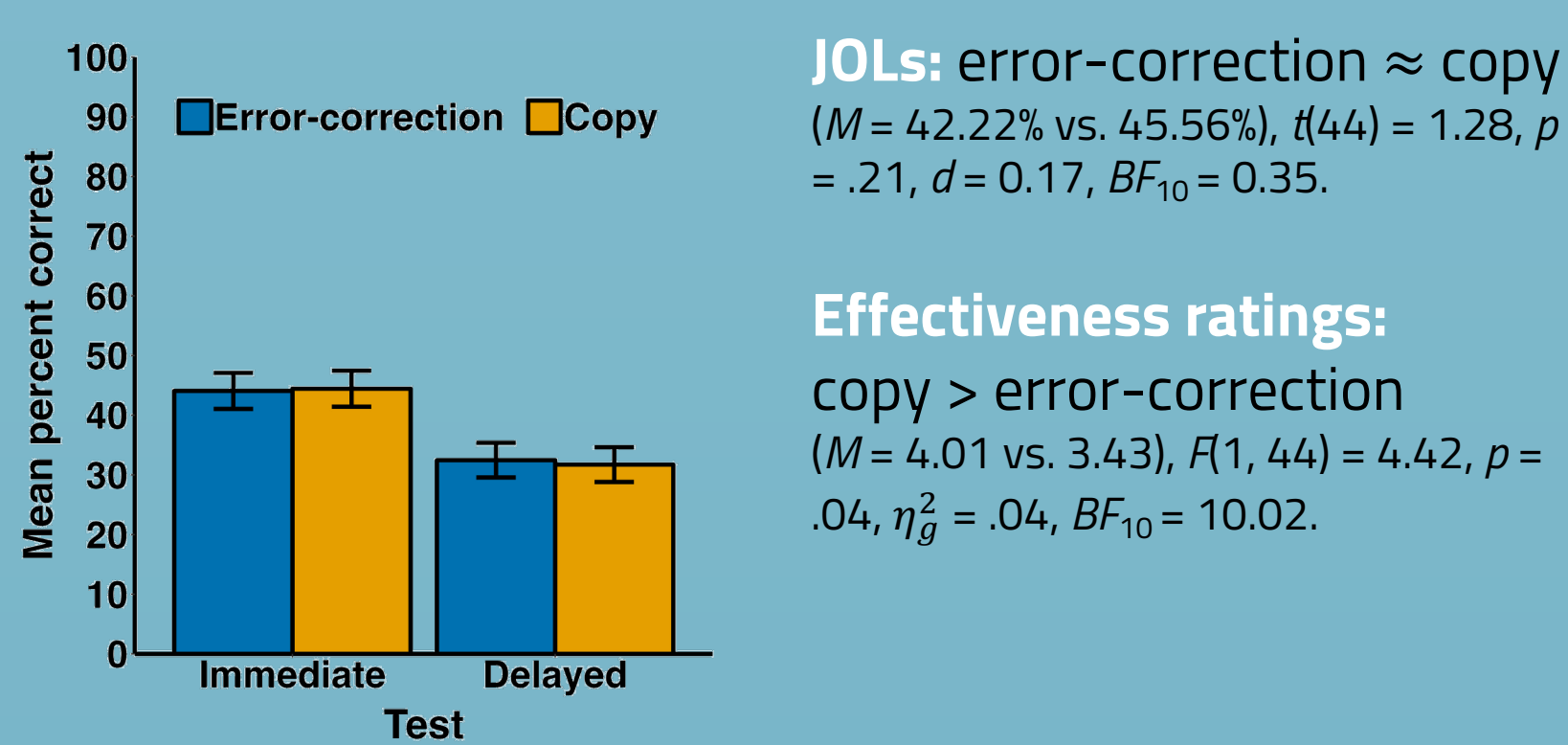
- Laboratory experiment with a very similar protocol to Wong and Lim (2022a), except with the addition of a delayed test.
- Psychology students ($N = 45$) studied two 18-item lists of biological term-definition concepts, in either an error-correction or copy condition.
- Participants studied each list for 2 min + 22 min with either learning condition, followed by an immediate cued-recall test and delayed test 2 days later (see Fig 2).

Fig 2: Experiment 1 Procedure



Experiment 1 - Results

Fig 3: Experiment 1 Test Performance



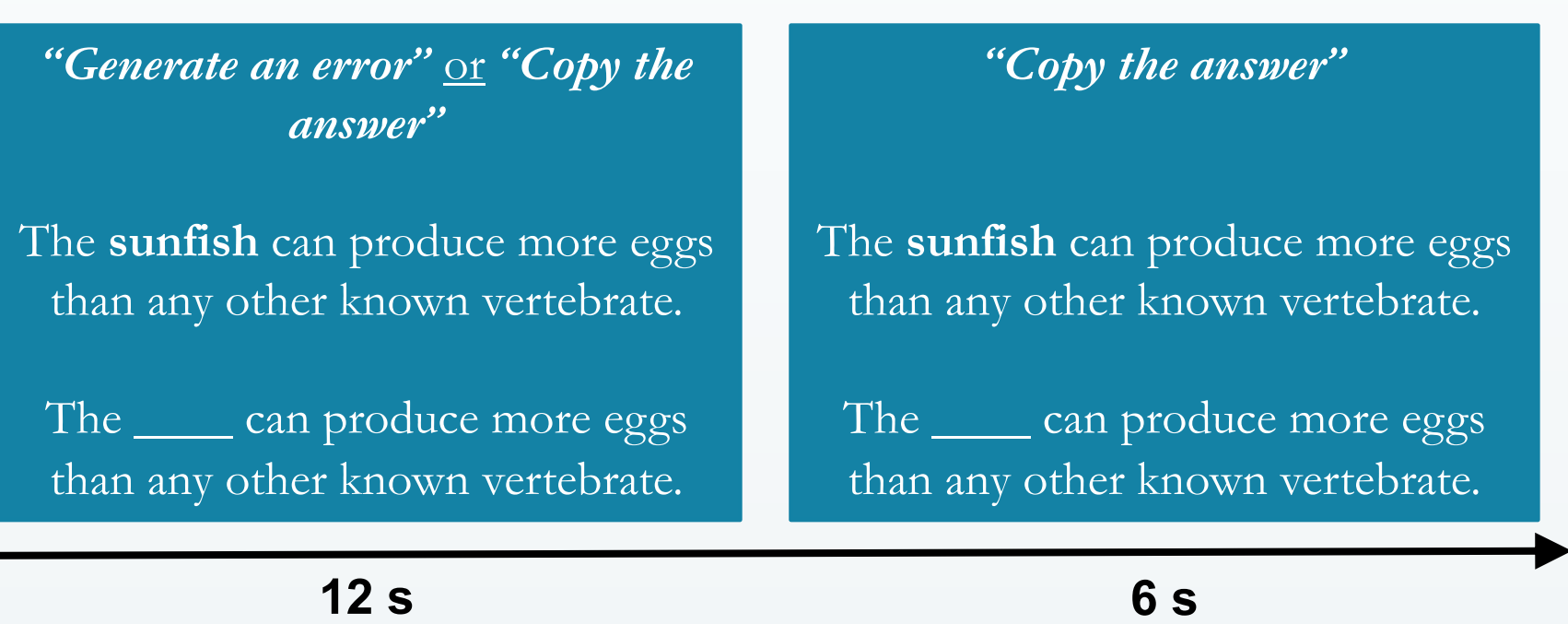
Test performance (see Fig 3)

- Delayed > immediate test, $F(1, 44) = 28.18, p < .001, \eta_g^2 = .06, BF_{10} > 100$.
- No significant effect of learning condition, $F(1, 44) = .01, p = .93, \eta_g^2 < .01, BF_{10} = 0.16$.
- No significant interaction, $F(1, 44) = 0.08, p = .78, \eta_g^2 < .01, BF_{10} = 0.24$.

Experiment 2 - Method

- Online experiment with a modified procedure from Experiment 1.
- Prolific participants ($N = 46$) studied 45 trivia facts each in an error-correction or copy condition.
- A trial-by-trial procedure was used for the learning conditions (see Fig 4).

Fig 4: Experiment 2 Learning Conditions



- After the encoding phase, participants completed a short distractor task, and a cued-recall test.
- Ratings (inc. JOLs) and effectiveness ratings were taken as in Experiment 1.

Experiment 2 - Results

- Table 1 shows the key descriptive statistics for Experiment 2.
- Test performance:** error-correction $\approx$ copy $t(45) = 0.60, p = .55, d = 0.06, BF_{10} = 0.19$.
- JOLs:** copy > error-correction $t(44) = 2.63, p = .01, d = 0.41, BF_{10} = 3.42$.
- Effectiveness ratings:** copy > error-correction $t(45) = 3.53, p = .001, d = 0.72, BF_{10} = 30.08$.

Table 1: Experiment 2 Key Results	Error-correction		Copy	
	M	SD	M	SD
Test performance (%)	70.99	18.62	72.08	18.72
JOLs (%) ¹	50.67	22.40	59.57	17.63
Perceived effectiveness	3.96	1.46	4.91	1.19

¹ $N = 45$

Discussion

- In two experiments, we did not observe the derring effect.
- Does the derring effect depend on the sample?
 - Wong and Lim's (2022a, 2022b, 2023) and Yap and Wong's (2024) participants were students from Singapore, while we recruited British participants.
 - Asian educational practices often encourage more independent problem-solving than Western practices (Metcalf, 2017), which might lead to different approaches to deliberate erring.
- It would be helpful to compare our participants' responses to those of Wong and Lim (2022a).
- In conclusion, caution must be taken when implementing deliberate erring in educational studies, and additional work comparing different populations is needed.

References

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Acknowledgements

This work was funded by the Experimental Psychology Society, the Basque Country Government Department of Education, and Economic and Social Research Council South Coast Doctoral Training Partnership.

