Evil Easies: When Students Accelerate Away from Desirable Difficulties

Matthew Jensen Hays | Dillon Murphy

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UC RIVERSIDE

1 Question

What happens when a learner has poor metacognition but also acts inconsistently with their beliefs?

2 Background

Metacognition

Two metacognition levels (Nelson & Narens, 1990):
Monitoring: your beliefs about how your learning works
Control: your behavior with respect to those beliefs

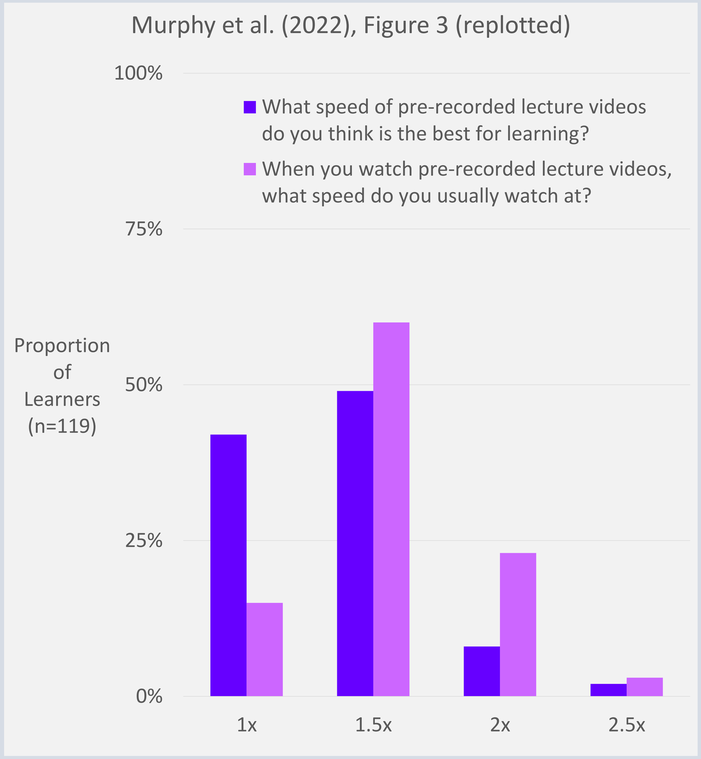
Metacognitive Sophistication

Increasing learners' *metacognitive sophistication* – helping them better understand how their learning works – can help them optimize their self-directed study and thus improve their learning (Bjork et al., 2013).

Lecture Video Speed

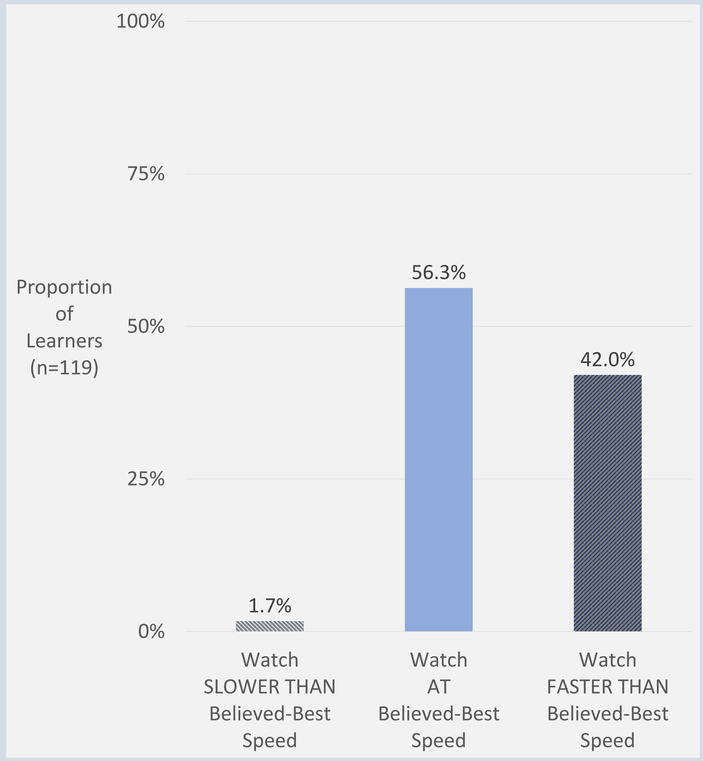
Students often watch lecture videos at increased playback speeds. Murphy et al. (2022) found that speeds up to 2x did not impair recall. Students also hold beliefs about the extent to which videos can be sped up before learning suffers. Murphy et al. found *metacognitive inconsistency*: Some students watch lecture videos at speeds faster than they believe to be best for learning.

Murphy et al. (2022), Figure 3 (replotted)



3 Analysis 1

To what extent are Murphy et al.'s (2022) learners' actions metacognitively (in)consistent with their beliefs?



- 56.3% of learners watch lecture videos at the speed that corresponds to what they believe is best for their learning.
- 43.7% of learners watch lecture videos at speeds they think are sub-optimal (a metacognitive control failure).

References

Bjork, R. A., Dunlosky, J., & Kornell, N. (2013). Self-regulated learning: Beliefs, techniques, and illusions. *Annual Review of Psychology*, 64, 417-444.

Murphy, D. H., Hoover, K. M., Agadzhanyan, K., Kuehn, J. C., & Castel, A. D. (2022). Learning in double time: The effect of lecture video speed on immediate and delayed comprehension. *Applied Cognitive Psychology*, 36(1), 69-82.

Nelson, T. O., & Narens, L. (1990). Metamemory: A theoretical framework and new findings. In G. H. Bower (Ed.), *The psychology of learning and motivation* (Vol. 26, pp. 125-173). Academic Press.

4 Analysis 2

Compared to what they believe is best for learning, at what speed do learners report watching lecture videos?

		Believed-Best Speed				
		1x	1.5x	2x	2.5x	Total
Watch Speed	1x	**14.3%**	0.0%	0.8%	0.0%	74.8%
	1.5x	24.4%	**34.5%**	0.0%	0.8%	
	2x	3.4%	12.6%	**6.7%**	0.0%	22.7%
	2.5x	0.0%	1.7%	0.0%	**0.8%**	2.5%

- 22.7% of learners watch at optimal speeds; 77.3% of learners exhibit metacognitive monitoring failures.
- Only 7.5% of all learners identified 2x as "best" for learning.

5 Conclusions

1. Many learners exhibit a metacognitive monitoring failure: They mistakenly believe that speeding up lecture videos will impair comprehension and recall.
2. Many learners *also* exhibit a metacognitive control failure: They ignore their beliefs and increase the speed of pre-recorded lecture videos, anyway.
3. Paradoxically, learners' poor metacognitive monitoring *and* control can combine to be beneficial; many learners who choose to watch videos at 2x speed believe that they are making a sacrifice in doing so, but instead inadvertently benefit (time efficiency) without cost (cognition).
4. Self-guided learning may be able to be optimized for retention and time efficiency without requiring learners to become metacognitively sophisticated.

6 Answer

Two wrongs can make a right!