WORTH THE EFFORT

THE SELF-REGULATION OF DESIRABLE DIFFICULTIES

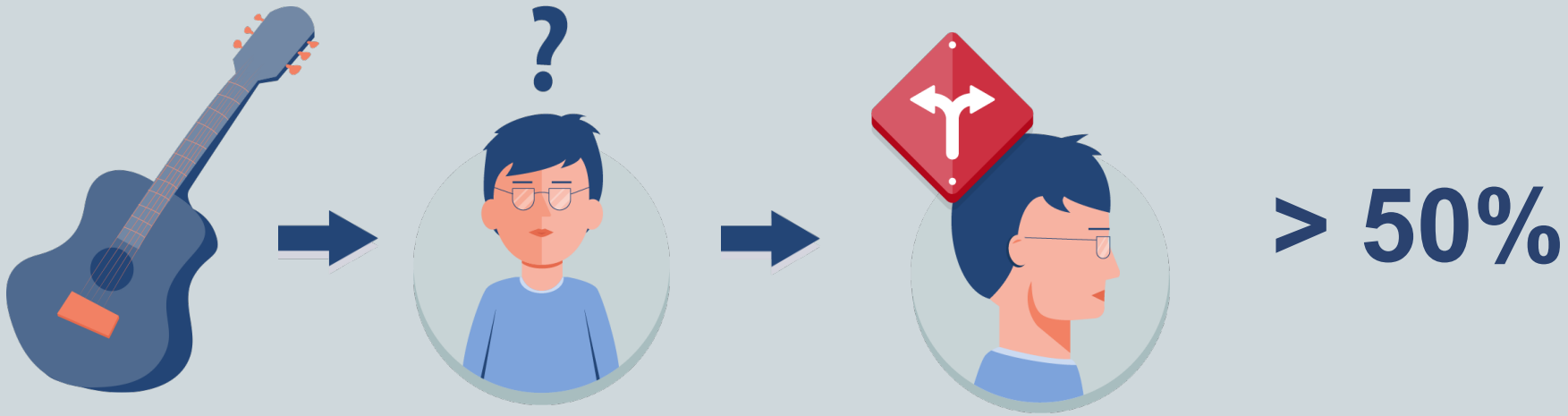
Anique de Bruin

School of Health Professions Education

Maastricht University

“If something’s hard to do, then it’s not worth doing

SELF-REGULATION



Workplace **Wellbeing** **Life satisfaction**

SUBJECTIVE EXPERIENCES

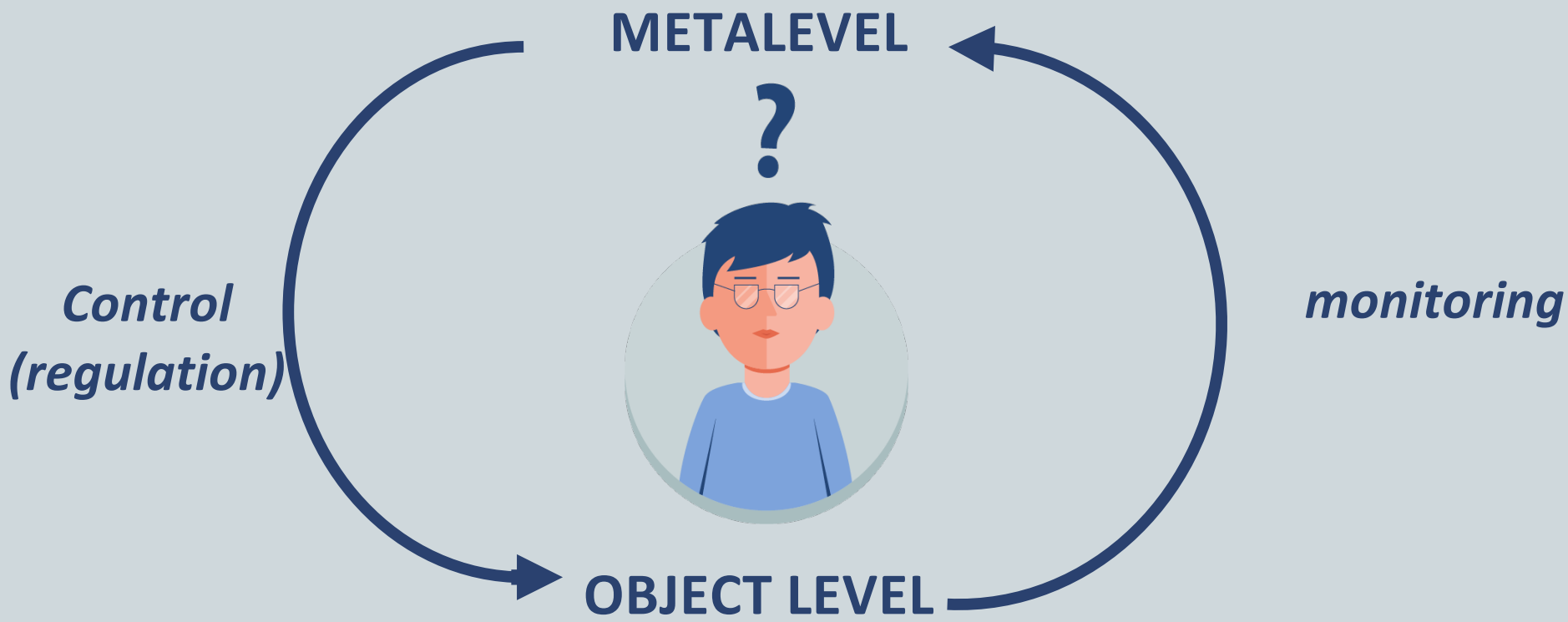
What is the next step?

First do task 2

A leads to B

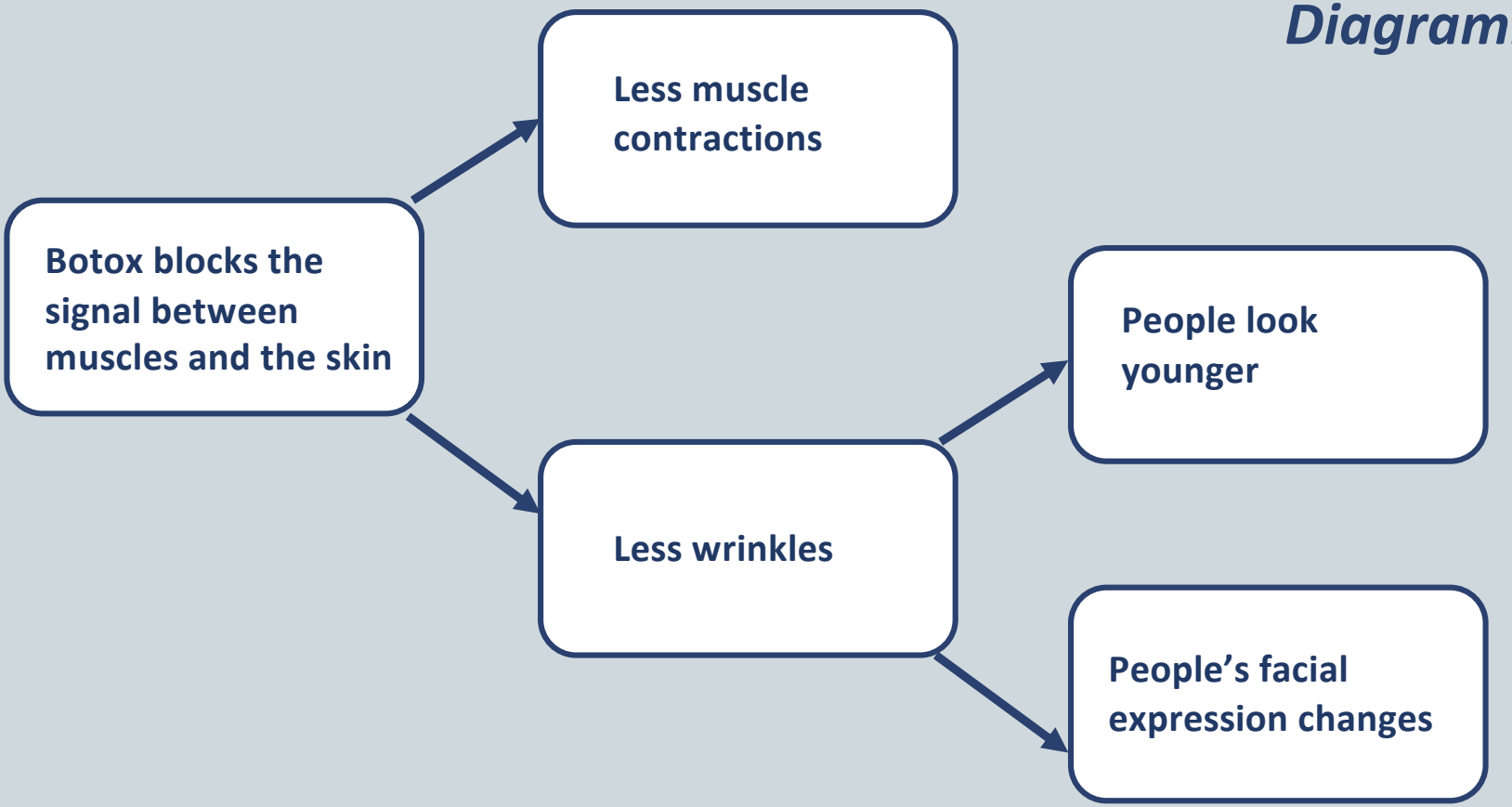
I can't do this

I've done this before

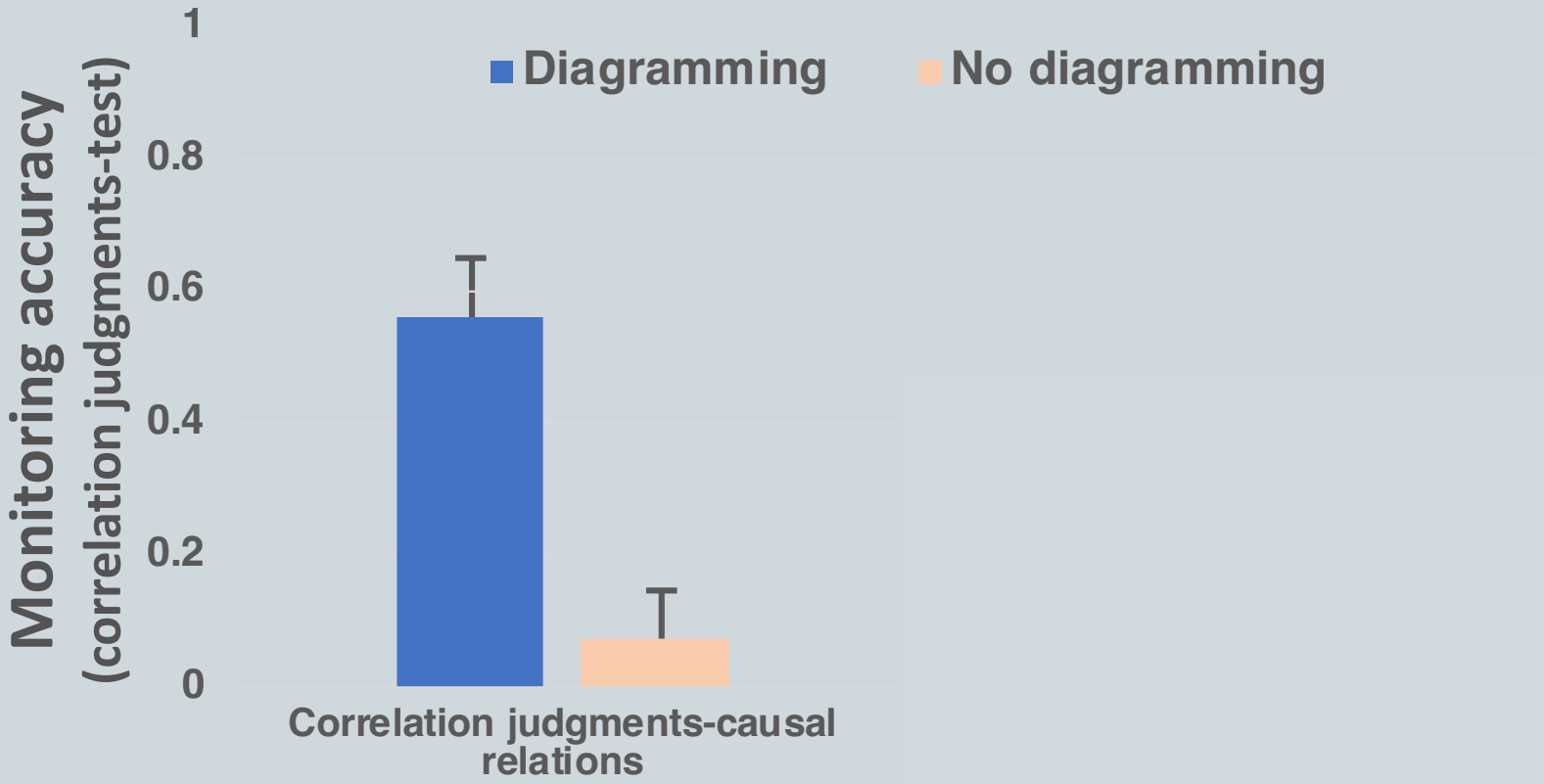


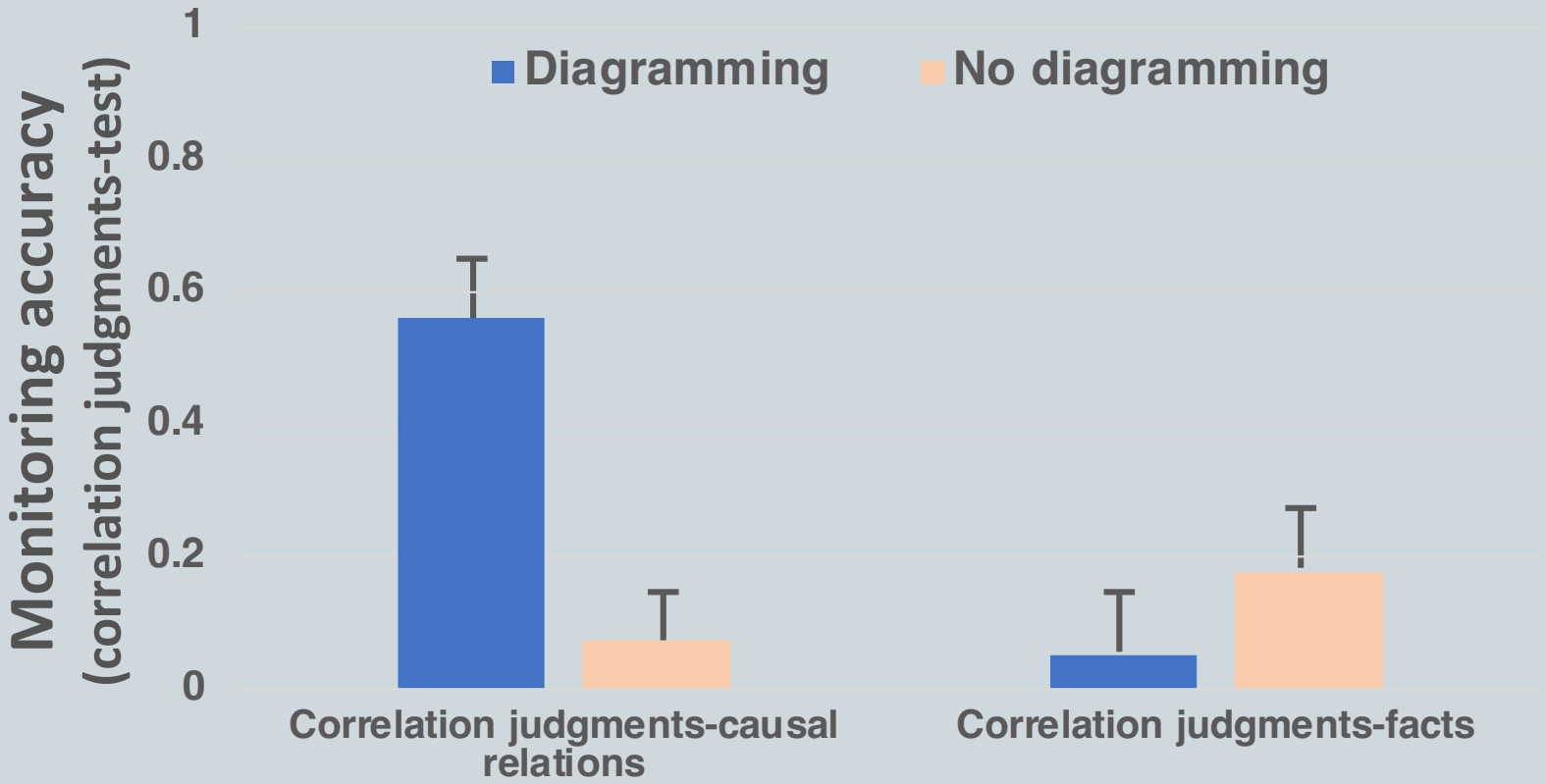
Nelson & Narens (1990), Nelson (1994)

Diagramming prompt



Van Loon, De Bruin, Van Gog,
Van Merriënboer, & Dunlosky (2014)


Monitoring accuracy
(correlation judgments-test)
1
0.8
0.6
0.4
0.2
0
Diagramming
No diagramming
Correlation judgments-causal relations


Monitoring accuracy
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1
0.8
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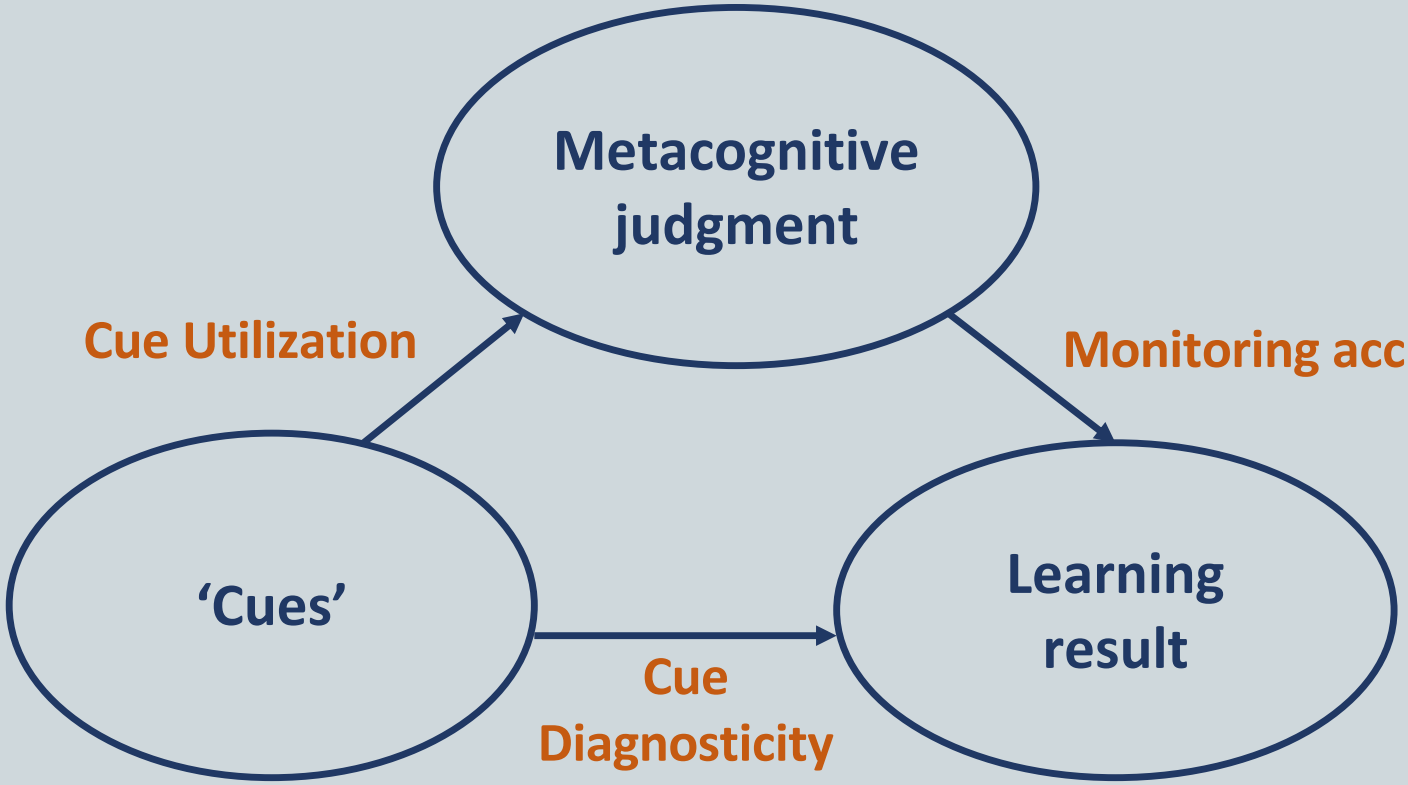
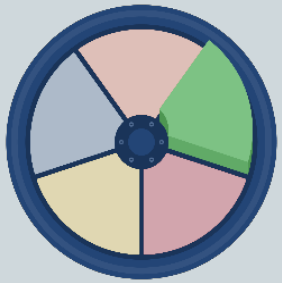
Diagramming
No diagramming
Correlation judgments-causal relations
Correlation judgments-facts



Dunlosky, Mueller, Thiede (2016)
De Bruin, Dunlosky, & Cavalcanti (2017)



IMPROVING SELF-~~REGULATION~~ THROUGH MONITORING DIAGNOSTIC CUE USE

COGNITIVE LOAD OF SELF-REGULATION

Bjork, Dunlosky, & Kornell (2013)

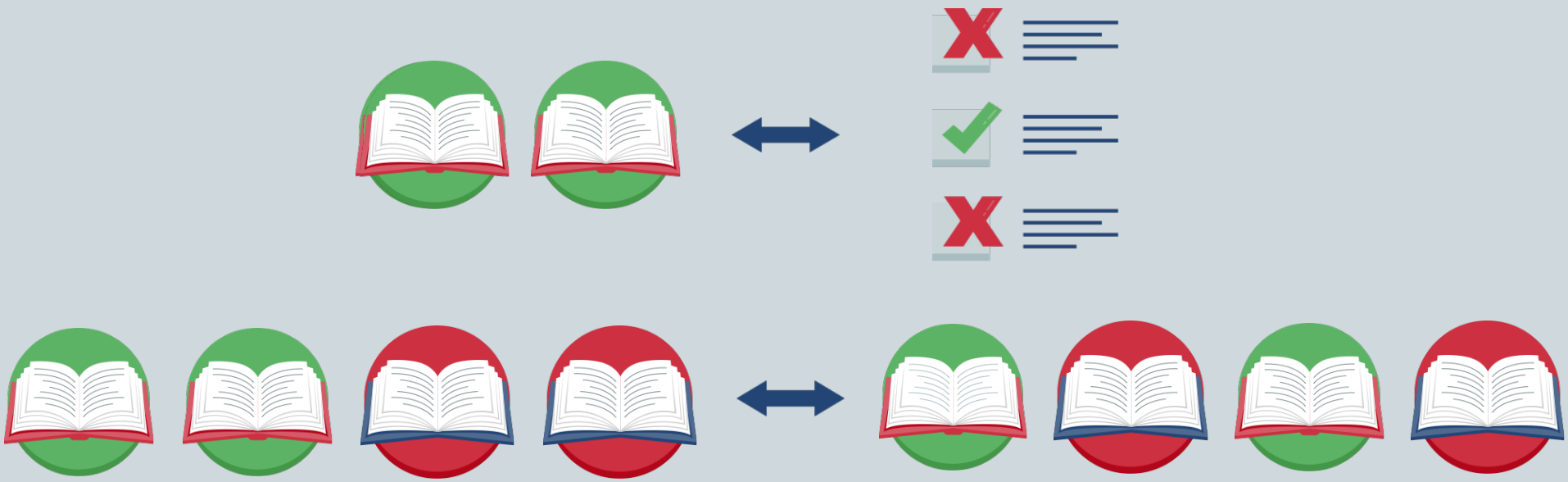
STUDY SMART

Retrieval practice and distributed practice work!

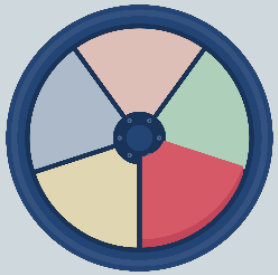
Learning takes time!

Learning takes effort!

Biwer, Oude Egbrink, Aalten, & De Bruin (2020)
Biwer, De Bruin, Schreurs, & Oude Egbrink (2020)



Fluent learning ⟷ Desirable difficulties

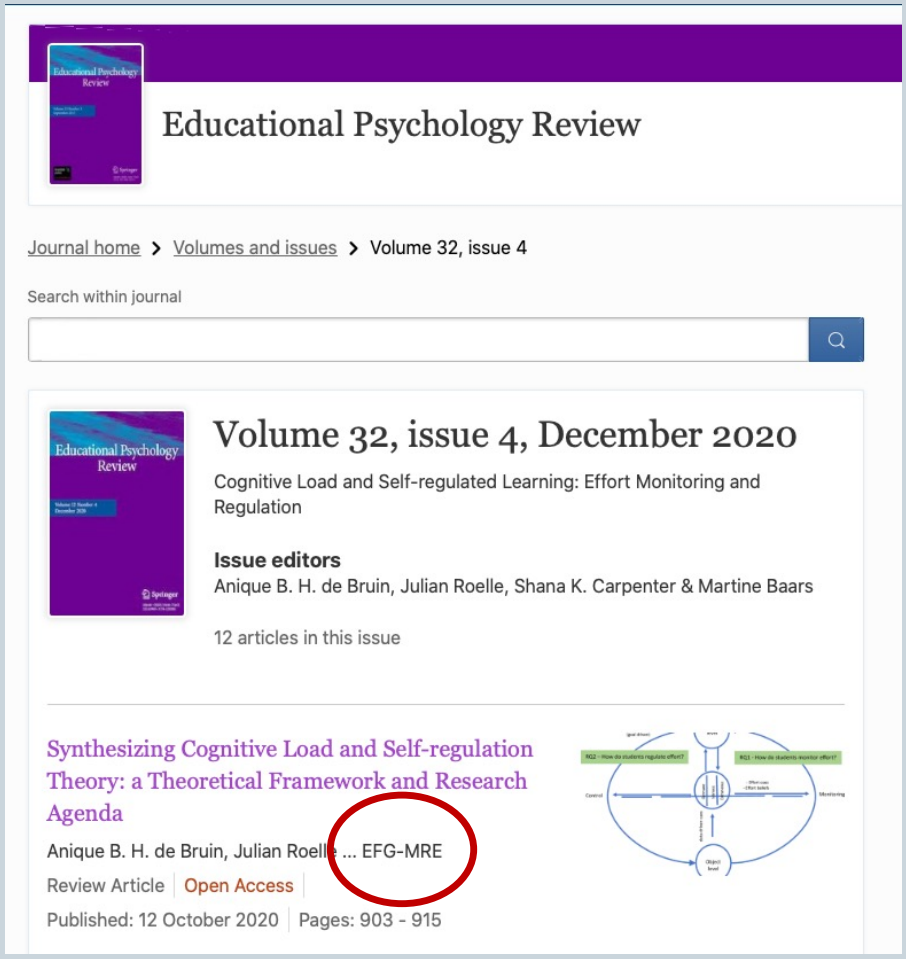


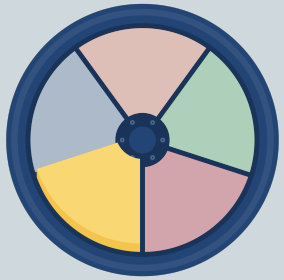
EXPERIENCED LEARNING ≠ ACTUAL LEARNING

EARLI Emerging Field Group ‘Monitoring and Regulation of Effort’

Approach:

- Development of a theoretical framework integrating SRL and CLT
- Joint/multilab pilot research (sponsored by Jacobs Foundation)
- Open science & sharing where possible
- Room for junior researchers to grow





ALL SCIENCE IS TEAM SCIENCE

The central role of PERCEIVED EFFORT

- Effort is continuously experienced and monitored (passive load; data-driven).
- Effort is actively and dynamically regulated (active load; goal-driven)
- Perceived effort is biased, heuristic, a type of metacognitive judgment (Scheiter, Ackerman, Hoogerheide, 2020).
  - → Biased by non-diagnostic cue use
  - → Is a cue for perceived learning

Felicitas Biwer

Luotong Hui

IT'S ABOUT TIME

Erdem Onan

Regulation towards effortful, but desirable difficulties

Felicitas Biwer

STUDY SMART

Internal factors
- Old habits of using ineffective strategies
- discipline

Uncertainty
- Use
- Time
- Energy/Effort
- Results

External factors
- Curriculum / assessment
- Availability of practice questions
- Fit strategy block

Strategy change

(Meta)Cognitive knowledge
'what works, what doesn't'

Awareness
about discrepancy between own strategy use and evidence

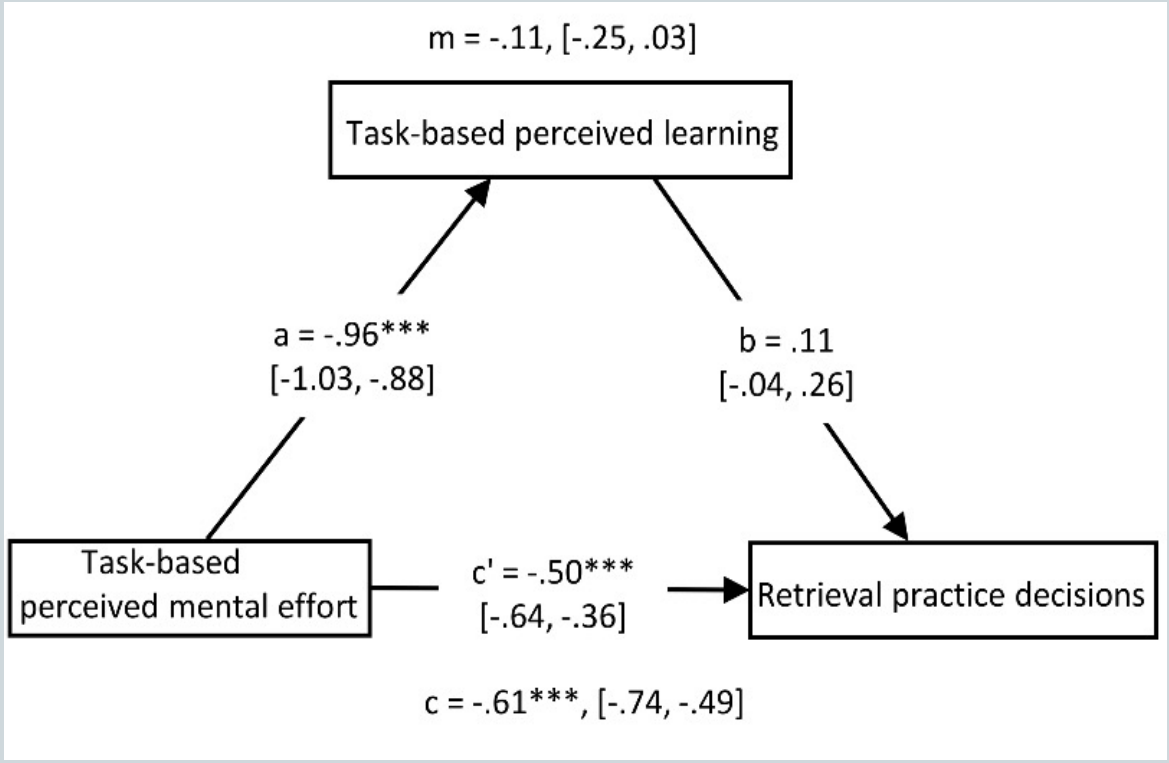
Intention to change

Use of effective learning strategies

Biwer, oude Egbrink, Aalten, & De Bruin (2020)

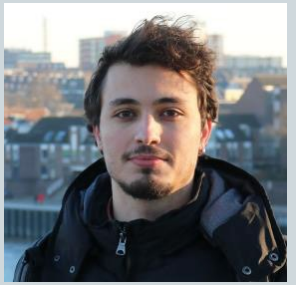
Task-based effort relates to regulation of learning

Luotong Hui



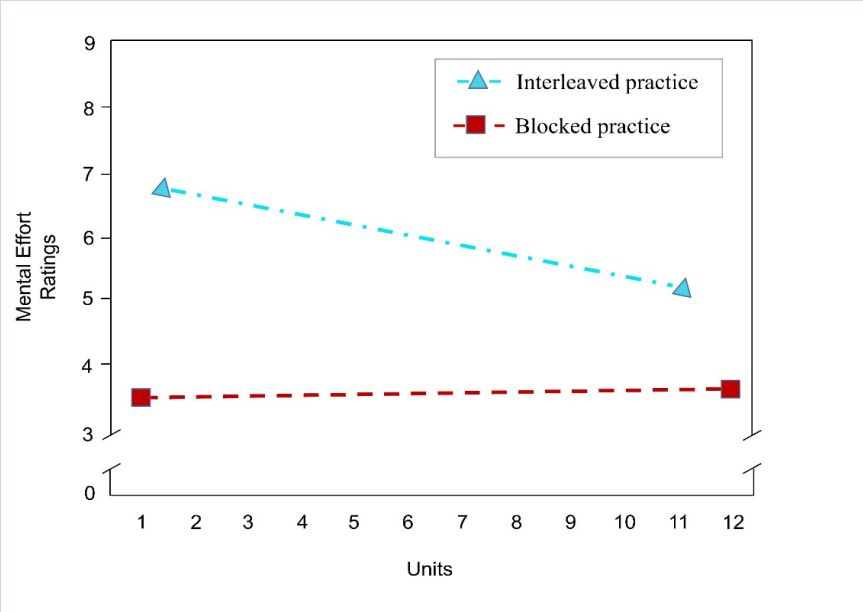
Direct effect is significant. c’ = -5.00, [-.64, -.36]
Indirect effect is not significant. m = -.11, [-.25, .03]

Perceived effort and learning across time



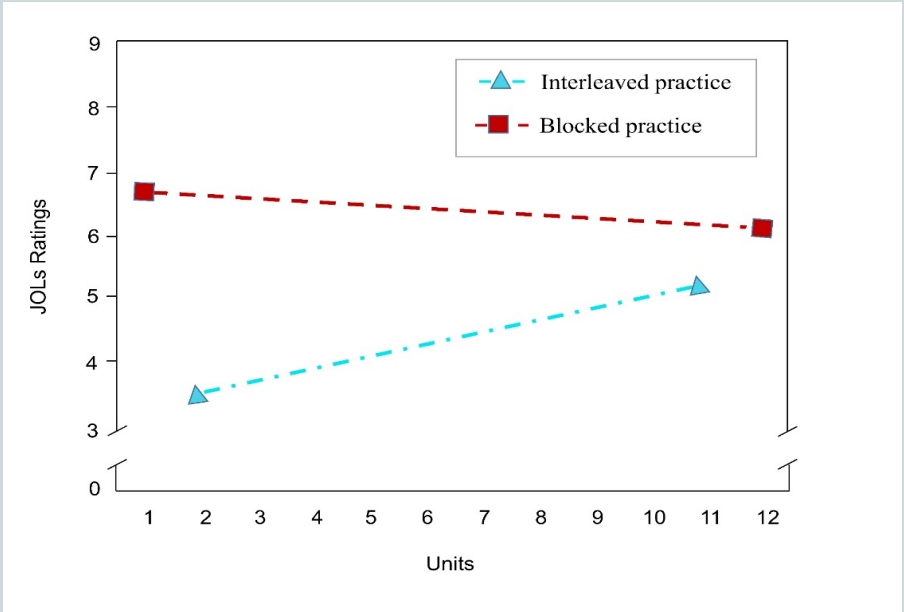
Erdem Onan

Perceived Effort



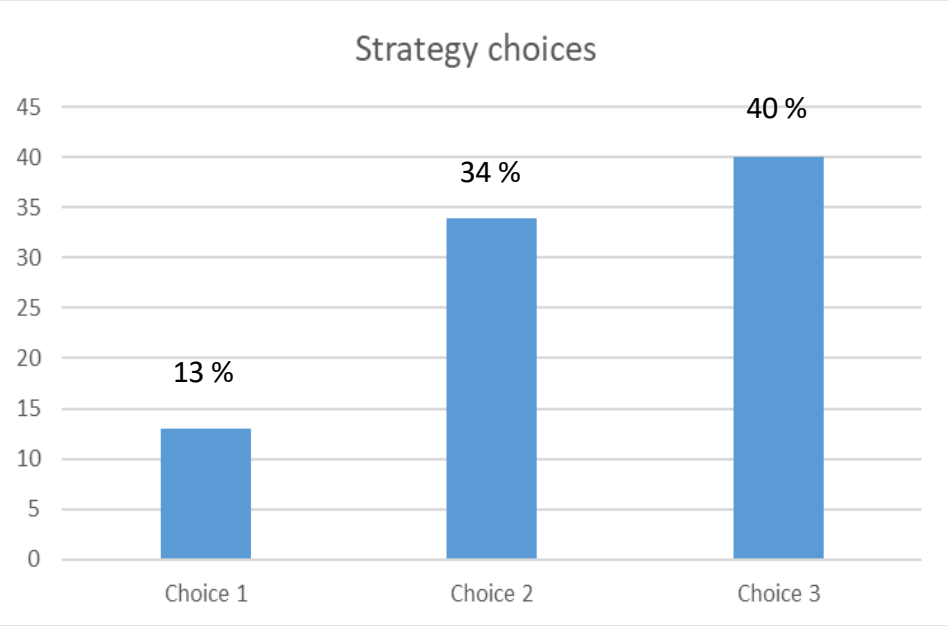
time × strategy
$F(1, 1498) = 135.22$, $p < .01$

Perceived Learning

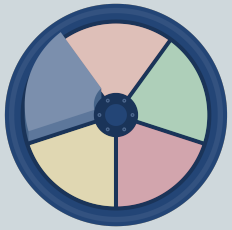


time × strategy
$F(1, 1498) = 260.81$, $p < .01$

Learning strategy choices change across time



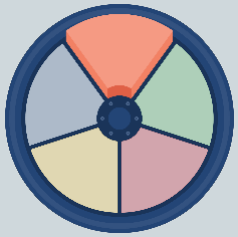
On-task experience increased the use of interleaved practice, $\chi 2$ (1) = 18.481, asymp. $P < .001$



PERCEIVED EFFORT AFFECTS SELF-REGULATION

SELF-REGULATION OF DESIRABLE DIFFICULTIES: EFFORT!

How can students self-regulate their (perceived) effort & learning when effort is high, but learning is effective?



ACCEPT, REDUCE, OR SILENCE EFFORT

	ACCEPT effort	REDUCE effort	SILENCE effort
STRATEGY LEVEL			
TASK LEVEL			
LEARNER LEVEL			

	ACCEPT effort	REDUCE effort	SILENCE effort
STRATEGY LEVEL	Educate about learning strategies (LS) and desirable difficulties (DD)		
TASK LEVEL			
LEARNER LEVEL			

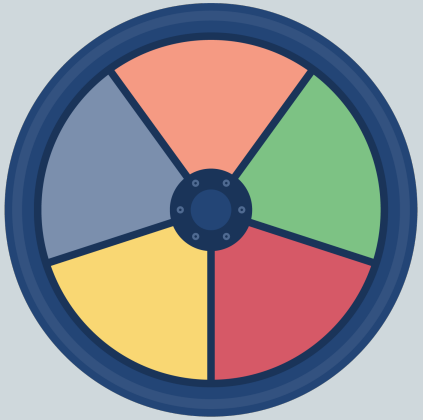
	ACCEPT effort	REDUCE effort	SILENCE effort
STRATEGY LEVEL	Educate about learning strategies (LS) and desirable difficulties (DD)		
TASK LEVEL	Experience LS and DD		
LEARNER LEVEL			

	ACCEPT effort	REDUCE effort	SILENCE effort
STRATEGY LEVEL	Educate about learning strategies (LS) and desirable difficulties (DD)		
TASK LEVEL	Experience LS and DD		
LEARNER LEVEL	Motivation regulation strategies		

	ACCEPT effort	REDUCE effort	SILENCE effort
STRATEGY LEVEL	Educate about learning strategies (LS) and desirable difficulties (DD)		
TASK LEVEL	Experience LS and DD	Segmenting task	
LEARNER LEVEL	Motivation regulation strategies		

	ACCEPT effort	REDUCE effort	SILENCE effort
STRATEGY LEVEL	Educate about learning strategies (LS) and desirable difficulties (DD)		
TASK LEVEL	Experience LS and DD	Segmenting task, decrease time left	
LEARNER LEVEL	Motivation regulation strategies	Self-segmenting task, take breaks, teleo anticipation	

	ACCEPT effort	REDUCE effort	SILENCE effort
STRATEGY LEVEL	Educate about learning strategies (LS) and desirable difficulties (DD)		
TASK LEVEL	Experience LS and DD	Segmenting task, decrease time left	
LEARNER LEVEL	Motivation regulation strategies	Self-segmenting task, take breaks, teleo anticipation	Increase importance (e.g., procrastinate)



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ACCEPT, REDUCE, OR SILENCE EFFORT

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THE SELF-REGULATION OF DESIRABLE DIFFICULTIES

Anique.debruin@maastrichtuniversity.nl

School of Health Professions Education

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