

Teaching critical thinking skills in psychology by means of a classroom experiment

Åge Diseth
University of Bergen
Norway







ÅGE DISETH

Psykologi 1

PSYKOLOGI 1
PROGRAMFAG



ÇAPPELEN DAMM

ÅGE DISETH
SUSANNA SØRHEIM

Psykologi 2

PSYKOLOGI 2
PROGRAMFAG



ÇAPPELEN DAMM

Psychology in Norwegian senior high schools

A “program subject”

- 140 hours/year
- 5 hours/week

Students

- Second and third year of senior high school (age groups: 17/18/19 years)

Choice of subject

- Approximately 12% of GE students have psychology as a subject (N=17.000)

Critical thinking

- Part of the psychology curriculum
- “scientific and critical thinking”



Critical thinking skills



Critical thinking skills: why they matter

Wilson (2000)

- Volume of information required to process is enormous
- Cognitive efficiency: Critical thinking reduces cognitive load

Tombs (2004)

- Discrepancy between volume of information required to process and actual time to process it
- «dumbing down» of curriculum: simplification
- Transference of skills

Williams et al (2005)

- psychology undergraduates: correlation critical thinking – exam performance: $r=.41$

Critical thinking dispositions

California Critical Thinking Disposition Inventory (CCTDI) (Facione, 1995)

- Truth-seeking: «Its never easy to decide between competing points of view»
- Analytical: «It bothers me when people rely on weak arguments to defend good ideas»
- Open-mindedness «It concerns me that I might have biases of which I am not aware»

What is critical thinking?



Karl Popper: demarcation criterion → falsification

“All swans are white”



“Chocolate taste better than vanilla”



What is critical thinking?

Definitions

- Conscious use of cognitive strategies that increase the likelihood of achieving a desired goal (Halpern, 1998).
- Reason and reflective thinking aimed at deciding what to believe or not believe (Ennis, 1985).
- Reflective thinking in which a person reasons about relevant evidence to draw a sound or good conclusion (Bensley, 2008)

Claim

- “Extraverts prefer more stimulating environments than introverts”

Evidence

- Schmeck, R. R., & Lockhart, D. (1983). Introverts and extraverts require different learning environments. *Educational leadership*, 40(5), 54-55.
- Geen, R. G. (1984). Preferred stimulation levels in introverts and extroverts: Effects on arousal and performance. *Journal of Personality and Social Psychology*, 46(6), 1303–1312.

Reasoning (argument)

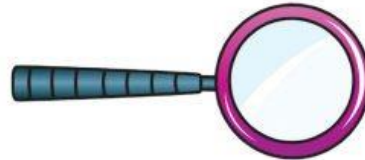
- “Both extraverts and introverts seek optimal arousal”

CLAIM



A statement that answers the question

EVIDENCE



The scientific data and details that support your claim

REASONING



Explains “how” or “why” the evidence supports the claim.

Aka the scientific rule

Some indicators of critical thinking

Analyzing arguments, claims, and evidence (Halpern, 1998)

Drawing conclusions based on inductive and deductive reasoning (Ennis, 1985)

Being able to evaluate or judge information (Ennis, 1985)

Being able to make decisions and solve problems based on relevant information (Halpern, 1998)

Being motivated to think critically (Willingham, 2007)

Critical thinking and cognitive reflection



Thinking fast and slow

Kahneman

- System 1 thinking:
Fast, intuitive
- System 2 thinking:
Slow, analytical

THINKING,
FAST AND SLOW



DANIEL

KAHNEMAN

WINNER OF THE NOBEL PRIZE IN ECONOMICS

MC: CRT

SOCRATIVE

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Room name

- AAGE1



Student Login

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Cognitive reflection test - CRT



A bat and a ball cost €110

The bat cost €100 more than the ball

How much does the ball cost?

Ball €10?

- Racket €10 + €100 110
- Plus ball 10
- **SUM:** **120**

Ball €5?

- Racket €5 + €100 105
- Plus ball 5
- **SUM:** **110**

Results

Water lillies

$D = 47$ days

Bat and ball

$A = € 5,-$

Money

$B = € 1.200,-$

“A Ferrari and a Ford together cost €190,000. The Ferrari costs €100,000 more than the Ford. How much does the Ford cost?”

- Trémolière, B., & De Neys, W. (2014). When intuitions are helpful: Prior beliefs can support reasoning in the bat-and-ball problem. *Journal of Cognitive Psychology*, 26, 486–490.

Ford € 90.000

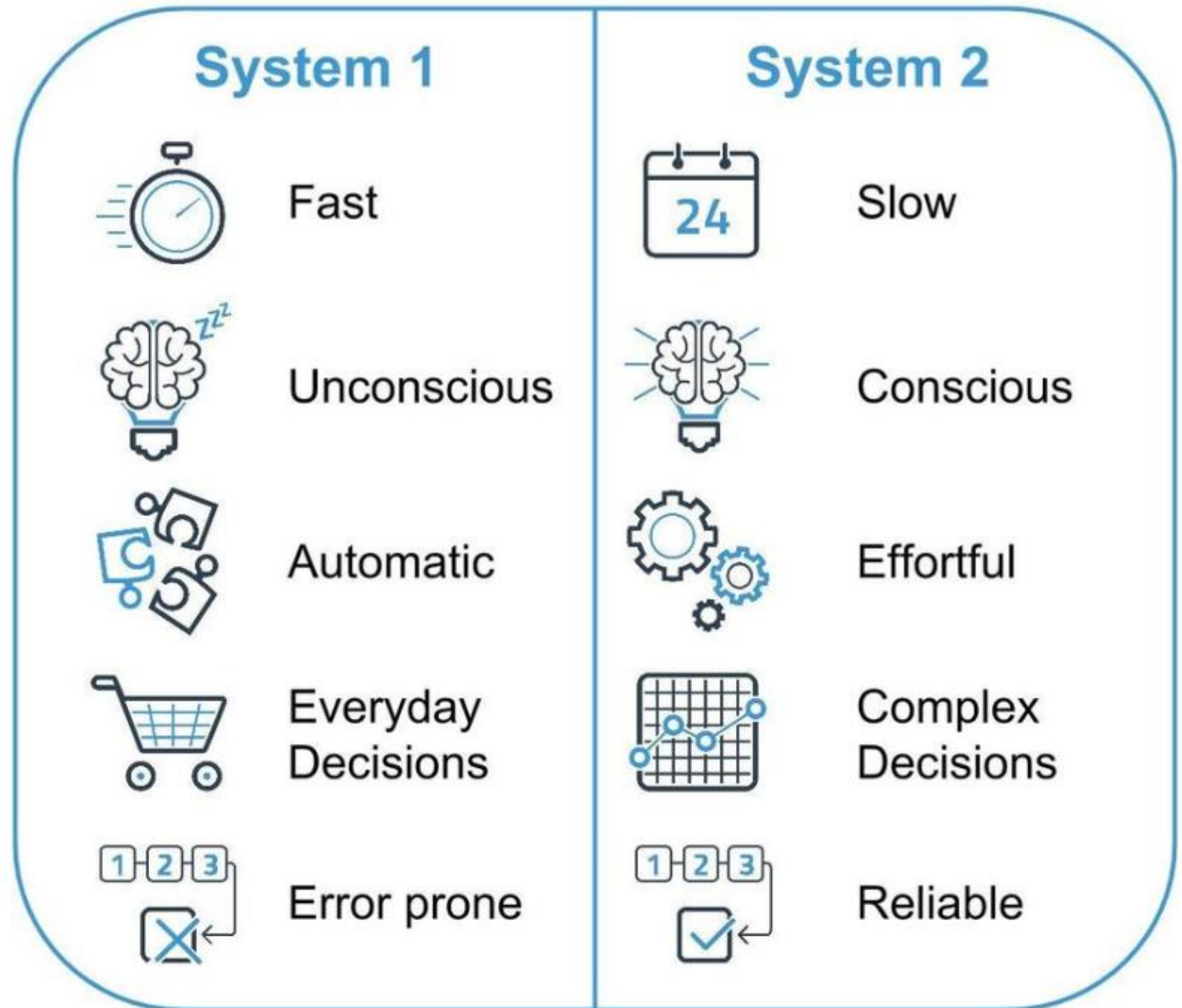
• Ford cost	90.000
• Plus Ferrari cost	190.000
• SUM	280.000

Ford € 45.000

• Ford cost	45.000
• Plus Ferrari cost	145.000
• SUM TOTAL	190.000

Thinking fast and slow

- https://www.youtube.com/watch?v=s_iF7W8QoiA
- Fra 1:40

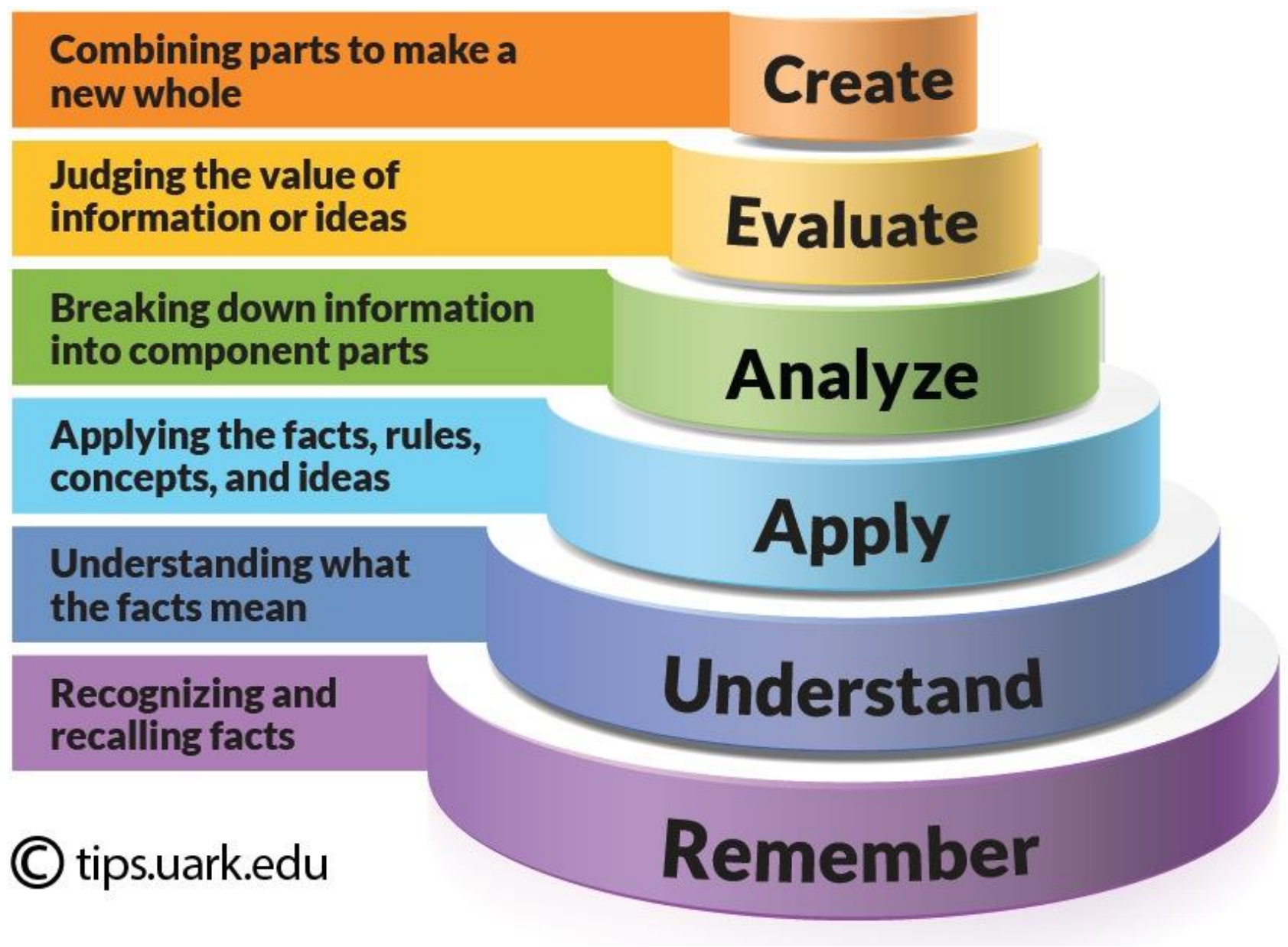


Teaching critical thinking



Blooms taxonomy

- analyze
- evaluate
- create



Example: depression

Create: New method for treating depression

Evaluate: Assess effectiveness of treating depression

Analyze: Determine if patient has depression or not

Apply: Describe standard process for determining if a patient suffers from depression or not

Understand: Match symptoms with depression

Remember: Identify three symptoms of depression

Sternberg's triarchic model

Example: Comparing treatment effectiveness:
Psychoanalysis vs. Cognitive Behavioral Therapy (CBT)

Use principles from psychoanalysis and CBT to explain the problem and to help this individual with social anxiety

Practical

- Real-world situation



Analytic

- Critical thinking



Compare evidence for the effectiveness of these treatment methods

Synthetic

- Creative thinking



Use principles from psychoanalysis and CBT to create your own form of therapy

How to teach critical thinking? (Wade, Tavris & Garry, 2013)

Ask questions

1. "Why do many smokers believe that they are not harmed by smoking?"
2. "What is the cause of the worldwide obesity epidemic?"

Define concepts precisely

1. "What is a 'stereotype'?"
2. "What are the consequences of 'stereotypes'?"

Examine evidence

- "Do victims of natural disasters benefit from crisis therapy?"

Avoid reasoning based on emotions

- "Can strong opinions about politics and religion influence their evidence for or against attitudes towards sexual minorities?"

Avoid oversimplification

- "Many are interested in brain scanning, but what does it really mean when a region of the brain is more active under certain conditions?"

Consider alternative explanations

- "Some argue that children and adolescents become more violent by playing violent video games, but are there alternative explanations?"

Be able to accommodate uncertainty

- "Do dreams have any hidden meaning, or are they simply expressions of brain activity during sleep?"

Example: Prisoner's dilemma

- two offenders (A and B) are interrogated, and they both risk imprisonment
- the police wants each of the offenders to testify against the other
- what should each of them choose to do? Remain silent? Testify and betray the other?

<https://www.youtube.com/watch?v=t9Lo2fgxWHw>

	A cooperate with B (remain silent)	A betray B (testify)
B cooperate with A (remain silent)	A: 1 year / B: 1 year	A: 0 year / B: 3 years
B betray A (testify)	A: 3 years / B: 0 year	A: 2 years / B: 2 years

- DILEMMA:
 - Mutual cooperation is better than mutual betrayal.
 - However, from a self-interest perspective, it is best to betray the other
 - If the other cooperates: no punishment.
 - If the other betray: lower punishment if one also betrays oneself
 - Betraying the other/not cooperating is actually in the self-interest of each prisoner

Prisoner's dilemma: other examples

Task to the students

- Find other examples of human interaction where the “prisoners dilemma” is relevant

Climate crisis vs. nature crisis

- Stop producing oil, or produce “clean” oil in Norway?
- Wind power: green energy to fight climate change or destruction of nature?



Psychology

- Substance abuse: → stop now or continue?
- Living together → leave your partner or stay?

Economy

- Spend money on commercials or not?



Assessment objective 2 (AO2) (Jarvis, 2011)

Get the students to analyze...

- ... the difference between superficial and elaborated evaluation of an academic topic
- "Milgram was unethical" vs "Milgram conducted his research before ethical guidelines were established"

Provide examples of superficial knowledge

- Have the students develop these into a more elaborated form
- "Milgram's research was unethical" could be elaborated into...

Get the students to assess which of the statements works best

- How do elaborated statements provide greater opportunity to present a more balanced picture?

Four-question model (Dietz-Uhler & Lanter, 2009)

Analysis of the material

- «Identify one important concept, research finding, theory or idea in psychology you learned while completing this activity»

Reflection on it

- «Why do you believe that this concept, research finding, theory or idea in psychology is important?»

Relating the material to an aspect of the student's life

- «Apply what you have learned from this activity to some aspect of your life»

Generation of one or more questions about the material

- «What question(s) has the activity raised for you?»

Example: Autonomy versus respect for authority

- How important is autonomy to you? (on a scale from 1-10)
- How important is autonomy for your fellow students? (on a scale from 1-10)

Bias



Critical thinking as knowledge about bias

Bias: examples (Schacher, 2001)

- **Hindsight bias.** Recollections of past events are adjusted by our current understanding
- **Egocentric bias.** Unrealistically positive illusion about oneself and one's own excellence
- **Stereotypical bias.** Unconscious interpretation of individuals as representatives of a group (gender, ethnicity, etc.)

MC: BIAS

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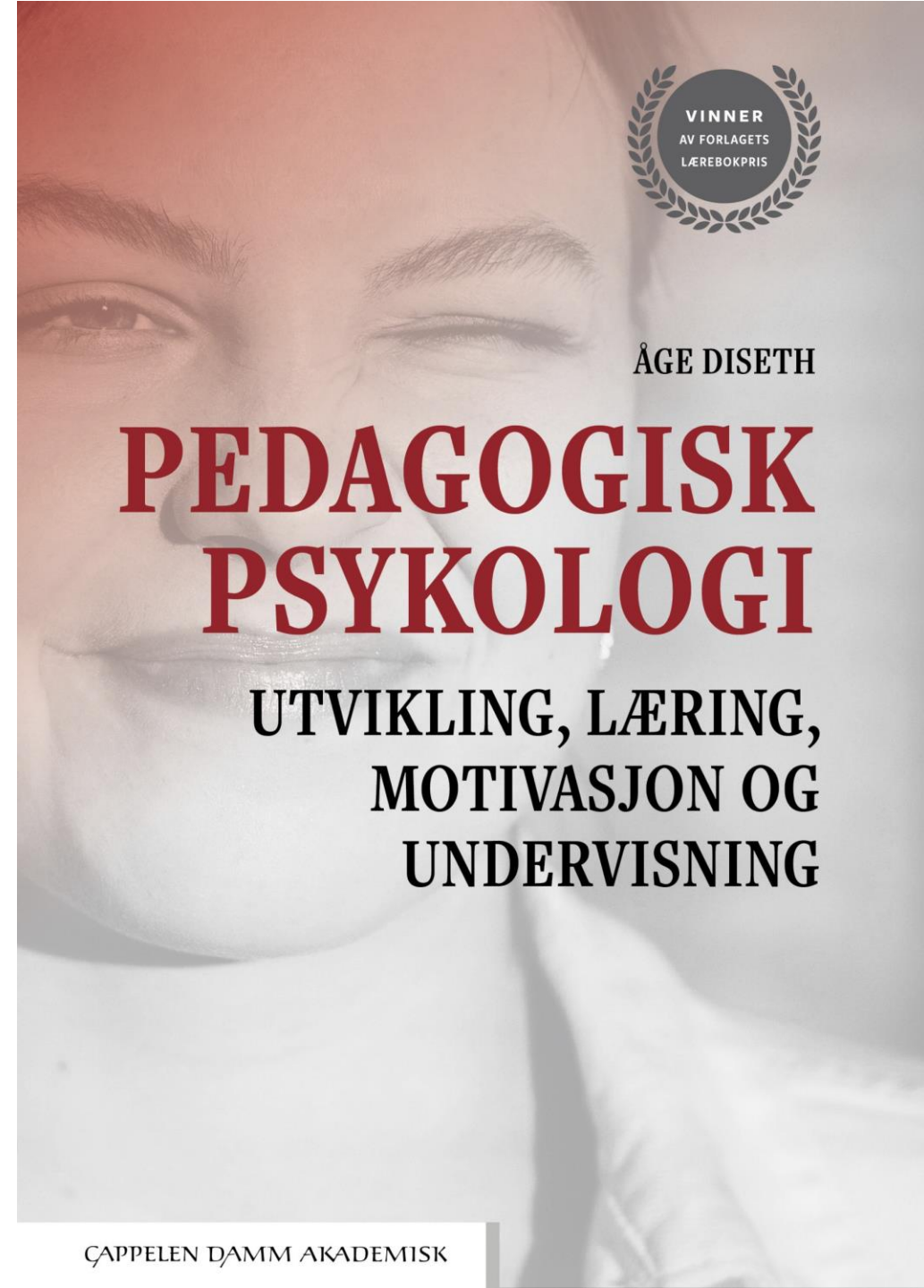
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New book June 2024



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PEDAGOGISK PSYKOLOGI

UTVIKLING, LÆRING,
MOTIVASJON OG
UNDERVISNING

CAPPELEN DAMM AKADEMISK

Thank you for
your attention

- Stay critical!

