FINE Webinar

Clinical reasoning
From classroom to clinical practice
From assessment to action

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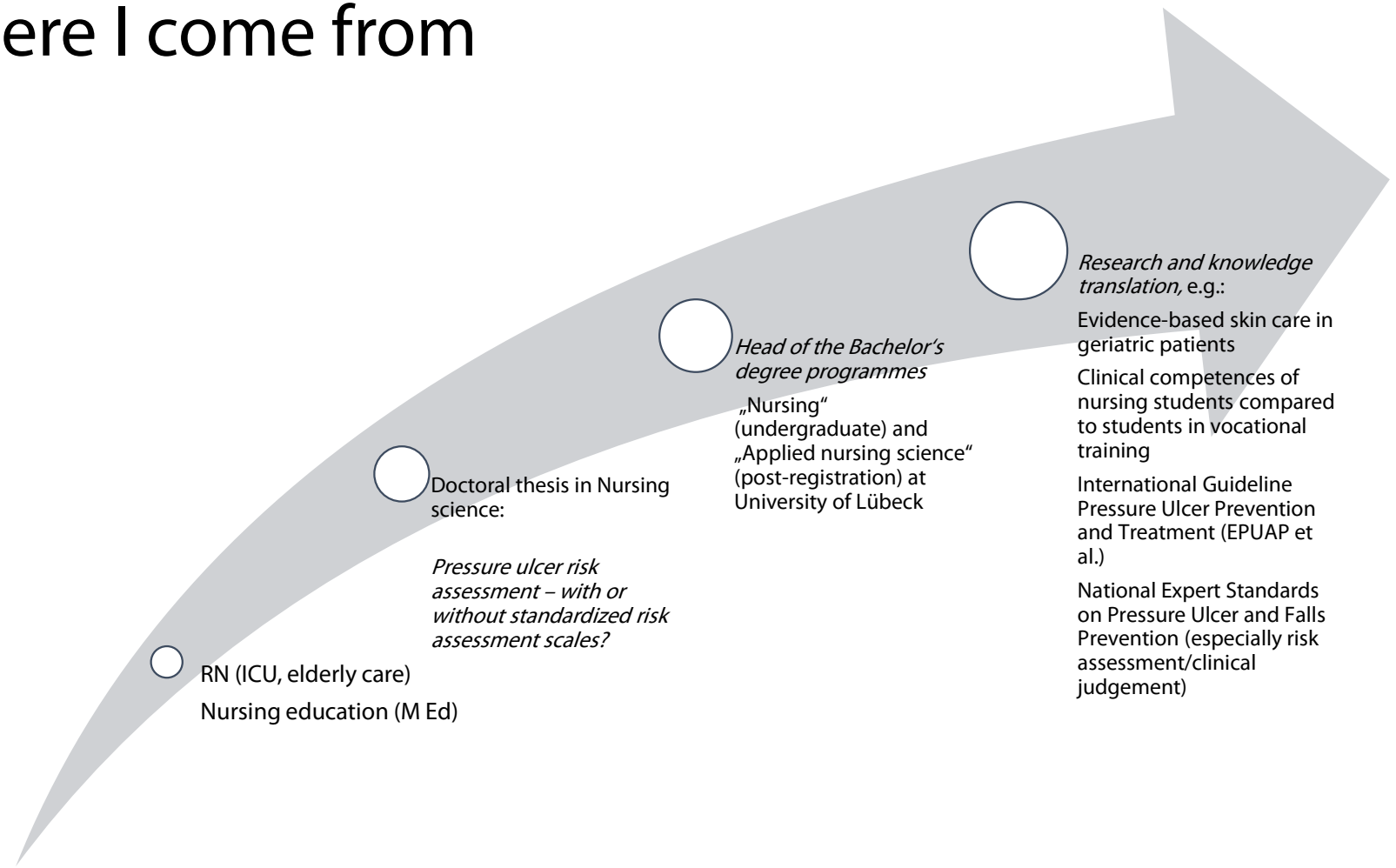
Where I come from



RN (ICU, elderly care)

Nursing education (M Ed)

Doctoral thesis in Nursing science:

Pressure ulcer risk assessment – with or without standardized risk assessment scales?

Head of the Bachelor's degree programmes

„Nursing“ (undergraduate) and „Applied nursing science“ (post-registration) at University of Lübeck

Research and knowledge translation, e.g.:

Evidence-based skin care in geriatric patients

Clinical competences of nursing students compared to students in vocational training

International Guideline Pressure Ulcer Prevention and Treatment (EPUAP et al.)

National Expert Standards on Pressure Ulcer and Falls Prevention (especially risk assessment/clinical judgement)

ORCiD-Profil

Objectives of the webinar

- To consolidate conceptual definitions of clinical reasoning, clinical judgement and clinical decision-making
- To reflect on the specificities of nurses‘ clinical reasoning and diagnostic competencies
- To discuss methods for and challenges in building sustainable clinical reasoning skills in **undergraduate nursing education**

Agenda

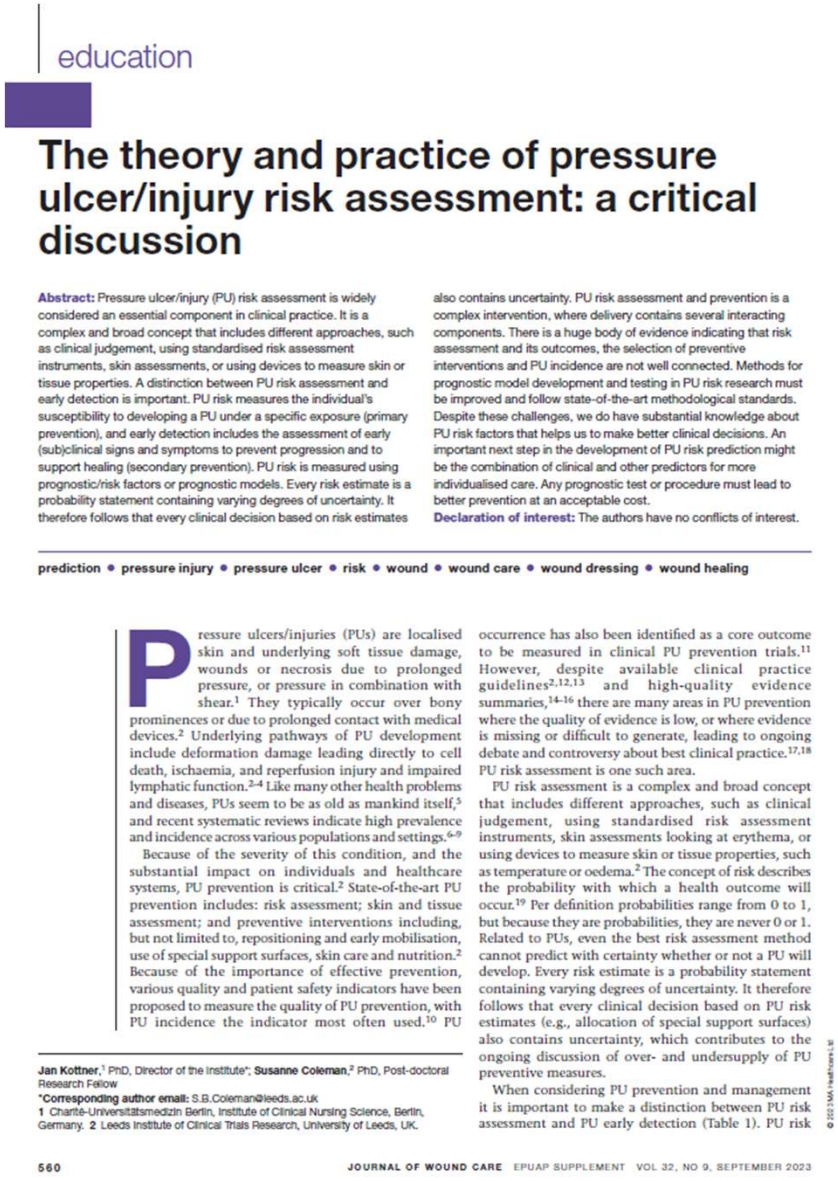
- 30 min presentation
- 20 min small group work
- 40 min plenary discussion

Problem areas: Pressure ulcer prevention as an example

What are the (potential) benefits of standardized risk assessment tools to **nurses' clinical judgement** and **decision-making**?

How will emerging diagnostic tools such as tissue biomarkers or AI-based prediction scores change the process and outcome of PU risk assessment?

How can gaps be minimised between nurses' pressure ulcer (PU) risk **assessment** and the **application** of preventative **measures**?



education

The theory and practice of pressure ulcer/injury risk assessment: a critical discussion

Abstract: Pressure ulcer/injury (PU) risk assessment is widely considered an essential component in clinical practice. It is a complex and broad concept that includes different approaches, such as clinical judgement, using standardised risk assessment instruments, skin assessments, or using devices to measure skin or tissue properties. A distinction between PU risk assessment and early detection is important. PU risk measures the individual's susceptibility to developing a PU under a specific exposure (primary prevention), and early detection includes the assessment of early (sub)clinical signs and symptoms to prevent progression and to support healing (secondary prevention). PU risk is measured using prognostic/risk factors or prognostic models. Every risk estimate is a probability statement containing varying degrees of uncertainty. It therefore follows that every clinical decision based on risk estimates also contains uncertainty. PU risk assessment and prevention is a complex intervention, where delivery contains several interacting components. There is a huge body of evidence indicating that risk assessment and its outcomes, the selection of preventive interventions and PU incidence are not well connected. Methods for prognostic model development and testing in PU risk research must be improved and follow state-of-the-art methodological standards. Despite these challenges, we do have substantial knowledge about PU risk factors that helps us to make better clinical decisions. An important next step in the development of PU risk prediction might be the combination of clinical and other predictors for more individualised care. Any prognostic test or procedure must lead to better prevention at an acceptable cost.
Declaration of interest: The authors have no conflicts of interest.

prediction • pressure injury • pressure ulcer • risk • wound • wound care • wound dressing • wound healing

Pressure ulcers/injuries (PUs) are localised skin and underlying soft tissue damage, wounds or necrosis due to prolonged pressure, or pressure in combination with shear.[1] They typically occur over bony prominences or due to prolonged contact with medical devices.[2] Underlying pathways of PU development include deformation damage leading directly to cell death, ischaemia, and reperfusion injury and impaired lymphatic function.[2–4] Like many other health problems and diseases, PUs seem to be as old as mankind itself,[5] and recent systematic reviews indicate high prevalence and incidence across various populations and settings.[6–9]

Because of the severity of this condition, and the substantial impact on individuals and healthcare systems, PU prevention is critical.[2] State-of-the-art PU prevention includes: risk assessment; skin and tissue assessment; and preventive interventions including, but not limited to, repositioning and early mobilisation, use of special support surfaces, skin care and nutrition.[2] Because of the importance of effective prevention, various quality and patient safety indicators have been proposed to measure the quality of PU prevention, with PU incidence the indicator most often used.[10] PU occurrence has also been identified as a core outcome to be measured in clinical PU prevention trials.[11] However, despite available clinical practice guidelines[2,12,13] and high-quality evidence summaries,[14–16] there are many areas in PU prevention where the quality of evidence is low, or where evidence is missing or difficult to generate, leading to ongoing debate and controversy about best clinical practice.[17,18] PU risk assessment is one such area.

PU risk assessment is a complex and broad concept that includes different approaches, such as clinical judgement, using standardised risk assessment instruments, skin assessments looking at erythema, or using devices to measure skin or tissue properties, such as temperature or oedema.[2] The concept of risk describes the probability with which a health outcome will occur.[19] Per definition probabilities range from 0 to 1, but because they are probabilities, they are never 0 or 1. Related to PUs, even the best risk assessment method cannot predict with certainty whether or not a PU will develop. Every risk estimate is a probability statement containing varying degrees of uncertainty. It therefore follows that every clinical decision based on PU risk estimates (e.g., allocation of special support surfaces) also contains uncertainty, which contributes to the ongoing discussion of over- and undersupply of PU preventive measures.

When considering PU prevention and management it is important to make a distinction between PU risk assessment and PU early detection (Table 1). PU risk

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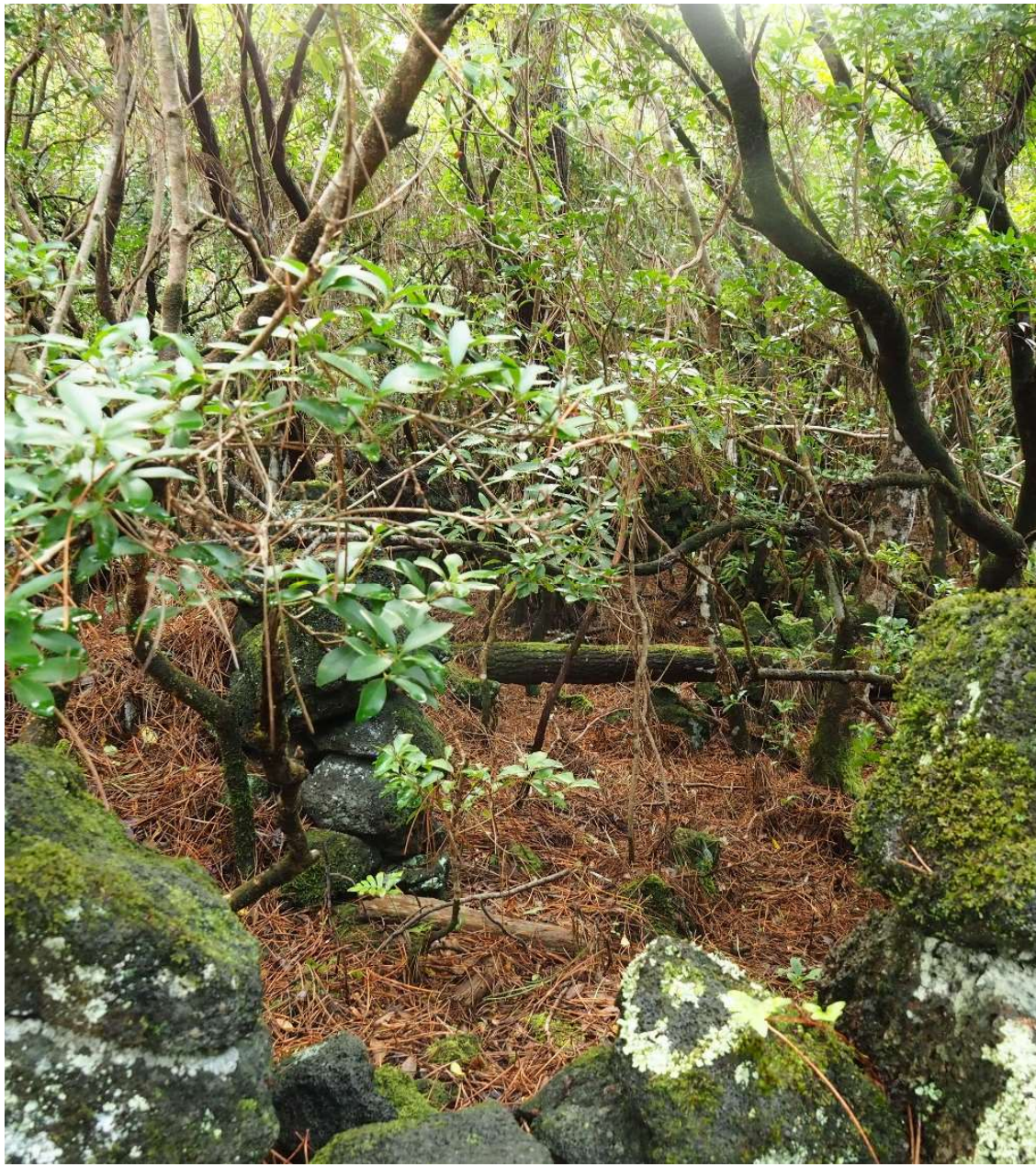
In the jungle of concepts

Clinical judgement =

Critical thinking =

Clinical reasoning =

Clinical decision-making?



In this presentation

Clinical judgement: „is a **reflective and reasoning process** that draws upon **all available data**, is informed by an **extensive knowledge base** and results in the **formation of a clinical conclusion**“ (Connor et al. 2022, DOI: https://doi.org/10.1111/jocn.16469)

Based on Connor et al. 2022 (DOI: https://doi.org/10.1111/jocn.16469) and Johansen & O'Brien 2016 (https://doi.org/10.1111/nuf.12119)

Clinical reasoning

„**To do the right thing in the right way at the right time** in clinical contexts, health professionals need clinical reasoning (CR) abilities."

(Elvén et al. 2023, DOI: 10.1177/23821205231209093)

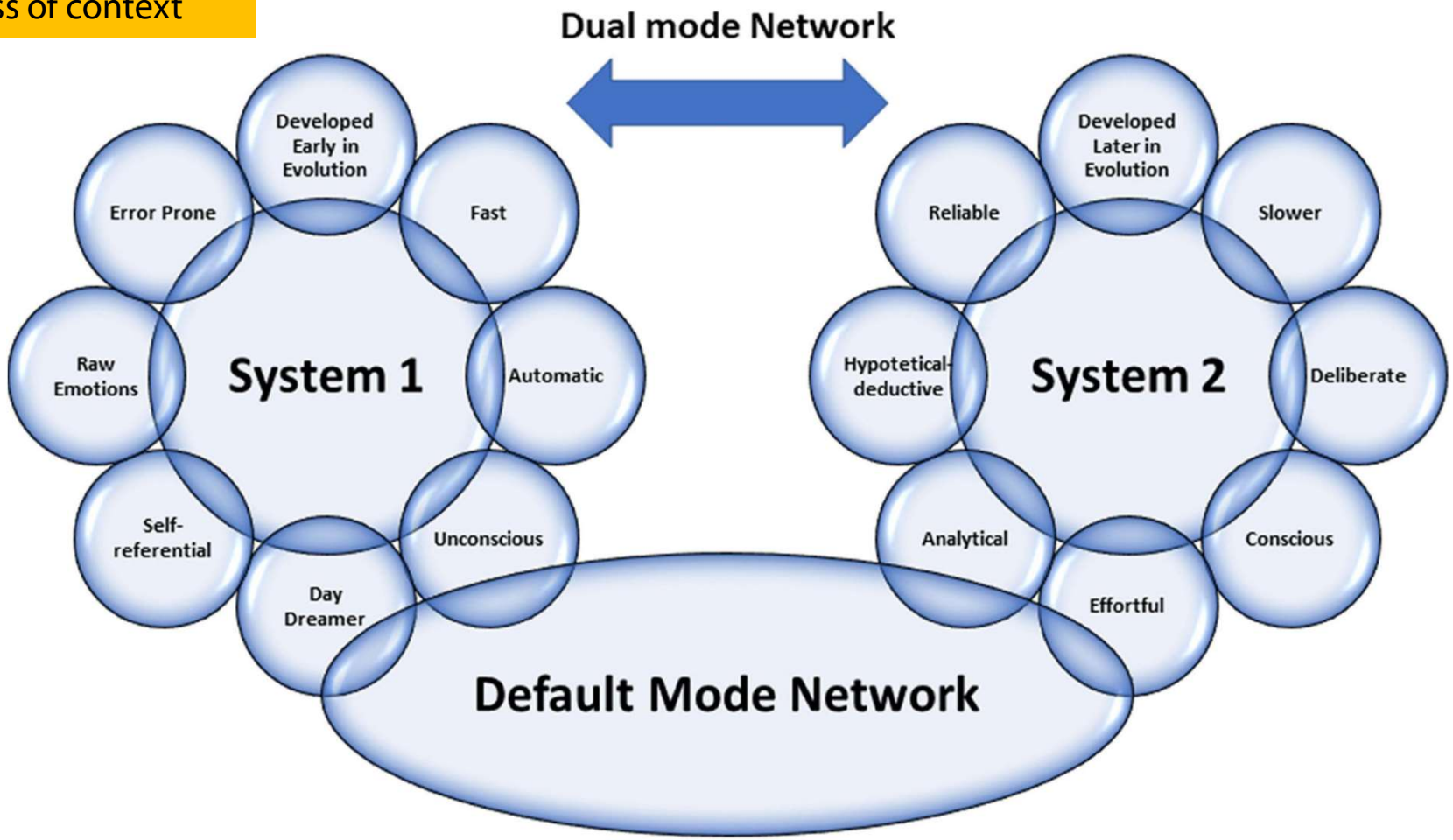
- Cognitive, **affective** and **meta-cognitive processes**
- Explicit and implicit knoweledge
- Context-dependent

(1) Collecting and analysing of data on patient conditions
(2) Making a diagnosis
(3) Making a decision on required care or treatment actions

Definition: „a context-dependent way of thinking and decision-making in professional practice to guide practice actions" (Higgs & Jensen. Clinical reasoning: challenges of interpretation and practice in the 21st century. In: Higgs et al. eds. *Clinical reasoning in the health professions*. 4th ed. Elsevier; 2019: 3-11.)

Metacognition

- Thinking about thinking
- Awareness of errors
- Awareness of context



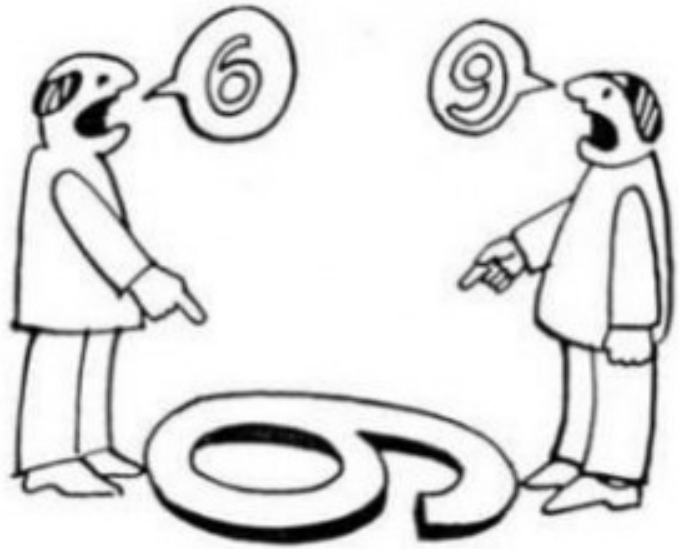
Dual Mode Network including the „dual-process theory of thought“ by Kahnemann (Corrao & Argano 2022, https://doi.org/10.3389/fmed.2022.900543)

Errors in clinical reasoning

Relevance to reasoning in nursing practice?

Insufficient/wrong information and knowledge

- No-fault errors (unavoidable errors)
- System errors
- Knowledge gap
- Misinterpretation



Cognitive bias

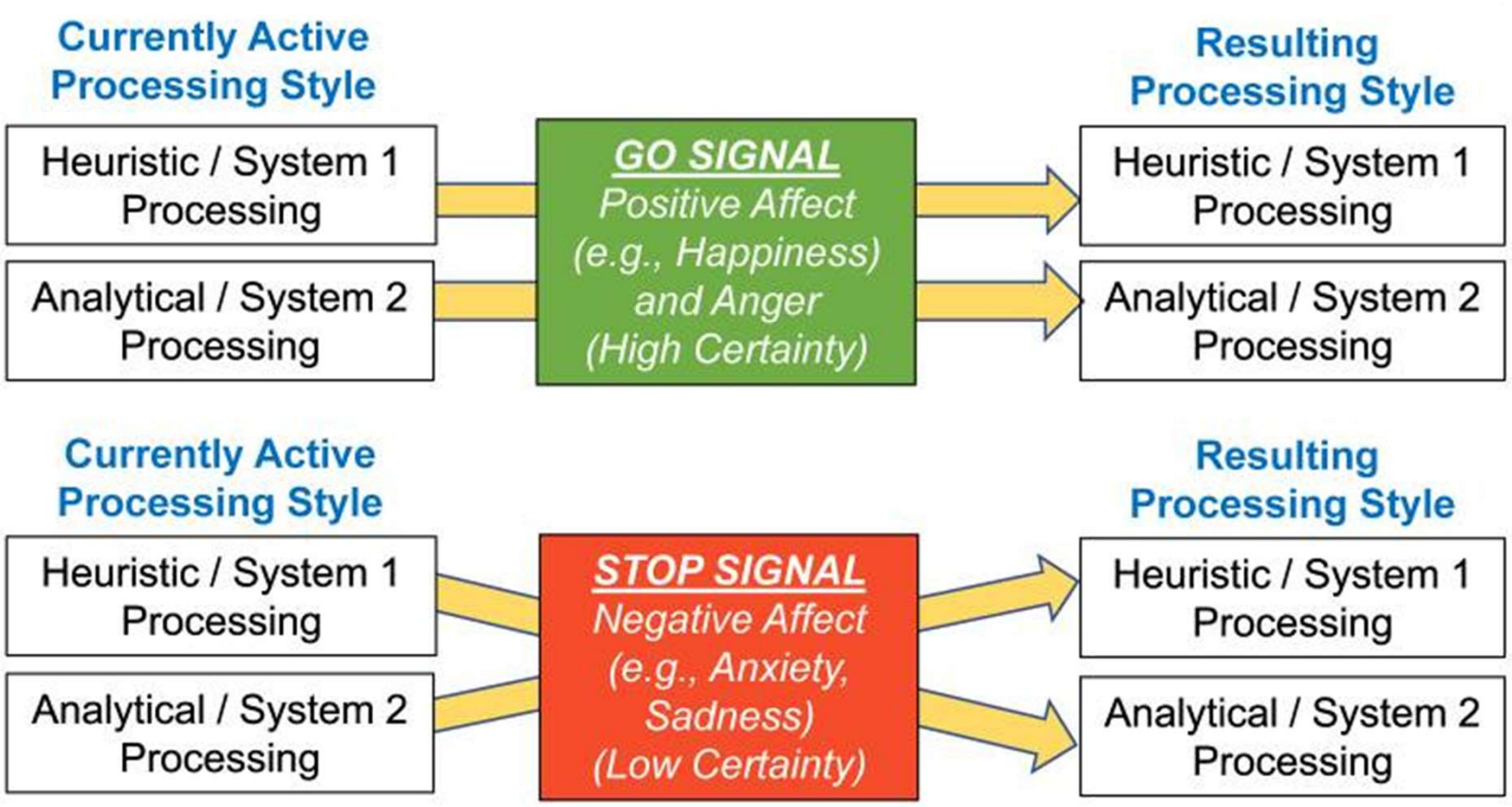
- Anchoring
- Confirmation bias
- Premature closure
- Search satisfaction
- Posterior probability error
- Outcome bias
- Commission bias

Based on: Corrao S, Argano C. 2022 Sep 8;9:900543. doi: 10.3389/fmed.2022.900543.

Clinical reasoning – also a matter of affects

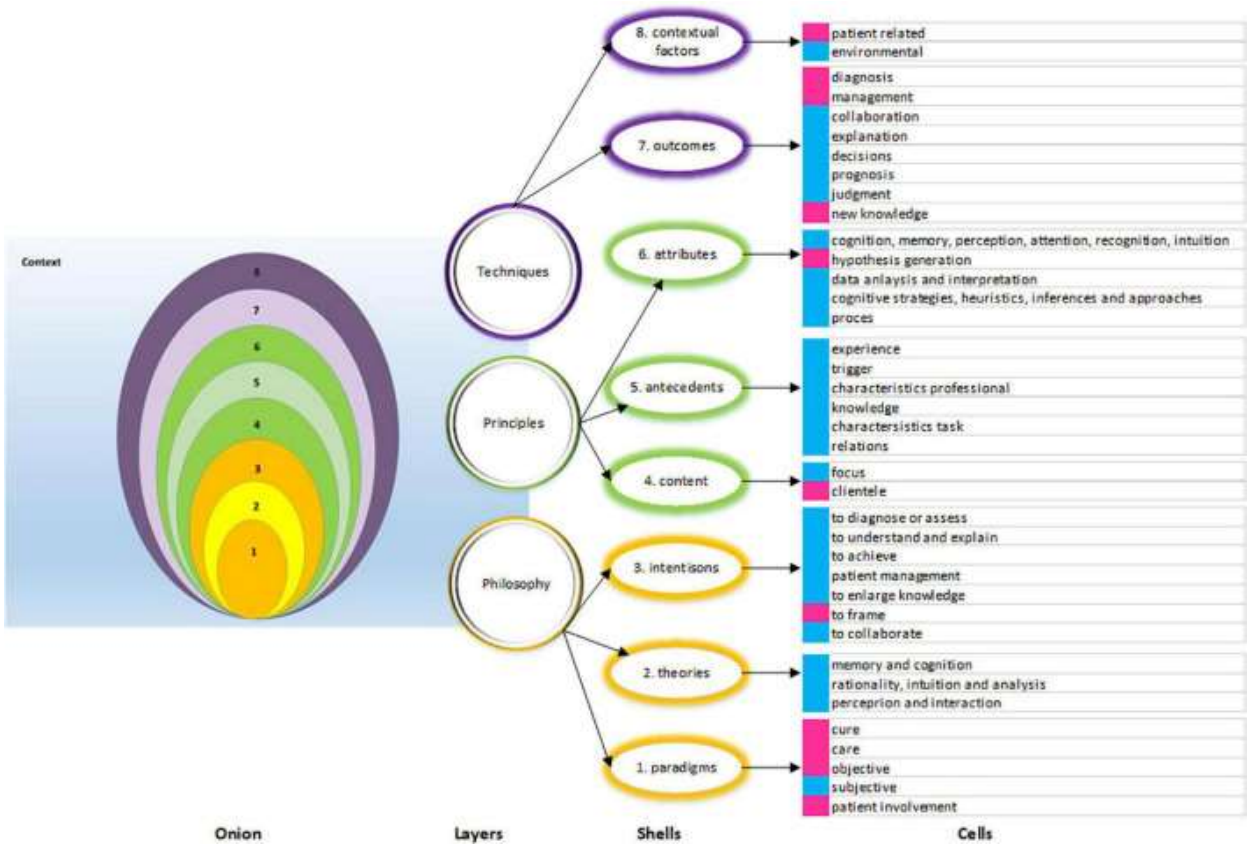
Affective influences on clincal reasoning:

- Positive facilitates information processing.
- Anger increases risk of cognitive bias.
- Other negative affects may induce switch to another thinking system.



Affect-as-Cognitive-Feedback Model (Liu et al. 2022, doi: 10.1515/dx-2021-0115)

What are the specificities of clinical reasoning in nursing (compared to physicians)?



Vreugdenhi et al. (2023, DOI: 10.3389/fmed.2023.1017783), Huesemann et al. (2023, DOI: 10.1080/13561820.2023.2208605)

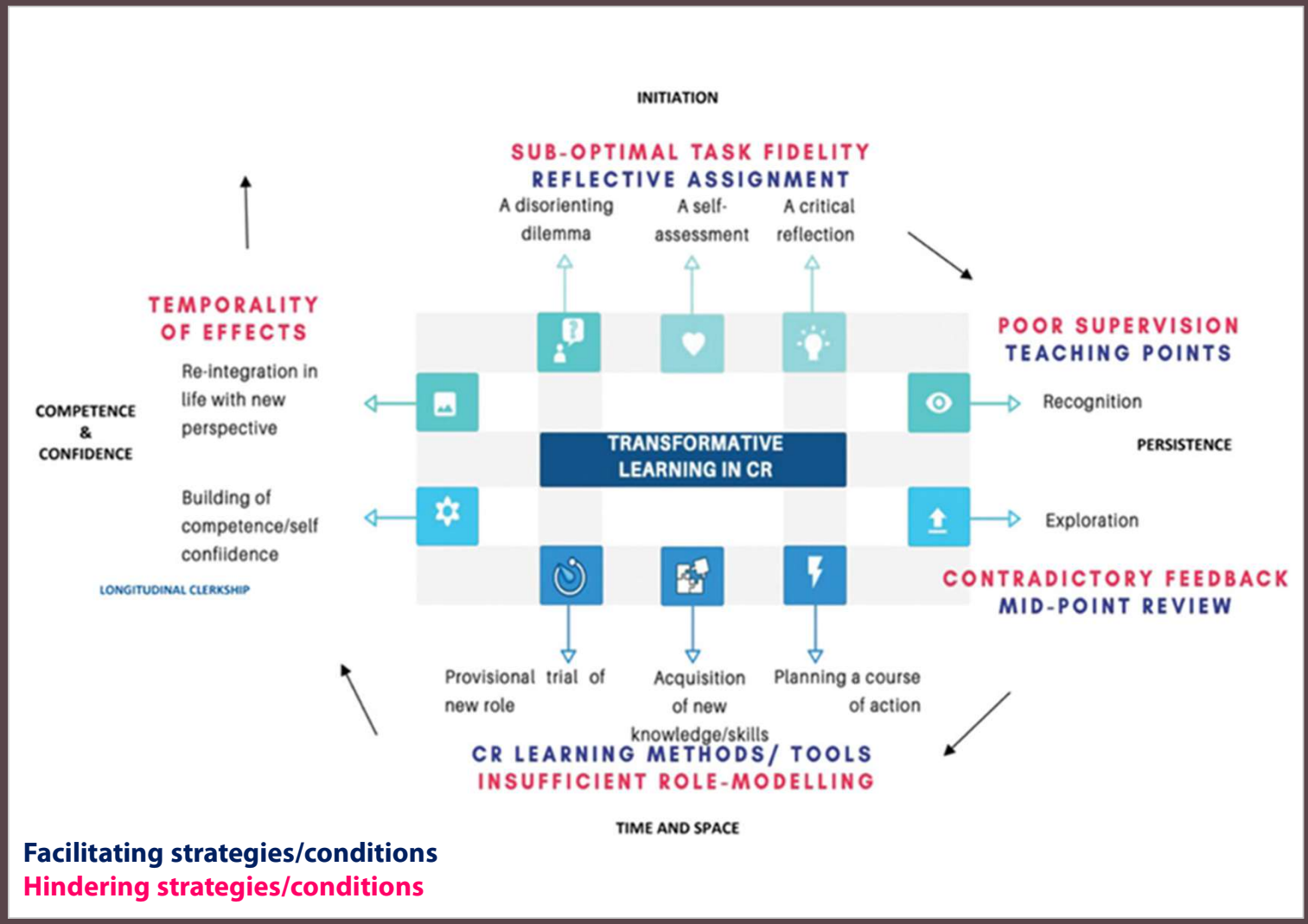
	Nurses
Aim	To understand and explain To reconstruct understanding of the problems in a **constantly changing situation**
Content	Broader focus, e.g. consequences of health conditions, self-care implications, patients and informal carers
Ante-cendents	Larger use of experiental knoweldge less awareness of diagnostic uncertainty
Attributes	Less use of explicit hyptheses on causation, inductive linkages of cues
Outcomes	Care plan reflecting patient's needs and self-care goals, medical treatment requirements

Commonalities Differences

How to teach and learn clinical reasoning? (Scoping Review)

Theories and frameworks	Content	Teaching methods
Theories on clinical reasoning: e.g. dual-process theory, script theory	Gathering, interpreting and synthesising information	Problem-based learning
Theories on clinical judgement: Tanner's model	Generating a diagnosis and/or differential diagnosis	Simulation-based learning
Further cognitive theories: e.g. hypothetico-deductive theoyr, cognitive load theory	Developing a treatment plan	Case-based learning
Didactic principles: e.g. student centeredness, problem-based learning, community-based learning	Self-reflection of clinical reasoning performance	Virtual patients
	Errors in the clinical reasoning process (biases)	**Workplace-based learning or bed-side teaching**
		Lectures

(Elvén et al. 2023, DOI: 10.1177/23821205231209093)



Facilitating strategies/conditions
Hindering strategies/conditions

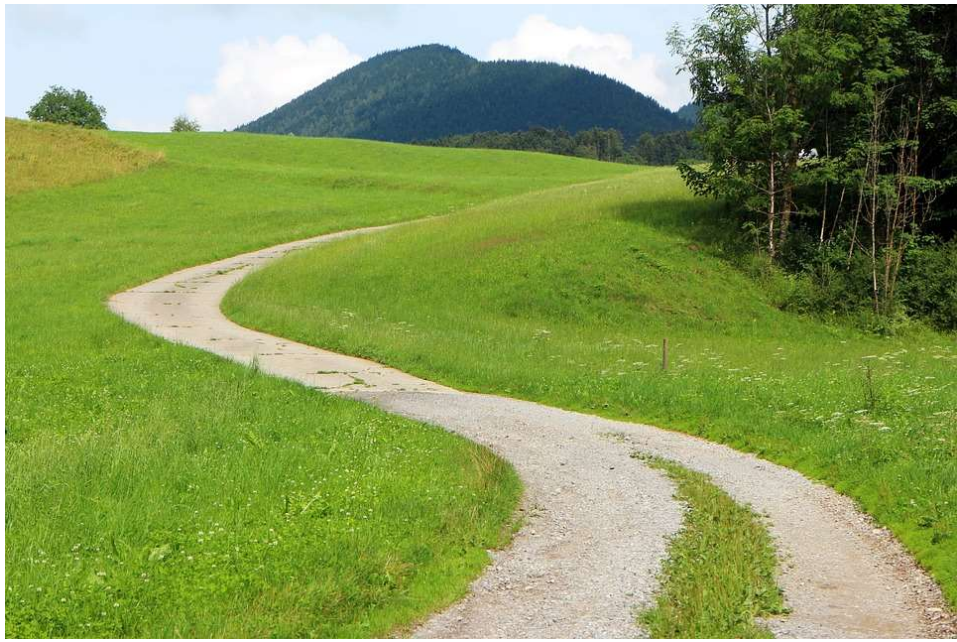
Model for stimulation of clinical reasoning during placements in primary care

Abdul Rahman et al. 2023, doi: 10.1080/14739879.2023.2248070

How to teach and learn clinical reasoning in nursing practice?

Where we are …

- Growing experimental evidence in favour of (high-fidelity) simulation-based training on reasoning skills in nursing students (Lei et al. 2022. DOI: 10.1016/j.nepr.2022.103306; Alshehri et al. 2023, DOI: 0.1016/j.nedt.2022.105679.; Sim et al. 2022, doi: 10.1016/j.ecns.2022.05.006.)
- Uncertainties on required dose of simulation-based training, applicability of evidence (comparators?), sustainablility of effects and translation into practice
- Emerging experimental evidence on serious games and reflective writing (Bjerkvik & Hilli 2019, doi: 10.1016/j.nepr.2018.11.013)
- Lack of evidence on methods to promote clinical reasoning during clinical placements
- Lack of evidence-based or theoretical guidance on longitudinal promotion of clinical reasoning in undergraduate nursing education (Elvén et al. 2023, DOI: 10.1177/23821205231209093)



Our experiences at the University of Lübeck

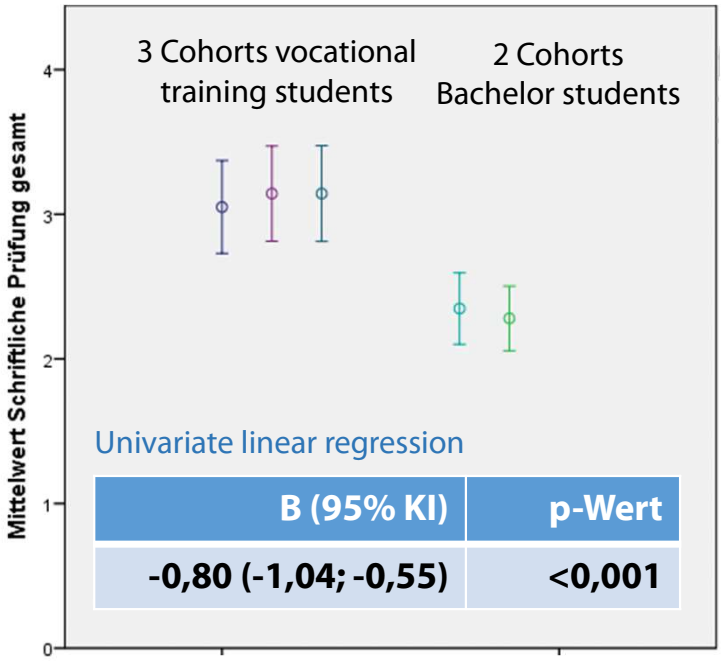
- 3,5 year Bachelor‘s degree programme „Nursing“ (B. Sc.)
- 2,100 hours classroom-based teaching, 2,500 hours clinical practice
- 20 students p. y.
- 5 main subject areas
- Clinical reasoning – classroom-based teaching, skills lab, clinical placements

Our experiences at the University of Lübeck: Promotion of clinical reasoning skills in **Evidence-based nursing practice**

Semesters 1 and 2	Semesters 3 and 4	Semesters 5 to 7
• Nursing process • Diagnostic process in nursing and potential errors • Focus: AEDL promotion	• Application of nursing process and diagnostic process in specific patient populations • Focus: self-care promotion	• Application of nursing process and diagnostic process in patient populations with **highly complex healthcare needs** • Focus: self-care promotion, shared decision-making, person-centred care
• Classroom: lectures (IPE) • Skills lab: case-based learning (IPE) • Bedside teaching • Clinical placement: care planning, bedside teaching	• Classroom: lectures • Skills lab: simulated patients • Clinical placement: care planning, bedside teaching	• Classroom: lectures (IPE) • Skills lab: simulated patients (IPE) • Clinical placement: care planning (IPE), bedside teaching

IPE = interprofessional education

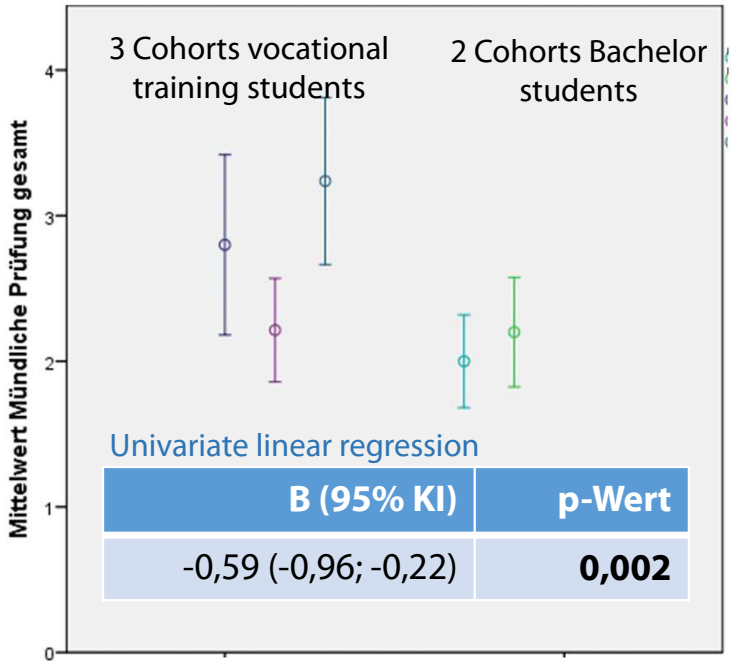
Our experiences at the University of Lübeck:
Evaluation of clinical reasoning skills – state examination



Univariate linear regression

B (95% KI)	p-Wert
-0,80 (-1,04; -0,55)	**<0,001**

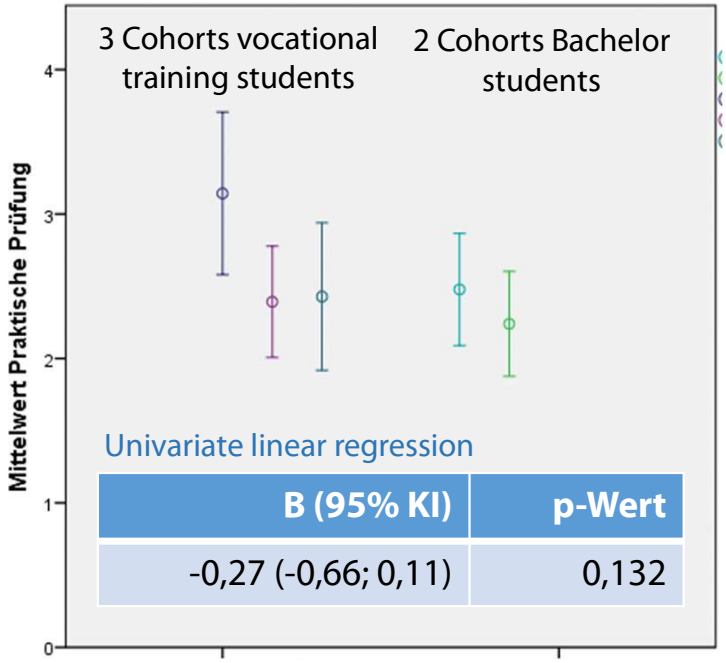
Written examination (based on case vignettes)



Univariate linear regression

B (95% KI)	p-Wert
-0,59 (-0,96; -0,22)	**0,002**

Oral examination (based on case vignettes)



Univariate linear regression

B (95% KI)	p-Wert
-0,27 (-0,66; 0,11)	0,132

Practical examination

The lower the score, the better the skills

Herr 2022, University of Lübeck

Our experiences at the University of Lübeck: **Evaluation of clinical reasoning skills – lessons learned**

- The Bachelor‘s degree programme effectively promotes clinical reasoning skills in nursing students.
- Uncertainties remain about the implementation of the skills in clinical practice and effects on patient-relevant care outcomes.
- There are ongoing areas of debates, e.g.:
  - What are relevant learning outcomes with regard to implementation of nursing diagnoses?
  - How can we stimulate evidence-based, reflective thinking, especially during clinical placements?
  - How to systematically integrate the patients‘ view in the teaching of clinical reasoning skills?

Small working groups (20 min): **Your experiences**

Group/room 1: What and how to teach with regard to „nursing diagnoses“?

Group/room 2: How to stimulate evidence-based reflective thinking during clinical placements, e.g. by reflective assignments/writing?

Group/room 3: How to systematically integrate the patients‘ view in the promotion of clinical reasoning skills?

Group/room 4: Building clinical reasoning skills in nursing – when and how should it be subject to interprofessional education?

Group/room 5: What competences do supervising nurses/preceptors or clinical teachers do need to promote nursing students‘ clinical reasoning skills?

Discuss and reflect in each group on

(1) What are your experiences with this issue?

(2) Which solutions did you find to address perceived challenges?

Please record main discussion points in the prepared board and nominate one group member to present to the auditorium.

Plenary discussion

Group/room 1: What and how to teach with regard to „nursing diagnoses“?

Group/room 2: How to stimulate evidence-based reflective thinking during clinical placements, e.g. by reflective assignments/writing?

Group/room 3: How to systematically integrate the patients‘ view in the promotion of clinical reasoning skills?

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