

# **Do measures of self-regulatory dispositions relate to nursing students' clinical reasoning competencies in a simulated clinical setting?**

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# Background

- We examine the influence of existing metacognitive beliefs on the planning and strategy choices of pre-service nurses when faced with a simulated clinical task.
- **Metacognitive belief** – as a form of prior knowledge – acts as an internal reference point whenever self-regulating activity is required.
- In complex and open-ended clinical tasks, no certainty of clinical outcome can be assured. Clinical decision-making requires access to higher-level clinical knowledge AND embedded higher-level clinical procedural knowledge if the clinical problem is to be appropriately conceptualised and acted upon.
- There is a reasonable prediction that the quality of clinical decision-making may be related to and predicted by the quality of prior metacognitive knowledge informing the clinical decision-making process

# Background

- In particular, we suggest that that how pre-service nurses choose to engage with a complex and open-ended clinical task will reflect pre-existing conceptions of how to approach clinical tasks (analogous to an approach to learning (Biggs, 1993)) and how to actively orchestrate or self-regulate strategy choices in the completion of that task (Cantwell & Moore, 1996)
- We now turn to a model of the internal processes presumed to explain the clinical decision-making process

What I am feeling about what I am internally doing?

**Affective domain**

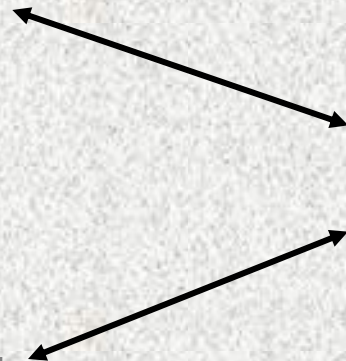


**Cognitive domain**

What I am doing, internally, right now?

How I am managing, internally, what I am doing right now?

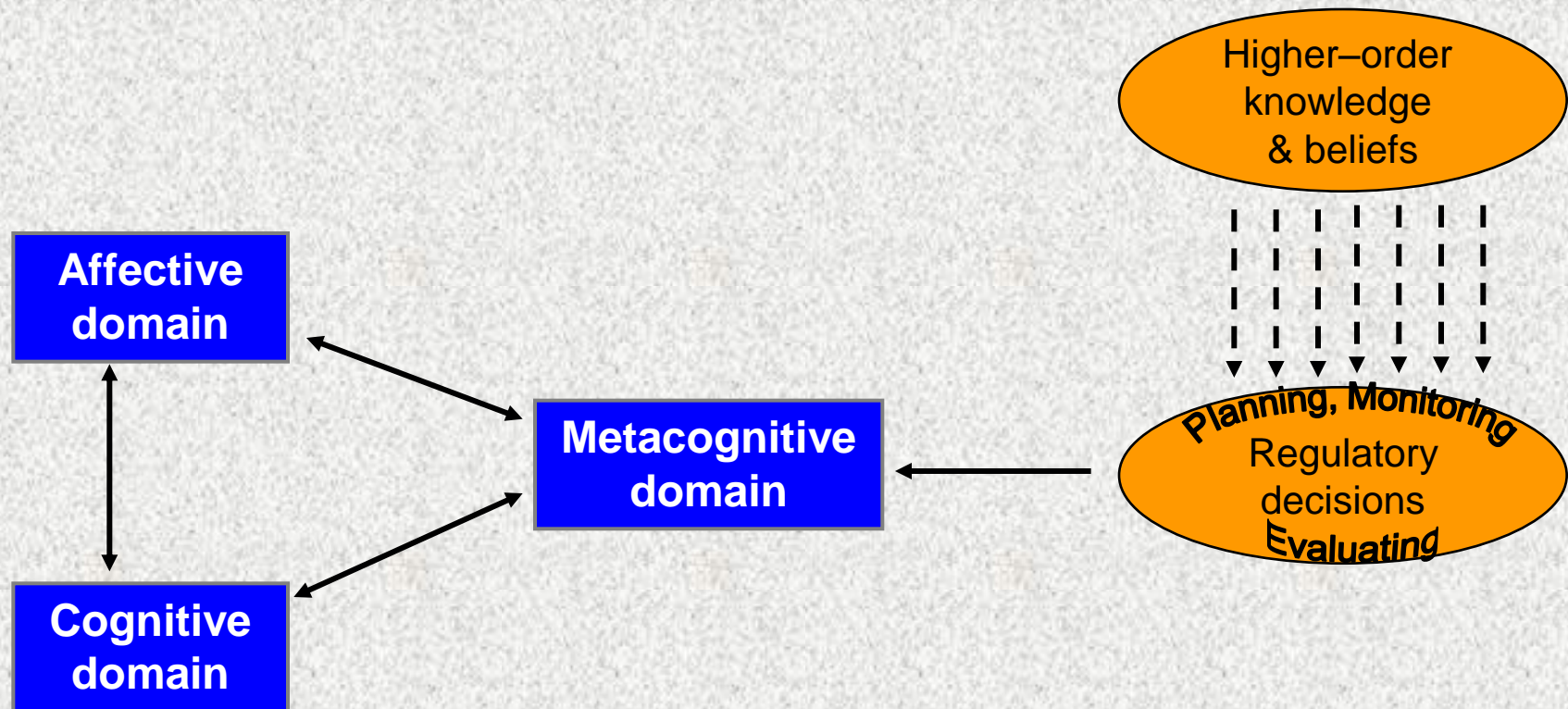
**Metacognitive domain**



Cantwell, 2004; ten Cate et al, 2004

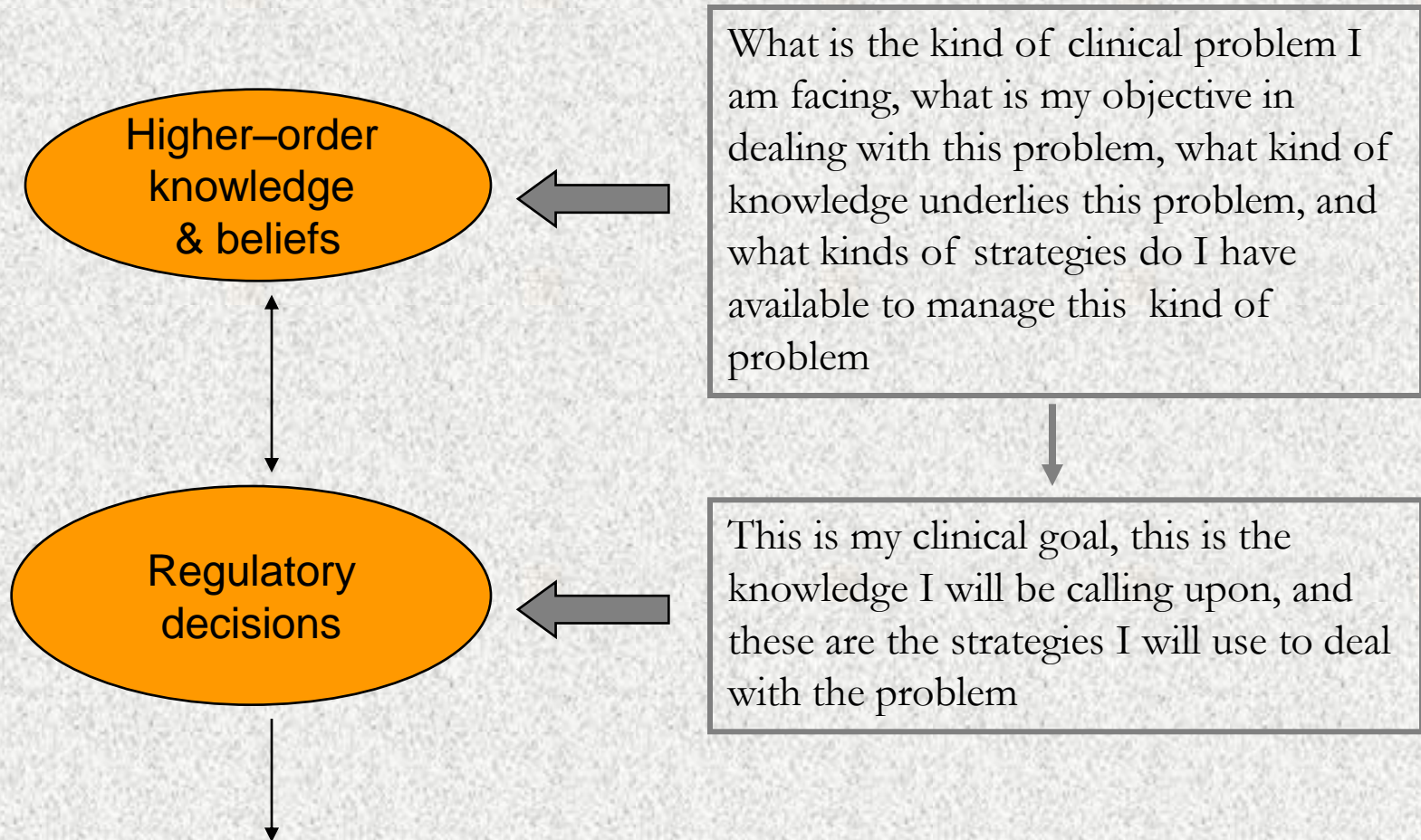
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# Method

- Participants
  - 87 final year nursing students.
  - Age range 19years to 48 years (Mean 21.91, sd 4.82)
  - 7 Males and 80 Females
- Materials
  - Biggs' (1987) Study Process Questionnaire
  - Cantwell & Moore's (1996) Strategic Flexibility Questionnaire
  - Simulation Booklet (including NANDA list of Nursing Diagnoses)

# Design of Study

- **Task**  
“You are nursing in a general surgical ward of a large hospital. You have been asked to complete a pre-operative interview of a male patient about to undertake a reasonably minor surgical procedure”
- Responses were matched against a template generated from expert responses

## Independent

## Dependent

### Strategic Flexibility

Adaptive control  
Inflexible Control  
Irresolute Control

### Planning

Purpose of Interview  
Information Needed  
Strategies to use  
Interview Evaluation

### Approach to Learning

Deep Approach  
Surface Approach  
Achieving Approach

### Note-taking

Information included  
Organisation of Information

### Clinical Reasoning

MSA Information  
MSA Organisation  
Diagnoses Generated  
Rationale: Clinical Data  
Rationale: Clinical Inference

# Design of Study

- Planning the Interview: Identifying purposes
  - Establishing Trust
  - Generating Data Base
  - Assessment
  - Needs
  - Operative procedures
- Planning the Interview: Information needed
  - Systems review
  - Mental Status Assessment
  - Social information
  - Medical history
  - Presenting circumstances
  - Comfort
  - Drug History

# Design of Study

- Planning the Interview: Strategies to be employed
  - Rapport
  - System information (methodical)
  - Communication
  
- Planning the Interview: Justification for Method
  - Tautology or simple content repetition
  - Use of single component strategy within the context of content justification
  - Justify individual strategic decisions without reference to procedural efficiency
  - Justify individual strategic decisions in terms of procedural efficiency without reference to external validation
  - Justifies strategy use in terms of external validation

# Design of Study

- Evaluating the Interview: Strategies to be employed
  - Nursing knowledge
  - Patient state
- Conducting the Interview: Information included
  - Physical
  - Psychological
  - Social
  - Drug
  - Wife
- Conducting the Interview: Structuring of Information
  - No notes
  - Sequence of unclassified detail
  - Information grouped and classified
  - Information grouped, classified and interpreted

# Design of Study

- Clinical Reasoning
  - Complete MSA
    - Mood
    - Behaviour
    - Speechform/Content
    - Social
    - Insight
    - Intelligence
    - Memory
  - Organisation of MSA
    - Ungrouped list
    - Grouped but uncategorised information
    - Grouped and categorised

# Design of Study

- Clinical Reasoning
  - Diagnoses Generated (Nanda)
    - Coping: Ineffective
    - Anxiety
    - Home maintenance: Impaired
    - Parenting: Impaired
    - Injury: Potential for

# Design of Study

- Clinical Reasoning
  - Rationale for Major Diagnosis
    - Use of Clinical Information
      - No data
      - Irrelevant data or simple repetition of diagnosis
      - Single aspect of clinical data
      - Multiple aspects of clinical data treated discretely
      - Multiple aspects linked to diagnosis

# Design of Study

- Clinical Reasoning
  - Rationale for Major Diagnosis
    - Inferred Consequences of Diagnosis
      - Irrelevant consequences drawn
      - Inferred consequences limited to one domain
      - Inferred consequences refer to multiple domains
      - Inferred consequences linked to principle of nursing management

# Results

- Only the correlational analyses are reported here. More complex analyses (including both MANOVA and Hierarchical Regression) amplified a number of the basic findings reported here.
- Similarly, qualitative analyses of elaborated responses were also conducted, but not reported here.

# Results: Planning Phase

Scale	Purpose of Interview	Information Sought	Proposed Strategies	Strategy Justification	Interview Evaluation
<u>SFQ</u>					
Adaptive Control	.05	.11	.18	.15	.10
Inflexible Control	-.15	.05	-.01	-.08	<b>-.27</b>
Irresolute Control	<b>-.23</b>	.02	-.10	<b>-.26</b>	-.12
<u>SPQ</u>					
Surface Approach	-.00	-.08	-.07	<b>-.26</b>	-.02
Deep Approach	.01	.12	.17	.07	.03
Achieving Approach	.07	.04	.04	-.02	-.03

**Red** font significant at  $p < .05$

# Results: Planning Phase

- Irresolute control refers to a diminished capacity to coherently plan complex solution paths. It is not a question of recognising complexity, but is one of strategically organising the complexity. Hence, the negative relationship between Irresolute Control and Conception of Purpose and Justification of Strategy Choices
- Inflexible control implies a myopic interpretation of problem-solving processes: “This is how I see (clinical) problems and this is how I always solve them – end of story”. Not surprising then that Inflexible Control negatively relates to breadth of Evaluation Criteria.
- Surface learning relates to a restricted conception of task depth (indicative of a generally more constrained epistemology driving appraisals). There is a close association with Inflexible Control, manifested again in a negative relationship with Justification of Strategic Choices

# Results: Note-taking Phase

Scale	Information Included	Organisation of Information
<u>SFQ</u>		
Adaptive Control	.00	.08
Inflexible Control	-.11	-.05
Irresolute Control	-.05	.12
<u>SPQ</u>		
Surface Approach	.06	.07
Deep Approach	-.06	-.01
Achieving Approach	.08	.17

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# Results: Note-taking Phase

- Lack of relationships between individual difference measures and both breadth and organisation of clinical notes generated reflective of the basic novice status of participants – an emphasis on the concrete symptomology rather than the use of more propositional or conceptual clinical concepts.

# Results: Clinical Reasoning Phase

Scale	MSA Information	MSA Organisation	Diagnoses	Clinical Data	Clinical Inferences
<u>SFQ</u>					
Adaptive Control	-.04	-.01	-.10	.02	-.03
Inflexible Control	.09	.10	.00	.00	.01
Irresolute Control	<b>-.21</b>	.04	.11	.07	-.17
<u>SPQ</u>					
Surface Approach	-.00	.15	.05	-.02	-.16
Deep Approach	.15	-.09	-.01	-.07	<b>.26</b>
Achieving Approach	.14	.01	-.05	-.06	-.07

**Red** font significant at  $p < .05$

# Results: Clinical Reasoning Phase

- As noted, Irresolute control is associated with diminished ability for coherently conceptualise the clinical problem. The negative relationship between Irresolute Control and MSA information included reflects the non-use of a systematic structure to orchestrate otherwise complex information
- The defining characteristic of a Deep Approach to Learning is its centeredness on the construction of meaningful representations of the clinical data under consideration. This normally implies the imposition of meanings that go beyond the literal - meaning is what I make of it. The “deepness” implies meanings that drill into the clinical data for explanation, and contrasts sharply with the Surface Approach. The association between Deep Learning and Clinical Inferences is thus not surprising, as are the negative (but non-significant ) associations with Irresolute Control and Surface Learning.

# Conclusions

- The data support an association between the quality of driving metacognitive knowledge and the quality of clinical decision-making. The association in this case is tempered by the novice status of the participants. Very few instances of the higher-order clinical thinking associated with experienced and expert nursing were evident.
- The data suggests that incorporation of metacognitively driven instruction into nursing curriculum may assist in raising the conceptual level of understanding of clinical problems encountered, and may be of benefit to those whose capacity to manage complex information and strategy choices is diminished.
- The data further suggest that the transition from university to workplace may be at risk without greater attention to the underlying conceptual and procedural understandings that drive clinical decision-making.