Metacognition in Nurse Practitioner Students: How Nurse Educators Can Best Serve Students

Kathryn Holliday DNP, CPNP, CNE
Justin Waryold DNP, ANP-C, ACNP-BC, GS-C, CNE, FAANP
Eric Rodriguez MS, FNP
SUNY Upstate Medical University
Syracuse, New York
DISCLOSURES

WE HAVE NO DISCLOSURES TO REPORT AND NO CONFLICTS OF INTERESTRELATED TO THIS PRESENTATION
LEARNING OBJECTIVES

• **Understand how cognitive theory can be applied to nursing education.**
• **Understand the parameters of metacognition and how metacognition can be applied to nursing education.**
• **Identify education strategies to improve nurse practitioner student metacognition.**
BACKGROUND

• What is Metacognition?
  • Metacognition
    • Complex topic that can be very simply explained as "thinking about one’s own thinking"
• VUCAD
  • Volatility, Uncertainty, Complexity, Ambiguity, and Delayed Feedback
  • The healthcare environment is filled with VUCAD

• How do educators prepare learners for this environment?
  • Practice Makes Perfect
  • Understanding of strengths and weaknesses
COGNITIVE THEORY

- Cognitive theory strives to understand the relationship between an individual’s thought processes and behavior.

- Cognitive theory proposes that we have a progressive building of thought processes
  - Lower to higher level
    - Relating to Blooms Taxonomy
  - How people think drives people’s actions
  - This is also the foundation of cognitive behavioral therapy
METACOGNITION PARAMETERS

- There are 5 unique Metacognition parameters
  - People Management
  - Crisis Management
  - Strategic Management
  - Informational Management
  - Task Management

- Breaking into these different parameters can assist learners and educators

- Allows for a more tailored education
METACOGNITION PARAMETERS

• TASK MANAGEMENT
  • OVERALL activity, FOCUS, GOAL SETTING, GOAL DEVELOPMENT, OVERALL ENGAGEMENT

• INFORMATIONAL MANAGEMENT
  • INFORMATION SEEKING, INFORMATION USAGE, CLARITY OF INFORMATION PROCESSING, KNOWLEDGE INTEGRATION

• STRATEGIC MANAGEMENT
  • BREADTH OF APPROACH, CREATIVITY, PLANNING, INTEGRATION, PRIORITIZATION, QUALITY IMPROVEMENT

• CRISIS MANAGEMENT
  • PROACTIVITY, CRISIS STRATEGY, CRISIS ACTIVITY, RESILIENCE

• PEOPLE MANAGEMENT
  • LEADERSHIP, QUALITY, PRACTICE INQUIRY, TECHNOLOGY AND INFORMATION LITERACY, POLICY, HEALTH DELIVERY SYSTEMS, ETHICS, INDEPENDENT PRACTICE
NURSE PRACTITIONER STUDENT DATA

- Metacognition data was collected using Strategic Management Simulations (SMS)
- SMS has been used by Medical Schools, Nursing Schools and Physician Residency programs
  - The use in NP programs is a novel approach
- 59 Nurse Practitioner Students completed the SMS
- Students are in the final year of a Nurse Practitioner Program
# Nurse Practitioner Student Data

## Reference Range

<table>
<thead>
<tr>
<th>Metacognition Parameter</th>
<th>Mean</th>
<th>Median</th>
<th>Min</th>
<th>Max</th>
<th>High range</th>
<th>Moderate range</th>
<th>Low range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task Management</td>
<td>77</td>
<td>85</td>
<td>16</td>
<td>125</td>
<td>90 &amp; above</td>
<td>55-89</td>
<td>55 &amp; below</td>
</tr>
<tr>
<td>Crisis Management</td>
<td>68.79</td>
<td>77.5</td>
<td>11</td>
<td>110</td>
<td>65 &amp; above</td>
<td>41-64</td>
<td>40 &amp; below</td>
</tr>
<tr>
<td>Information Management</td>
<td>4.59</td>
<td>4</td>
<td>1</td>
<td>9</td>
<td>10 &amp; above</td>
<td>8-6</td>
<td>5 &amp; below</td>
</tr>
<tr>
<td>Strategy Management</td>
<td>9.02</td>
<td>8</td>
<td>1</td>
<td>37</td>
<td>16 &amp; above</td>
<td>8-15</td>
<td>7 &amp; below</td>
</tr>
<tr>
<td>People Management</td>
<td>5.74</td>
<td>6</td>
<td>3</td>
<td>8</td>
<td>7 &amp; above</td>
<td>4-6</td>
<td>3 &amp; below</td>
</tr>
</tbody>
</table>
STRENGTHS AND WEAKNESSES

• Scores are characterized as low, moderate, and high scoring values for each parameter and are based on normative data.

• Knowing a group's or an individual's strengths and weaknesses is valuable information.

• Strengths
  • NP students excelled in the area of Crisis Management (mean/median scores in the high range).
  • NP students scored in the moderate range (mean/median scores) task management, strategy management, and people management.

• Weaknesses
  • NP students scored in the low range for Information Management.
FOUNDATIONS OF NURSE PRACTITIONER EDUCATION

- Nurse Practitioner Educator’s mission
  - Educating individuals to deliver safe, quality care to assist persons in need
  - Assisting in addressing the lack of providers practicing Primary Care within the United States

- The National Organization of Nurse Practitioner Faculties (NONPF)
  - Established in 1974, created a task force leading to the formation of the Family Nurse Practitioner curricula and evaluation guidelines
    - Focus of the pregnant woman to the frail elderly
  - Over 90% of all NP academic institutions within the US, the United Kingdom, and Canada have adopted these curricula and evaluation guidelines
NONPF
NURSE PRACTITIONER CORE COMPETENCIES

• **Scientific Foundations**
  • Integration of knowledge and translation of research

• **Leadership**
  • Initiation and guiding change

• **Quality**
  • Promotion of a culture of excellence

• **Practice Inquiry**
  • Generates knowledge to improve practice and outcomes

• **Technology and Information Literacy**
  • Utilization in complex decision making while capturing data on variables

• **Policy**
  • Advocates for safe and healthy practice environments

• **Health Delivery System**
  • Facilitates the development of health care systems

• **Ethics**
  • Integrates ethical principles in decision making

• **Independent Practice**
  • Functions as a licensed independent practitioner
  • Collaborates with both professional and other caregivers to achieve optimal care outcomes
  • Participates in the development, use, and evaluation of professional standards and evidence-based care
# Strategic Management Simulations & Associated Indices

<table>
<thead>
<tr>
<th>SMS Parameter</th>
<th>Associated Indices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task Management</td>
<td>• Focus</td>
</tr>
<tr>
<td></td>
<td>• Goal setting &amp; development</td>
</tr>
<tr>
<td></td>
<td>• Overall engagement</td>
</tr>
<tr>
<td>Informational Management</td>
<td>• Information seeking &amp; usage</td>
</tr>
<tr>
<td></td>
<td>• Clarity of information processing</td>
</tr>
<tr>
<td></td>
<td>• Knowledge integration</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SMS Parameter</th>
<th>Associated Indices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategic Management</td>
<td>• Breadth of approach</td>
</tr>
<tr>
<td></td>
<td>• Planning</td>
</tr>
<tr>
<td></td>
<td>• Integration</td>
</tr>
<tr>
<td></td>
<td>• Prioritization</td>
</tr>
<tr>
<td>Crisis Management</td>
<td>• Proactivity</td>
</tr>
<tr>
<td></td>
<td>• Crisis strategy</td>
</tr>
<tr>
<td>People Management</td>
<td>• Facilitation</td>
</tr>
<tr>
<td></td>
<td>• Influence</td>
</tr>
<tr>
<td></td>
<td>• Communication</td>
</tr>
<tr>
<td></td>
<td>• Professionalism</td>
</tr>
</tbody>
</table>
### METACOGNITION PARAMETERS CROSSWALKED WITH CORE NP COMPETENCY

<table>
<thead>
<tr>
<th>SMS Parameter</th>
<th>Core Competencies Area</th>
</tr>
</thead>
</table>
| Task Management            | • Scientific Foundation  
                              | • Leadership  
                              | • Health Delivery System |
| Informational Management   | • Practice Inquiry  
                              | • Technology and Information Literacy  
                              | • Healthcare delivery system  
                              | • Independent Practice |
| Strategic Management       | • Scientific foundations  
                              | • Quality  
                              | • Practice Inquiry  
                              | • Health delivery system |
### METACOGNITION PARAMETERS CROSSED WITH CORE NP COMPETENCY

Continued...

<table>
<thead>
<tr>
<th>SMS Parameter</th>
<th>Core Competencies Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crisis Management</td>
<td>• Leadership&lt;br&gt;• Technology and Information Literacy&lt;br&gt;• Policy&lt;br&gt;• Health Delivery System&lt;br&gt;• Independent Practice</td>
</tr>
<tr>
<td>People Management</td>
<td>• Leadership&lt;br&gt;• Quality&lt;br&gt;• Practice Inquiry&lt;br&gt;• Technology and Information Literacy&lt;br&gt;• Policy&lt;br&gt;• Health Delivery System&lt;br&gt;• Ethics&lt;br&gt;• Independent Practice</td>
</tr>
</tbody>
</table>
## FURTHER EXPLORATION: INFORMATIONAL MANAGEMENT

<table>
<thead>
<tr>
<th>Associated Indices</th>
<th>NONPF Core Competencies Area</th>
<th>Exemplar NP Core Competencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Information seeking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Information usage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Clarity of information processing</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
CURRICULUM STRATEGIES FOR INFORMATION MANAGEMENT

• Practice with case-based learning to practice Information seeking and Information Usage
  • This is the first step in the skill of Information Management
• Debriefing about clinical experiences
• Team and group learning
• Integration of the different metacognitive parameters into program and course learning outcomes
• Integration will allow students to be thoughtful about their own processing and implementation
EVALUATION STRATEGIES INFORMATION MANAGEMENT

- Written debriefing exercises
- Objective Structured Clinical Examination (OSCEs)
- Simulations
  - Debriefing post simulation
  - Recording and reviewing post simulation
- High level of blooms taxonomy Exam questions
  - Analyzing, Evaluate, Create
STUDENT SUCCESS STRATEGIES

- **Strategic Management Simulations (SMS) integrated throughout the program**
- **Integration of unfolding case studies throughout a program**
- **Flipped classroom techniques**
  - Facilitate active learning
- **Practice in leadership, delegation, and stressful situations**
  - Team-based learning
- **Mentorship and development of strong relationships with preceptors and faculty**
  - Allowing for debriefing and remediation
  - Open communication
• Kathryn Holliday @ Degirolk@upstate.edu
• Justin Waryold @ Waryoldj@upstate.edu
• Eric Rodriguez @ Rodriger@upstate.edu
REFERENCES