RUTGERS School of Nursing

Lesia Clarke, BSN, RN, CCRN   Heather Gumiran, BSN, RN, CCRN

Project Chair: Michael McLaughlin, DNP, CRNA/APN   *Team Member:* Maureen McCartney Anderson, DNP, CRNA/APN

Introduction

System 1: Fast & Automatic	System 2: Slow & Reflective
Effortless, associative, unconscious, rules stored in memory as schemata, acquisition by biology, exposure and personal experience	Effortful, deductive and analytical, self-aware, knowledge-based, acquisition by cultural and formal tuition
Heuristics	**Metacognitive Regulation**
☐ Intuitive decision-making ☐ Mental shortcuts or rules of thumbs ☐ Guides decision-making when available information is limited, and a faster decision-making strategy is necessary ☐ Emergency situations	☐ Cognitive debiasing strategy ☐ Allows for reflection on the thinking process ☐ Examines conflicting evidence and consideration of alternative options

☐ The proposed outcome of this practice change was to describe approaches that will help to identify and/or improve decision making errors.

Background & Significance

☐ Patient Safety: impacted by decisions made by anesthesia providers

☐ Cognitive process of decision-making affected by: inconsistent approach to patient management, practice variability, and noncompliance with evidence-based guidelines (Steigler & Tung, 2014).

☐ Cognitive factors that influence the decision-making process: heuristics, bias, and overconfidence

☐ Preventable hospital deaths linked to medical errors: among the top 3 causes of patient deaths in the U.S.
- 123 closed malpractice claims involving CRNAs that could have been prevented.
- 65% of the cases caused by errors in judgement
- Cognitive biases - a subcategory of errors in judgement

☐ Safe practice in anesthesia
- Appropriate level of confidence
- Adherence to evidence

Methodology

☐ **Design** Qualitative, Descriptive, pilot study

☐ **Sample** RRNAs graduating in 2021 & 2022 (n = 42), CRNAs (n = 21), Anesthesiologists (n = 3)

☐ **Intervention**

T	Threat What is the life or limb threatening conditions in this patient?
W	**What Else** What if I am wrong? What else could it be?
E	Evidence Do I have sufficient evidence, or should I exclude this diagnosis?
D	Dispositional Factors What are the environmental & emotional dispositions influencing my decision?

Measures

☐ **Measures**

Decisions Styles Scale	Survey	Survey Continued
Instructions: Please state your opinion as honestly as possible. Using the scale below please indicate the extent to which you agree or disagree with the statements. Describe how you are now, not as you wish to be in the future (1) Strongly Disagree, (2) Disagree, (3) Neutral (neither agree nor disagree), (4) Agree, (5) Strongly Agree **Category A** ____1. I prefer to gather all the necessary information before committing to a decision. ____2. I thoroughly evaluate decision alternatives before making a final choice. ____3. In decision making, I take time to contemplate the pros/cons or risks/benefits of a situation ____4. Investigating the facts is an important part of my decision-making process. ____5. I weigh a number of different factors when making decisions. **Category B** ____1. When making decisions, I rely mainly on my gut feelings ____2. My initial hunch about decisions is generally what I follow. ____3. I make decisions based on intuition. ____4. I rely on my first impressions when making decisions. ____5. I weigh feelings more than analysis in making decisions.	1. Please select the choice you identify with a. CRNA b. Anesthesiologist c. CRRNA 2. How long have you been in clinical practice? a. < 5 years b. 6 – 10 years c. 11 – 15 years d. 15 + years 3. Please select your age group a. < 30 years old b. 30 – 40 years old c. 41 – 49 years old d. 50 + years old 4. Which would not be a consideration for difficult mask ventilation? a. Edentulousness b. Beard c. Obese d. Small mouth opening 4a. Please rate your confidence associated with your answer a. 1 - not confident at all b. 2 - slightly confident c. 3 - somewhat confident d. 4 - fairly confident e. 5 - completely confident	5. According to the Difficult Airway Algorithm all of the following are acceptable interventions after an initial intubation attempt is unsuccessful, EXCEPT a. Return to spontaneous ventilation b. Place LMA c. Call for help d. Awaken the patient 5a. Please rate your confidence associated with your answer a. 1 - not confident at all b. 2 - slightly confident c. 3 - somewhat confident d. 4 - fairly confident e. 5 - completely confident 6. The following are problems that causes a rise in end-tidal CO2 post intubation, EXCEPT a. Pulmonary thrombus b. Hypoventilation c. Malignant hypertension d. Depleted CO2 absorber 6a. Please rate your confidence associated with your answer a. 1 - not confident at all b. 2 - slightly confident c. 3 - somewhat confident d. 4 - fairly confident e. 5 - completely confident 7. The following are true about laryngospasm EXCEPT a. Persistent laryngospasm plus hypoxia can be treated with succinylcholine 0.25 – 0.5mg/kg b. A struggling patient during a laryngospasm creates a large positive intrathoracic pressure c. Laryngospasm can be treated with intravenous lidocaine 1 – 1.5mg/kg d. Extubating a patient deeply increases the risk of laryngospasm 7a. Please rate your confidence associated with your answer a. 1 - not confident at all b. 2 - slightly confident c. 3 - somewhat confident d. 4 - fairly confident e. 5 - completely confident

☐ **Analysis** Chi-Squared test analyzing the relationship between each provider and their confidence level associated with the correct answer

Results

DSS		Reason	Intuitive	Equal	Total
Profession	RRNA	38	1	3	42
	CRNA	19	2	0	21
	Anesthesiologist	3	0	0	3
Total		60	3	3	66

DSS		Reason	Intuitive	Equal	Total
Years of Practice	< 5 years	49	3	3	55
	6 – 10 years	7	0	0	7
	11 – 15 years	2	0	0	2
	15 + years	2	0	0	2
Total		60	3	3	66

Chi-Squared Test	Question 4	Question 5	Question 6	Question 7
P value	0.4	0.2	**<0.1**	0.5

☐ Confidence levels of Question 4, 5, and 7 did not produce any statistical significance

☐ Confidence level of Question 6 produced statistical significance

Q4	CRNA				AN				RRNA			
	A	B	C	D	A	B	C	D	A	B	C	D
(5)Completely confident	0	0	1	5 (31.3%)	1 (50%)	0	0	0	1 (16.7%)	1 (100%)	0	19 (59.4%)
(4) Fairly confident	3 (75%)	0	0	7 (43.8%)	1 (50%)	0	0	0	4 (66.7%)	0	1 (33.3%)	9 (28.1%)
(3)Somewhat confident	1 (25%)	0	0	3 (18.8%)	0	0	0	1 (100%)	1 (16.7%)	0	2 (66.7%)	4 (12.5%)
(2)Slightly confident	0	0	0	1 (6.3%)	0	0	0	0	0	0	0	0
(1)Not confident at all	0	0	0	0	0	0	0	0	0	0	0	0

Q5	CRNA				AN				RRNA			
	A	B	C	D	A	B	C	D	A	B	C	D
(5)Completely confident	1 (12.5%)	0	0	1 (11.1%)	1 (50%)	0	0	0	1 (6.7%)	0	0	3 (15.0%)
(4) Fairly confident	3 (37.5%)	1 (25.0%)	0	3 (33.3%)	0	0	0	0	7 (46.7%)	3 (75%)	2 (66.7%)	5 (25.0%)
(3)Somewhat confident	1 (12.5%)	2 (50.0%)	0	4 (44.4%)	0	0	0	0	5 (33.3%)	1 (25%)	1 (33.3%)	8 (40.0%)
(2)Slightly confident	1 (12.5%)	0	0	0	0	0	0	1 (100%)	1 (6.7%)	0	0	2 (10.0%)
(1)Not confident at all	2 (25.0%)	1 (25%)	0	1 (11.1%)	0	0	0	0	1 (6.7%)	0	0	2 (10.0%)

Results Continued

Q6	CRNA				AN				RRNA			
	A	B	C	D	A	B	C	D	A	B	C	D
(5)Completely confident	9 (50.0%)	1 (100.0%)	0	0	2 (66.7%)	0	0	0	15 (51.7%)	3 (60.0%)	0	0
(4) Fairly confident	8 (44.4%)	0	0	0	1 (33.3%)	0	0	0	10 (34.5%)	2 (40.0%)	5 (71.4%)	1 (25.0%)
(3)Somewhat confident	1 (5.6%)	0	1 (100.0%)	1 (100.0%)	0	0	0	0	1 (3.4%)	0	1 (14.3%)	0
(2)Slightly confident	0	0	0	0	0	0	0	0	3 (10.3%)	0	1 (14.3%)	0
(1)Not confident at all	0	0	0	0	0	0	0	0	0	0	0	0

Q7	CRNA				AN				RRNA			
	A	B	C	D	A	B	C	D	A	B	C	D
(5)Completely confident	0	0	0	1 (11.1%)	0	0	0	1 (100.0%)	0	2 (13.3%)	2 (12.5%)	3 (37.5%)
(4) Fairly confident	1 (100.0%)	2 (33.3%)	5 (100.0%)	3 (33.3%)	0	2 (100%)	0	0	4 (66.7%)	9 (60.0%)	4 (25.0%)	1 (12.5%)
(3)Somewhat confident	0	3 (50.0%)	0	3 (33.3%)	0	0	0	0	1 (33.3%)	3 (20.0%)	8 (50.0%)	3 (37.5%)
(2)Slightly confident	0	1 (16.7%)	0	1 (11.1%)	0	0	0	0	0	1 (6.7%)	1 (6.3%)	1 (12.5%)
(1)Not confident at all	0	0	0	1 (11.1%)	0	0	0	0	0	0	1 (6.3%)	0

Discussion

Study results indicated:

☐ Majority of anesthesia providers (90.0%) identify with the reason/System 2 decision making process, 5.0% identified with intuitive/System 1 decision making process, and 5.0% identified with both.

Implications:

☐ Anesthesia providers can become aware of their decision-making styles by using the Decisions Styles Scale (DSS). Awareness of this may lead to improved patient safety during the perioperative period.

☐ Tools such as the TWED checklist can be implemented by anesthesia providers to help maintain focus when faced with challenges in the perioperative setting.

Summary:

☐ The project provided the awareness of Systems 1 and 2 decision making process, the advantages of each, and the impact it may have on patient safety to anesthesia providers.

☐ By implementing metacognitive tool, anesthesia providers will maintain decision-making strategies that will improve patient safety.

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