Making Correct Decisions while using System 1 and System 2 Thinking
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Question 1
1. Please PICK ONLY ONE of the following choices. Pick the most appropriate choice recommendation based on the signs and symptoms of the patient.
   - a. Plain film radiograph of the low back (flexion-extension views)
   - b. Magnetic Resonance Image of the low back
   - c. Plain film radiograph of the pelvis
   - d. None

Question 2
2. Please PICK ONLY ONE of the following choices. Pick the most appropriate recommended medication choice based on the signs and symptoms of the patient.
   - a. Non-Steroidal Anti-Inflammatory
   - b. Tricyclic Anti-Depressant
   - c. Corticosteroid (Dose pack)
   - d. Short term Narcotic derivative
   - e. None

Question 3
3. Please PICK ONLY ONE of the following choices. Pick the most appropriate self-care option based on the signs and symptoms of the patient.
   - a. Advice to decrease activity since it diminishes his current symptoms
   - b. Advice to remain active
   - c. Advice to perform unsupervised general exercises such as Yoga
   - d. None

Question 4
4. Please PICK ONLY ONE of the following choices. If the patient was treated for 1 month with no improvement or worsening in the present signs or symptoms, which of the following selections is most appropriate for this patient.
   - a. Refer for Imaging consultation
   - b. Refer for Surgical consultation
   - c. Another round of conservative therapy
   - d. Recommend heavier dosages of medication
Physical Therapists Can Determine Patient Prognosis at Baseline


Dual Processing Theory

- A Careful Balance of Intuitive (Automatic) and Analytical Thoughts

System 1 Thinking (Nutshell)

- Designed to jump to conclusions from little evidence—is not designed to know the size of the jumps (Kahneman 2011)
  - Involves
  - Fast,
  - Automatic,
  - Frequent,
  - Emotional,
  - Stereotypic,
  - Subconscious designs

System 2 Thinking (Nutshell)

- Slow,
- Cautious,
- Effortful,
- Infrequent,
- Logical,
- Calculating,
- Conscious

Both Have Pros and Cons

- Allows one to function in fast paced environments
- Allows one to make quick decisions that are correct
- Allows one to short cut processes and improve efficacy with fast, automatic decisions
- Allows experience to assist in making decisions

**System 1 Uses Good, Quality Experiences**

- Talented, well-trained clinicians make faster and better decisions.
- Factual knowledge appears to be more important than years of emergency nursing or triage experience in triage decision accuracy.


**How Does One Obtain “Fast-Automatic” Decisions?**

- Training
  - Depth and breadth of prior experience
- Expertise
- Efficiency
  - Patient Centered
- Goal Oriented/Distinct view of role
  - How data are used
- Structured pattern to the decision making model

**Training**

- Physical Therapy Education (CAPTE Data and Study)
  - Stronger academic background and work experience
- Residency Training
- Fellowship

**Expertise?**

- Involves key characteristics
  - (1) a dynamic, multidimensional knowledge base that is patient-centered and evolves through therapist reflection,
  - (2) a clinical reasoning process that is embedded in a collaborative, problem-solving venture with the patient,
  - (3) a central focus on movement assessment linked to patient function,
  - (4) consistent virtues seen in caring and commitment to patients.

Jensen et al. Expert practice in physical therapy

**Efficacy**

- Less information was needed to make appropriate decisions
- Recognition of patterns in the care planning
- More “useful” time spent in the patient care process
- Better understanding of prognoses

**Goal Oriented/ Distinct View of Role**

- Has ability to build and convince patient of the relationships and roles
- Knows what they want to get done
- Knows how to target useful information
  - Care planning
  - Triage and deference of care to others
**Expertise Learned through a Structured Pattern**

- You miss fewer things
- It is a moderator to all the other elements we discussed
- Doesn’t mean it’s needed forever but it build the patterns

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**10,000 Hours Concept**

- Simon and Chase’s observation—and researchers, time and again, reached the same conclusion: it takes a lot of practice to be good at complex tasks.
- Practice creates Programming

HA Simon, WG Chase - Skill in chess: Experiments with chess-playing tasks and computer simulation of skilled performance throw light on some human perceptual and memory processes American scientist, 1973

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**System 1 Allows you to Make Quick, Smart Decisions based on Intuition**

- Allows individuals to identify risk and recognize negative consequences
- Allows clinicians to understand situations of potential harm or stupidity

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**Weaknesses-Bias**

- The functions associated with choice in particular are often “conducted prior to and independent of any conscious direction” (Heuer, 1999, p. 3).
- What spontaneously appears in our consciousness at the end of cognition is the product, not the process, of thinking.

- Two types
  - Information Biases
  - Ego Biases


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**Product Information Biases**

- **Product Information biases** include the use of heuristics, or information-processing shortcuts, that produce fast and efficient, though occasionally inaccurate, decisions

- Priming
- Context Bias
- Mental Short Cuts

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**Driven By Priming Agents**

- Such as our Experiences and Our responses to those experiences
- A **good** priming experience will reduce the effect of a negative finding
- A **bad** priming experience will reduce the effect of a positive finding
The Brain will try to Organize things in the way it thinks should be

System 1 Theory has an Emotional Component that Drives Responses
- Emotions stimulate automatic, quick responses
- Caring is an emotion

System 1 is Driven by Stereotypes or Assumptions
- Harvard Implicit Racism Test
- Overall, despite one’s race there are inherent “preferences” toward specific races

Human Arrogance
- Which is most acceptable?
- A regional expert physician’s protocol was able to save the lives of 17% of children who had Klotchman’s Disease who were identified within a span of 3 months. The previous life expectancy percentage was only 8%.
- A computer algorithm used at Mercy Memorial in New York missed 78% of the children with Klotchman’s Disease. This resulted in the deaths of nearly 8 out of 10 children when identified within a span of 3 months. No previous algorithm was used.

System 2 has Strengths
- Unemotional
- Performs better in complex situations
- Allows for a decision that is based on large data points
- Adjusts for evidence

System 2 has Weaknesses
- Can be very SLOW!!
- Relies heavily on research findings
  - Research fraud is documented in about 1 every 10K to 100,000 scientists
  - Paper retractions from the PubMed library due to misconduct have a frequency of 0.02%, which led to speculation that between 0.02 and 0.2% of papers in the literature are fraudulent.
- Requires more effort and occasionally more knowledge

Why Doesn’t System 2 Always Work?


What About Clustering? (CPRs)


Weaknesses in Each Buffer One Another

- CPR for Total Hip Replacement surgery
  - System 1 assists
- Pelvic Pain Case
  - System 1 assists
- Jefferson’s Fracture
  - System 2 assists
- Deep Vein Thrombosis
  - System 2 assists