"The essential difference between emotion and reason is that emotion leads to action while reason leads to conclusions."

-Donald Calne

**WHAT ARE EMOTIONS?**

> "The essential difference between emotion and reason is that emotion leads to action while reason leads to conclusions."

-Donald Calne

**EMOTIONAL INTELLIGENCE AND THE NEUROSCIENCE OF EMOTIONS**

Heidi Reyst, PhD, CBIST

**EMOTION COMPONENTS**

- **PHYSIOLOGICAL**
  - Heart palpitations
  - Stomach distress
  - Sweating
  - Hot or cold flashes
  - Shortness of breath
  - Fatigue
  - Muscle tension
  - Increased energy

- **COGNITIVE**
  - Appraisal of what’s happening
  - Expectations of the situation
  - The subjective aspect
  - Feelings

- **BEHAVIORAL**
  - How I react
  - What I do
  - Body language
  - Facial expression

**ROADMAP & GOALS**
Moods, feelings and emotions are often thought of as the same thing. They are related, but distinct...

**Emotions** occur rapidly in response to a specific external stimulus. They are temporary, can be intense, and are involuntary.

**Feelings** are the thoughts and interpretations of those emotions.

**Moods** tend to be more mild and last longer. They may have no identifiable beginning. They tell us about our inner state.

... emotions are helpful for making decisions, moods are not.

**WHAT EMOTIONS ARE NOT...**

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**FUNCTION OF EMOTIONS**

- Negative emotions are thought to play a significant role in survival.
- Their major function is to alert us to threats and danger.
- Positive emotions are related to health and well-being.

"Emotions are not problems to be solved. They are signals to be interpreted."

- Vironika Tugaleva

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**THE FUNCTION OF EMOTIONS**

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**FUNCTION OF EMOTIONS - FEAR**

- Is experienced when we perceive there is a potential danger AND we are relatively powerless over this danger
- Inspires the fight or flight response – leading to avoidance or escape from danger
- Psychopathology, anxiety, phobia and panic

**Physiological Response**
- Rapidly increased cardiac activity
- Increased breathing rate; then shallow and irregular

**Related Emotions**
- Anxiety; Apprehension; Nervousness; Concern; Consternation; Misgiving

**FUNCTION OF EMOTIONS - ANGER**

- Tries to change the situation – it’s not a passive emotion
- Is extremely situational in terms of how useful it is
- Pathological end, hatred and violence

**Physiological Response**
- Excessive increase in activation and preparation for action
- Increase in cardiac activity
- Muscle tone & breathing increase
- Increase in adrenaline

**Related Emotions**
- Fury; Outrage; Resentment; Wrath; Exasperation; Indignation; Annoyance; Irritability; Hostility

**SO, HOW MANY EMOTIONS ARE THERE?**

- There are likely innumerable emotions available to us, likely more than we have the words for
- There have been many attempts to quantify how many emotions exist in the human repertoire
- Paul Eckman identified what he called Universal Emotions
  - This was based on facial expression research
  - He viewed them as universal because the facial expressions that certain emotions elicited were found across distinctly unique cultures
The purpose of sadness is to act in situations where the subject finds themselves powerless or can’t take any direct action. It fulfills very important roles and the pathological end is severe depression.

**Physiological Response**
- Decreased heart rate
- Increased muscle tone

**Related Emotions**
- Grief; Sorrow; Cheerlessness; Gloom; Melancholy; Self-pity; Loneliness; Dejection; Despair

**SURPRISE**
- **Surprise** is a reaction provoked by something unexpected, new, or strange.
- The purpose of surprise is to empty our working memory in order to face the unexpected stimulus.
- There are good surprises and bad surprises.

**Physiological Response**
- Activate attentional processes
- This happens in the form of endorphins flooding the brain
- Decreased heart rate
- Increased muscle tone

**Related Emotions**
- Shock; Astonishment; Amazement; Wonder

**DISGUST**
- **Disgust** serves the evolutionary purpose of keeping us safe from harm.
- The adaptive function of disgust is to reject any stimulus that could be toxic.
- This also results in rejection of toxic social stimuli too.

**Physiological Response**
- GI problems/nausea
- Increase in heart rate and breathing rate
- Skin conductance
- Muscle tension

**Related Emotions**
- Contempt; Disdain; Scorn; Abhorrence; Aversion; Distaste; Revulsion

**FUNCTION OF EMOTIONS - HAPPINESS**
- It moves us to action.
- Is centered around pleasure and reward - when rewarded we seek to continue a behavior.
- At the far edge, mania.

**Physiological Response**
- Increase in heart rate and
- Good breathing rate
- Release of endorphins and dopamine

**Related Emotions**
- Excitement; Joy; Relief; Contentment; Bliss; Delight; Amusement; Pride
THE MOOD METER

THE NEUROSCIENCE OF EMOTION

"The emotions of man are stirred more quickly than man's intelligence" - Oscar Wilde

LEVEL OF ENERGY

PLEASANTNESS

EMOTION AND COGNITION

Why is it important?
Underlying theory of Emotional Intelligence is that it impacts cognitive processes

EMOTIONS AND BRAIN EVOLUTION

Emotions have to be explained in the context of evolution

- Take the emotion of 'disgust' – for animals disgust evolved so that they could avoid poisons or toxins – it was about survival – animals learned about contaminants by seeing what happened to other animals
- In humans disgust evolved beyond that – not only did we learn by seeing what happened to others, we also learned because others told us to avoid them;
EQ impacted cognition (decision-making) only when emotional stimuli was present. Information was processed differently, which implicates different neural networks at work.

<table>
<thead>
<tr>
<th></th>
<th>HOT COGNITIVE TASK (Emotional stimuli or consequences)</th>
<th>COLD COGNITIVE TASK (Emotionally neutral stimuli or consequences)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIGH EQ</td>
<td>Made more advantageous vs disadvantageous selections * *p &lt; .05</td>
<td>X</td>
</tr>
<tr>
<td>LOW EQ</td>
<td>No difference in the advantageous vs disadvantageous selections</td>
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SUPPORT FOR THE UNDERLYING THEORY OF EQ

Mental processes and neural networks involved in emotional intelligence:

1. **Executive Control Network** (left and right)
2. **Salience Network**
3. **Language Network**
4. **Explicit Memory Network**
5. **Face-object Recognition**
6. **Working Memory - Executive Function Network**
7. **Behavioral Empathy Network**
8. **Expression of compassion or affective empathy**
9. **Anterior Insula**
10. **Theory of Mind Network**
    - Inferring and reasoning about the beliefs, thoughts and emotions of others
    - Perspective-taking
    - Anterior Temporoparietal Junction

NEURAL NETWORKS

EMOTIONAL BRAIN – ADDITIONAL STRUCTURES

- **Cerebral Cortex**
  - Prefrontal cortex
  - Anterior temporal lobe
  - Anterior insula
- **Deep Brain Structures**
  - Hippocampus
  - Basal forebrain
  - Septum pellucidum
  - Posterior cingulate cortex
- **Brainstem**
  - Periaqueductal gray matter
  - Ventral tegmental area

EMOTIONAL BRAIN – CORE STRUCTURES

- **Orbitofrontal area**
- **Nucleus accumbens**
- **Ventromedial prefrontal cortex**
- **Hypothalamus**
- **Amygdala**

EQ - EMOTION REGULATION

- The set of operations involved in modulating ongoing emotional responses in accordance with individual or social goals
  - vmPFC
  - vIPFC
  - Amygdala

EQ SOCIAL AWARENESS (EMOTION RECOGNITION)

- Amygdala
  - Emotional facial recognition, via processing emotionally salient exteroceptive stimuli
  - Also assists in the prioritization of the processing salient stimuli
- vmPFC
  - Works in conjunction with the Amygdala to detect and represent motivationally salient stimulus events
- Somatosensory cortex
- Insula & ACC
  - Play a critical role in emotion recognition of pleasant and unpleasant emotion categories
  - These are the same areas that process first-person emotional experiences
  - The “simulation hypothesis”

EQ SELF-AWARENESS

- Anterior insula (AI)
- Anterior cingulate cortex (ACC)
- Ventromedial prefrontal cortex (vmPFC)

BRAIN STRUCTURES TIED TO EQ

PERCEIVING EMOTIONS
- Frontal Lobe
- Temporal Lobe
- Temporal-Occipital Lobes
- Parietal Lobe

MANAGING EMOTIONS
- Frontal Lobe
- Temporal Lobe
- Parietal Lobe

White Matter
- Left superior longitudinal fasciculus
- Left uncinate fasciculus

FUNCTION

- AI integrates incoming signals about the state of one’s own body which are sent to the ACC
- The ACC initiates selection and planning of motor and non-motor movement responses to emotional events
- Together they play a critical role in generation of subjective emotional experience

AFFECTIVE EMPATHY

- Influences social behavior
- Refers to the ability to share the emotional state of another person
  - vIPFC
  - Insula
- Relies on the ability to prioritize processing of self & other
  - Temporoparietal junction

EMOTIONAL MEMORY

- Memory of emotional events is superior to memory of other types of events
- They are less likely to fade over time
  - Medial temporal lobe
  - Amygdala
  - Hippocampus
  - Perirhinal cortex

EQ SOCIAL AWARENESS (EMPATHY)

The neural networks for processing emotional stimuli are widely distributed
The limbic system and the frontal lobe are key regions in the processing of emotional information
Emotional processing works in close conjunction with cognitive processing

BRAIN EVOLUTION

1. THE PRIMITIVE BRAIN
   - MEDULLA
   - PONS
   - MIDBRAIN
2. THE EMOTIONAL BRAIN

- Hippocampus
- Amygdala
- Thalamus
- Hypothalamus

How critical is the Amygdala to emotional processing?

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Scenario 1

Danger?
In the past, when our amygdala detected some sort of danger, the associated memory was much stronger than other memories.

In the present, the amygdala is assessing new stimuli for threats.

The way it determines danger is to compare the stimulus against emotional memories to see if there is a “match.”

For successful social interaction, we need to:
1. Be able to recognize emotions as they occur.
2. Once we experience an emotion, we need to have control over them in order to regulate our responses.

For successful social interaction we need to:
1. Be able recognize emotions as they occur.
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So what happens if the amygdala is wrong?

Emotional Hijacking occurs when the amygdala FALSELY detects dangers, triggers the fight or flight process and shuts down the rational brain.

Prefrontal Cortex = Emotional Hijack “OFF” Switch.

Amygdala Turns Emotional Hijack Switch “ON”
**EMOTIONAL HIJACKING**

- **Amygdala**: initiates flight or flight
- **Hypothalamus**: send out hormones

**PROBLEM?**

- The amygdala can’t generate the response- the frontal lobe has to
- **Amygdala**: sends a signal to the prefrontal cortex
- This is the opportunity for our prefrontal cortex to say “hey wait a minute”
- Last line of defense for an emotional hijacking

**COUNTERACTING EMOTIONAL HIJACKINGS**

- What stops a hijacking is our understanding that the emotion or intensity isn’t appropriate or proportionate given the context of the situation
- In particular a key aspect that informs the context of the situation is our understanding of our emotions in conjunction with our previously learned responses to those emotions
- The key is that some people understand their emotions and have learned how to respond adaptively
- The flip side of that? Some people don’t fully understand their emotions and some have not learned how to respond adaptively

**The difference is emotional intelligence**

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**DEFINING EQ & EQ MODELS**

- *Emotional intelligence (EQ)* refers to an individual’s ability to process and respond to emotions, including recognizing the expression of emotions in others, using emotions to enhance thought and decision making, and regulating emotions to drive effective behaviors
SELF-AWARENESS

“When awareness is brought to an emotion, power is brought to your life”
– Tara Meyer Robson

There are 3 competencies related to Self-Awareness:
- Emotional Awareness: Recognizing one’s emotions and their effects
- Accurate Self-Assessment: Knowing one’s strengths and limits
- Self-Confidence: A strong sense of one’s self-worth and capabilities
INCREASING SELF-AWARENESS

- Involves paying attention to your emotions
- Simply trying to be more aware of our emotions can help to understand them better
- So the key is recognizing an emotion as it comes over you, and understanding how that emotion affects you

Click on the line to go to video
http://clg.webflow.io/video/locating-yourself-a-key-to-conscious-leadership

SELF-AWARENESS

- Do you sometimes avoid your feelings and hope they simply go away?
- Do you find that some people elicit very negative emotions?
- Do you find that when you are in a bad mood, it clouds everything you do?
- Do you find that you react differently when you are feeling stressed?

EMOTIONAL REGULATION

“He who angers you conquers you.”

– Elizabeth Kenny

INCREASING SELF AWARENESS

- Mindfulness is the practice of purposeful attention without judgment
- It is the practice of being aware of present-moment experience without trying to push it away or over-engage
IMPROVING EMOTIONAL REGULATION

- We can’t regulate our emotions if we aren’t aware of them
- Asking “am I above or below the line” brings the conscious awareness that allows us to then regulate them
- Let’s go back to the black line...

EMOTIONAL REGULATION

- **Emotional Self-Control**: Keeping disruptive emotions and impulses in check
- **Transparency**: Maintaining integrity, acting congruently with one’s values
- **Adaptability**: Flexibility in handling change
- **Achievement**: Striving to improve or meeting a standard of excellence
- **Initiative**: Readiness to act on opportunities.
- **Optimism**: Persistence in pursuing goals despite obstacles and setbacks

If self-awareness is a not a current strength, regulating them won't be either.

LOCATION, LOCATION, LOCATION

- The black line is a simple tool to help us bring attention to, and gain awareness of our emotions as they occur

Imagine Steve has an interaction with co-worker Jane after an important project deadline was missed

Jane implicates Steve as the reason for the delay

Imagine there are two routes for Steve to address the situation

He can respond without being mindful
He can respond in a mindful way

EMOTIONAL REGULATION

- Do you find that you struggle to respond in a thoughtful way, versus an emotional way?
- When someone challenges your emotions, do you see them as a villain or an ally?
- Do you find that you don’t notice the effects of your actions until it’s too late?
- Do you visualize yourself succeeding or do you see failure in many situations?
SOCIAL AWARENESS

“Empathy is seeing with the eyes of another, listening with the ears of another and feeling with the heart of another”

Alfred Adler

RESPOND WITHOUT BEING MINDFUL

Physically, his heart rate increased, his muscles tensed

His immediate thought is “Jane is always out to get me!”

Steve responds defensively and blames a different department for causing the project delay

Closed, Defensive, Committed to Being Right

RESPOND IN A MINDFUL WAY

Physically, his heart rate increased, his muscles tensed

His immediate thought is “Jane is always out to get me!”

Steve says to Jane “I agree the deadline was missed, and part of that may be from our end. Can we problem solve how to fix it, and prevent the issue moving forward?”

Responsive / Curious / Growth & Learning

SOCIAL AWARENESS

Refers to how people handle relationships and awareness of others’ feelings, needs, and concerns

- There are 3 competencies related to Social Awareness:
  - **Empathy**: Sensing others’ feelings and perspectives, and taking an active interest in their concerns
  - **Organizational Awareness**: Reading a group’s emotional currents and power relationships
  - **Service Orientation**: Anticipating, recognizing, and meeting customers’ needs

RESPONSE IN A MINDFUL WAY

COMMUNICATION
SOCIAL AWARENESS

- Do you feel you are always present when speaking with others?
- When you see an acquaintance having a difficult time, do you ask what is wrong?
- Do you try and see through others' world lens to understand their point of view?
- Are you able to walk into a room and quickly sense the mood?

INCREASING EMPATHY – ACTIVE LISTENING

- Pay attention!
  - Make eye contact
  - Ignore outside factors
  - Put own thoughts on hold
  - Put the phone down...
  - Stop planning what response
- Provide feedback
  - Ask questions, check in
  - Nod, smile, respond
- Don’t interrupt
- Be mindful of your body language

- Practice Active Listening.
  - Listen with your ears – what is being said, and what tone is being used?
  - Listen with your eyes – what is the person doing with his or her body while speaking?
  - Listen with your instincts – do you sense that the person is not communicating something important?
  - Listen with your heart – what do you think the other person feels?

EMPATHY

- In order to be truly empathic, there are four pre-requisites that must be present
  - You must leave judgment behind
  - Try to experience the world through the other person's lens
  - Aspire to understand others' feelings
  - Communicate your understanding of those feelings

RELATIONSHIP MANAGEMENT

“Only by knowing ourselves can we responsibly and efficiently manage our senses, thoughts, words and actions, and behave in a benevolent manner toward other beings and the world”

Joseph Rain
RELATIONSHIP MANAGEMENT STRATEGIES

- Be open and be curious
- Enhance your communication style
- Avoid giving mixed signals
- Be open to receiving feedback
- Focus on trust-building
- Have an open door policy
- Don’t put off what needs to be addressed
- Use feedback effectively

RELATIONSHIP MANAGEMENT

There are competencies related to Relationship Management:

- Developing Others: Sensing others’ development needs and bolstering their abilities
- Inspirational Leadership: Inspiring and guiding individuals and groups
- Change Catalyst: Initiating or managing change.
- Influence: Wielding effective tactics for persuasion
- Conflict Management: Negotiating and resolving disagreements
- Teamwork & Collaboration: Working with others toward shared goals; Creating group synergy in pursuing collective goals

RELATIONSHIP MANAGEMENT

This is the ability to use awareness of your emotions and the emotions of others to manage interactions successfully

THANK YOU!