



Safety in Special Ed
(...and everywhere else for that
matter)

**Stress and Self Control:
The Depletion Model**

Failure of Self-Regulation

- More than 21 years of data from DHS and Oregon Intervention System (primarily Seniors and People with Disabilities and Services to Children and Families) suggests that failure in self control is one of the leading causes of abuse.
- Decision fatigue, closely related to self-regulation (neurologically) accounts for a significant percentage of on the job injury in human services.

The Association for Positive Behavior Support (APBS)

- PBIS
- Home and Community Supports
- Research and Practice Dissemination
- International Membership
- On-going research

The Origin of this Presentation

- Numerous requests to address school safety in behavioral issues, especially Special Ed
- Self-regulation (self-control) in both staff and students is found to be a critical factor in injuries and litigation.
- This presentation was developed in response to this important issue.

Relevance to All of Us

- This is based on 8 studies that are arguably the first evidence-based studies of Self-Regulation.
- It applies to all of us, especially those who are engaged in decision-making, self-regulation, problem-solving, and physical activity (all of us!)

Contact information

- Adjustment:
 - My information was conveyed over Bluetooth 30 miles offshore...so some info was lost.

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Self-Control and Stress: The Evidence-Based “Depletion” Model

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*Board of Directors,
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Introduction

- Discussion of
 - Traditional Model of Self-Control
 - A look at science of Self-Control
 - Evidence-based practices
 - New Studies (less than 1 year old...and still growing!)
 - Practical Application

What Has Self-Control Ever Done for Me?

- Success in Work, Home
- Maintaining Relationships
- Happy, low stress
- Adjustment, mental health
- Physical Health
- Socially acceptable behavior
- Longevity
- Every major personal problem has an element of self-control failure

(Baumeister 2012)

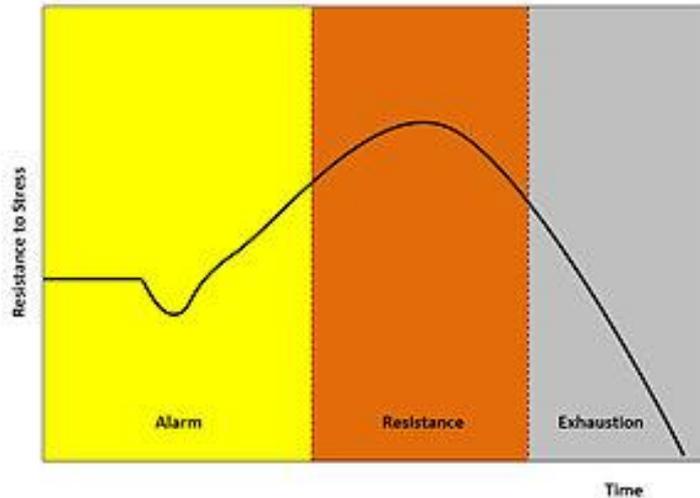
What is Self-Control?

- Group exercise:
 - What do we think of when we use the term “self-control?”
 - What are some examples?

The “Selye” Model of Self Control

- Originally (1930’s) described by Austrian-born Canadian Endocrinologist/Physiologist Hans Selye.
 - Selye described stress physiologically
 - Primarily concerned with the body and specifically the endocrine system
 - Much of what has been done in stress management was “extrapolated” from Selye’s work with “clinical evidence”

“The General Adaptation Syndrome”



- Phases:
 - Alarm
 - Shock
 - Anti-shock
 - Resistance
 - Exhaustion (or Recovery)

Selye's General Adaptation is about general physical energy and resources, not brain function.

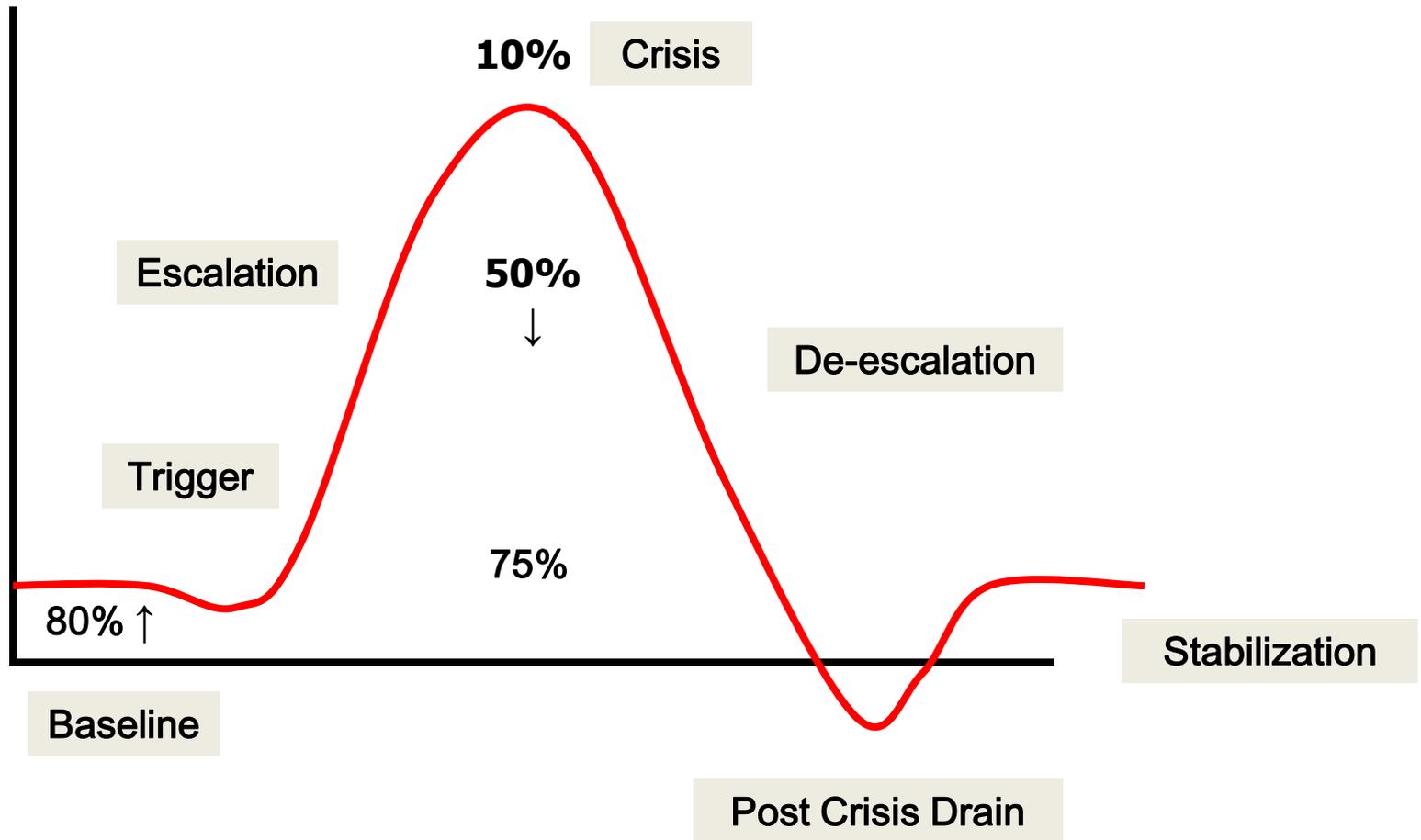
Selye was a physiologist, consequently his model reflects his study of the physical responses.

The tools to study brain function were yet to be developed.

Traditional Stress Model

- Generally, Selye's model is still around
- The following slides are taken from OIS (Oregon Intervention System)
- The Model is a good one for physical response
- But,
 - It was never meant to address brain functioning
 - It doesn't address the issues of prolonged stress
 - It doesn't address our behavioral tendencies when experiencing prolonged stress

Traditional Stress Cycle (OIS '98)



The “Oh _____” Moment

Think of a time when you experienced freeze, flight, or fight.

- What was the situation?
- What physical sign did you first notice?
 - About yourself
 - About another
- What was your response?
- Did you maintain self-control? (OIS’10)

Self-Control Plan

- Develop a support system
- Learn to accept things you cannot change
- Develop your personal anti-stress regimen
- Don't take it personally
- Believe in yourself
- Develop strategies

(OIS'10)

The “Plan” Development is EASY??

- Hardly...
- Steve Martin: “How to get a million dollars and not pay any taxes: First, you get a million dollars...”



Self-Control Plan

1. Step Back
2. Take a few moments (if ok*)
3. Assess
 - Self
 - Others
 - Environment
4. Think about your options
5. Respond carefully

*Always consider the person's supervision needs.

(OIS'10)

And that will work if...

- You remember it...
- ...and you're still in control...
- And you realize that you are in danger of losing control

Discussion: Nature vs. Nurture

- Are behaviors wired into our brains...
- Or are they learned???

Nature vs. Nurture

- This debate has been going on for decades.
- (Actually there are still those who believe the Earth is flat, too)
- B F Skinner is believed to have stated that all behavior is learned...
- Others suggest that behaviors are genetically driven
- What do you think?

Gene-Brain-Behavior Model

- We will be hearing more and more about this model as it applies to much of our work
- It applies equal weight to the idea that behavior is a combination of “nature” AND “nurture”
- While some behavior is the direct result of our genetic make-up (biology), the remainder of our behavior is learned in order to work with our biology

Examples of Direct Biological Causes

- Response to feelings of hunger
- Coughing
- Sneezing
-
-
-

Learned behavior

- Tying your shoe
- Language
- Singing
- Doing paperwork
-

Name that origin: Nature or nurture (or both)

- Screaming
- Spitting
- Laughing
- Falling in love
- Falling in Unlove
- Self-injury

So, with that in mind...

- ...on to Scientific Babble

Mirror, Mirror...on the Wall



Mirror Neurons

- Mirror neurons: discovered first in chimps
 - Monkey see, monkey do
- New(er) study demonstrates that when observing an event these specialized cells “light up” the same part of the brain that lights up when we are actually participating in an activity.

Mirror Neuron Implication

- Our brains experience stress when watching someone else in the stress mode.
- Examples...

A different look at Self-Control

- Override of response, willful changing
 - Thoughts, emotions, impulses, performance
- Regulate: Change based upon an idea or ideas
- Vital for Human Social Life
- Psychological and Sociological Basis of Moral and Cooperative Behavior

Part 1: Self-Control is Limited

- Numerous studies over the past 2-3 years
 - Psychology
 - Baumeister and Tierney 2012; Baumeister and Vohs, 2013; Job, Dreck, Walton , 2011, 2012
 - Neuroscience
 - Hedgcock, Nauert, 2012, 2013
 - Genetics
 - Human Genome Project
 - Zarccone, 2010, Carr, 2008, Hurley, 2012
 - Medicine
 - CDC: Llewellyn, Michaels (ongoing)

Willpower:

Baumeister

- Self-Control,
- Decision Fatigue,
- Initiative and
- Energy Depletion

All draw from the same source.

Baumeister, et al 2012

German Study

- Frequency of Self-Control (of desire) over 16 waking hours
- Desiring something: 8 hours/day
 - 1/3 of our day we want something
- Resisting problematic desires: 3-4 hours/day
 - Nearly half of that time we are actively resisting
- Succumbing to previous resisted temptations: ½ hour/day
 - At least half an hour each day, we succumb to temptation!

Is Willpower Limited?

- Just the term “Willpower” implies limits
- Does it deplete?

Is it like a muscle?

- Gets tired after exertion
- Conserving energy
- *Does exercise increase strength?*

One “Willpower” (Category), Not Many

- Control Thoughts
- Control Feelings
- Impulse Control
- Task Performance

Uses of Self-Regulation (Willpower)

- Self-Control
- Decision-Making
 - E.g. after making decisions, self-control is significantly impaired
- Initiative
- Creativity

Decision Fatigue: Choosing While Depleted

- Postpone/Avoid Decisions
- Less Compromise
- Default Option
- Impulse, Self-indulge
- Irrational Bias

Effective Self-Controllers

- Less frequent resistance
- Reduced Guilt
 - From other work
 - From lowering life stress
- Implications:
 - Playing offense
 - Avoiding Problems
 - Avoiding the Situation where Self-control is needed

Willpower, Brain and Body

- Is associated with the Prefrontal Cortex
- Willpower depletion is associated with Glucose depletion...but not directly

Understanding Glucose

High Utilization of Glucose:

- Self-Control
- Physical Exertion
- Immune system
- Premenstrual Syndrome

What does Depletion feel like?

- Strong Behavior effect
 - Weak subjective
- **No “signature feeling”**
 - Doesn’t always feel the same, hard to recognize
- Reluctance to tackle difficult things
- Sometimes different feelings of “tired”
- Intensification of all emotions, desires
 - **Turns up the volume on life!**

Summary of Part 1 (Willpower Depletion)

- Willpower is limited, but can be powerful
 - Self-control, choice, initiative all draw from the same resource
 - Greatest human strength, both individually and collectively
 - Can we increase Willpower?
 - Like exercising a muscle?

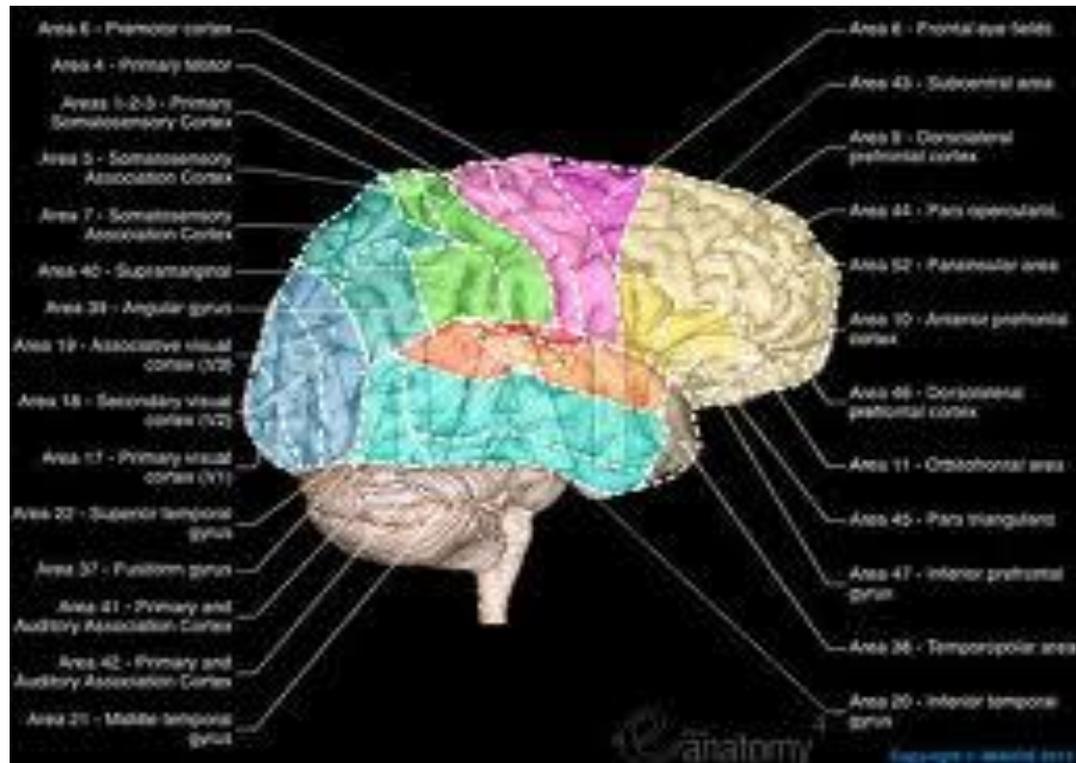
Baumeister, et al 2012

Part 2: Regulatory Resource Depletion

- Study by Hedgecock, et al University of Iowa 2012
- When self-control is exerted, later self-control is diminished
- Single resource depletion

“If you show an image of a brain, you add a great deal of credibility...”

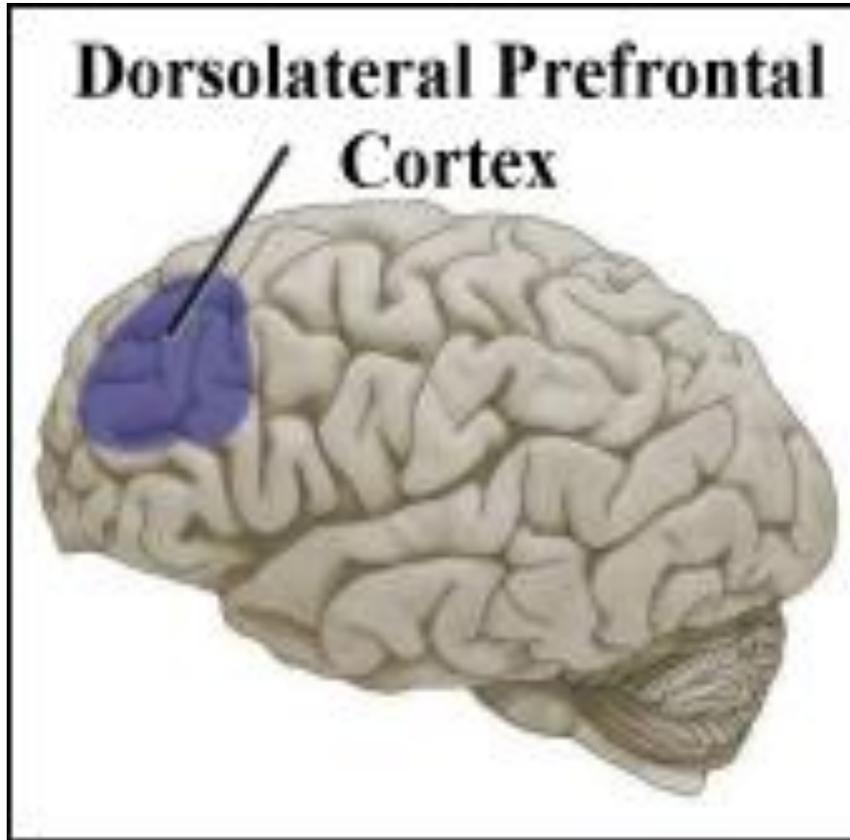
Oliver Sacks



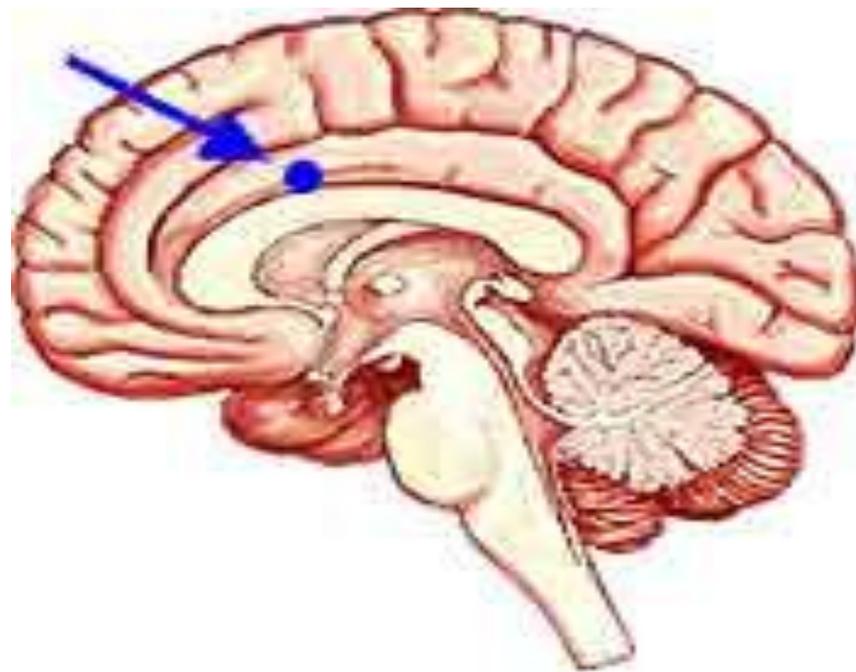
Self-Control Center

- Dorsolateral Prefrontal Cortex
- Located just inside and slightly down from the temple
- Anterior cingulate cortex (another activation area)
- Serious depletion of the areas after exerting self control (fMRI)
- Reservoir concept

Dorso-Lateral Prefrontal Cortex

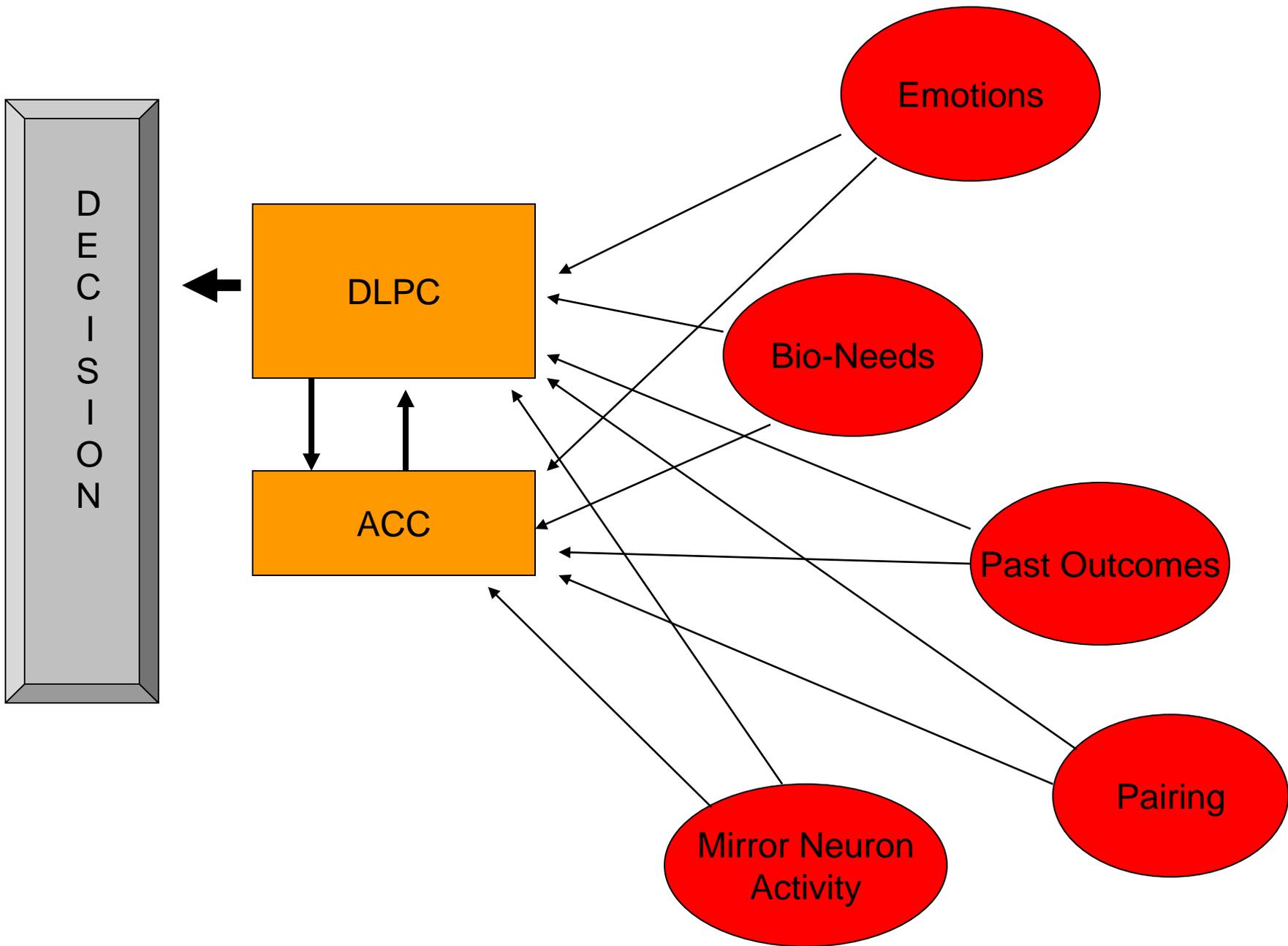


Anterior Cingulate Cortex



The (Many) Paths of Self-Regulation

- Throughout the brain, impulses are detected, processed and transported to specialized areas for determining action, if any.
- During high arousal, these impulses are decoded and valued in several areas, including the DLPC, and the ACC. Emotions, memory, pairing, prioritizing, etc all come into this center
- The DLPC and ACC make sense of the impulses and “choose” the best response.



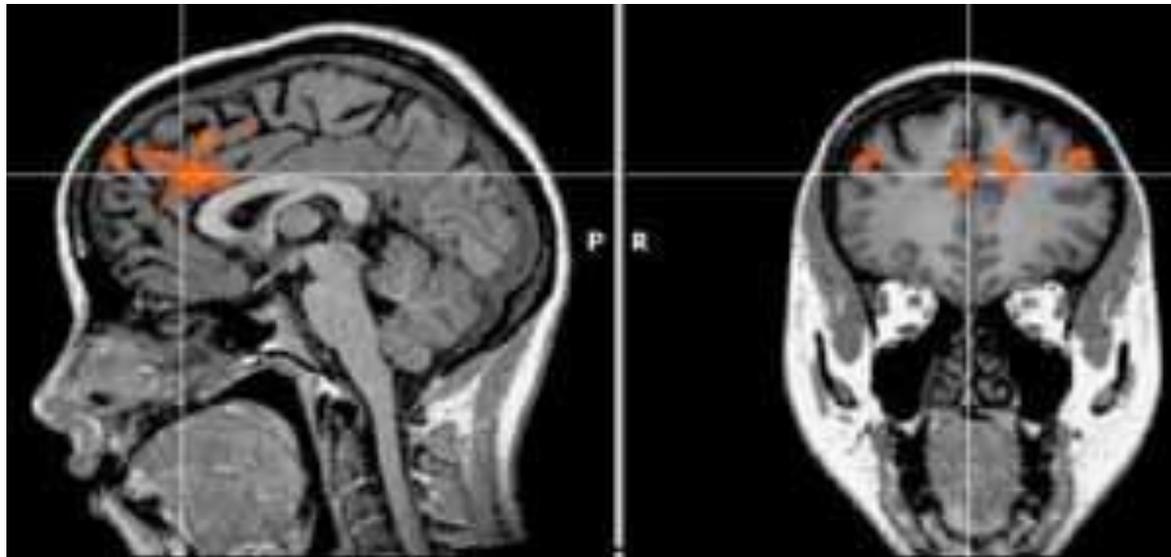
The Reservoir Concept

- Depletes over time with “willpower” activity
- Depletes much more rapidly with higher level activity
 - Self control
 - Initiative
 - Decision-making. Etc
- Recovers over time (hours (even days, rather than minutes))

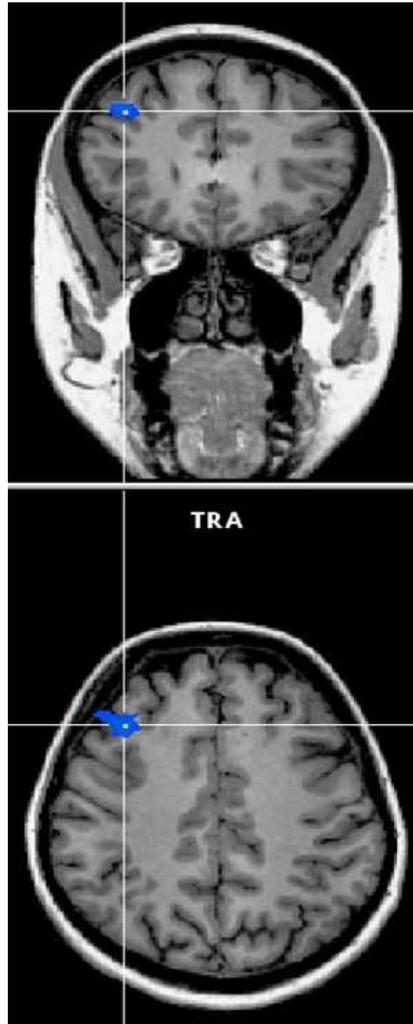
Before and After Depletion

(Serious Problem-Solving, Self-Control, Creativity)

During Depletion

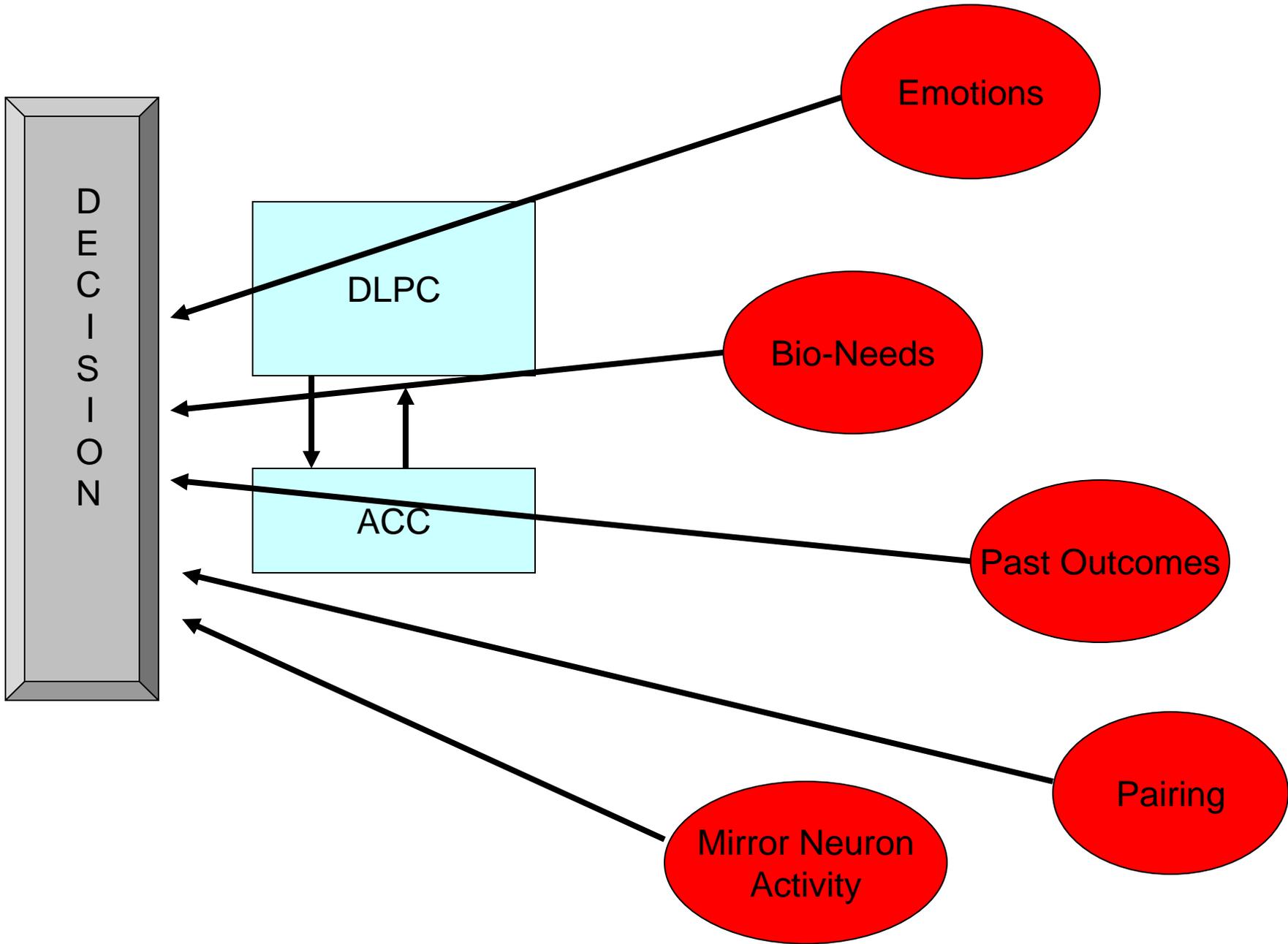


After 15 minutes of “Depletion”:
Virtually NO DLPFC activity



Activation of DLPC and ACC

- Specialized neurons in both areas fire rapidly and deplete resources significantly (limited by available resources)
- When resources are depleted, DLPC and ACC activity decreases rapidly to near zero, while information continues to flood the area.
- Our behavior becomes driven by strong emotion (including fear, anger, love, etc.), self-preservation, etc.
- The stronger the signal, the more likely the influence—without the benefit of weighing outcomes



The Role of Glucose

- During Stress, Glucose is released from the liver
- After a significant stress event, or over a period of time of high demand activity, blood glucose levels are significantly lower
- The “reservoirs” in the brain are depleted
- **Glucose study (Hedgcock, 2012)

Implications for staff and those we support...

- Resources are limited
- Performance is dependent upon resources
- Resources can deplete quickly
- Resources replenish at a fairly slow rate
- Decision-making behaviors after depletion are severely compromised

Strengthening Willpower: “Willpower Workouts”

- Strengthening the “Muscle”
 - Since exerting Willpower leaves us with less self-control, can we “strengthen the muscle”?
 - There are exercises that may help. (Evidenced-based practices)
 - There are several that offer very little. (No evidence of improvement)

Practices producing marginal results:

- Positive thinking
 - Self-talk
- Stress “inoculation”
- Meditation

Practices that yield little if any practical results:

- Short break (15-30 minutes)
- Immediate debriefing
- Corrective action (suggestions) from supervisor
- Writing an incident report immediately after a stressful incident

Evidenced-based Practices

- Maintaining sufficient blood-glucose levels
 - Frequent small snacks are far better than 3 daily meals!!!
(Grazing)
- Allow enough time at low demand levels for sufficient rebuilding of levels
 - Hours, not minutes (in some instances, replenishment may take a day or more)
- Social contact is a major factor in replenishing our system (if it lowers demand!)
- Avoiding temptations
- Setting up tangible reinforcements for success

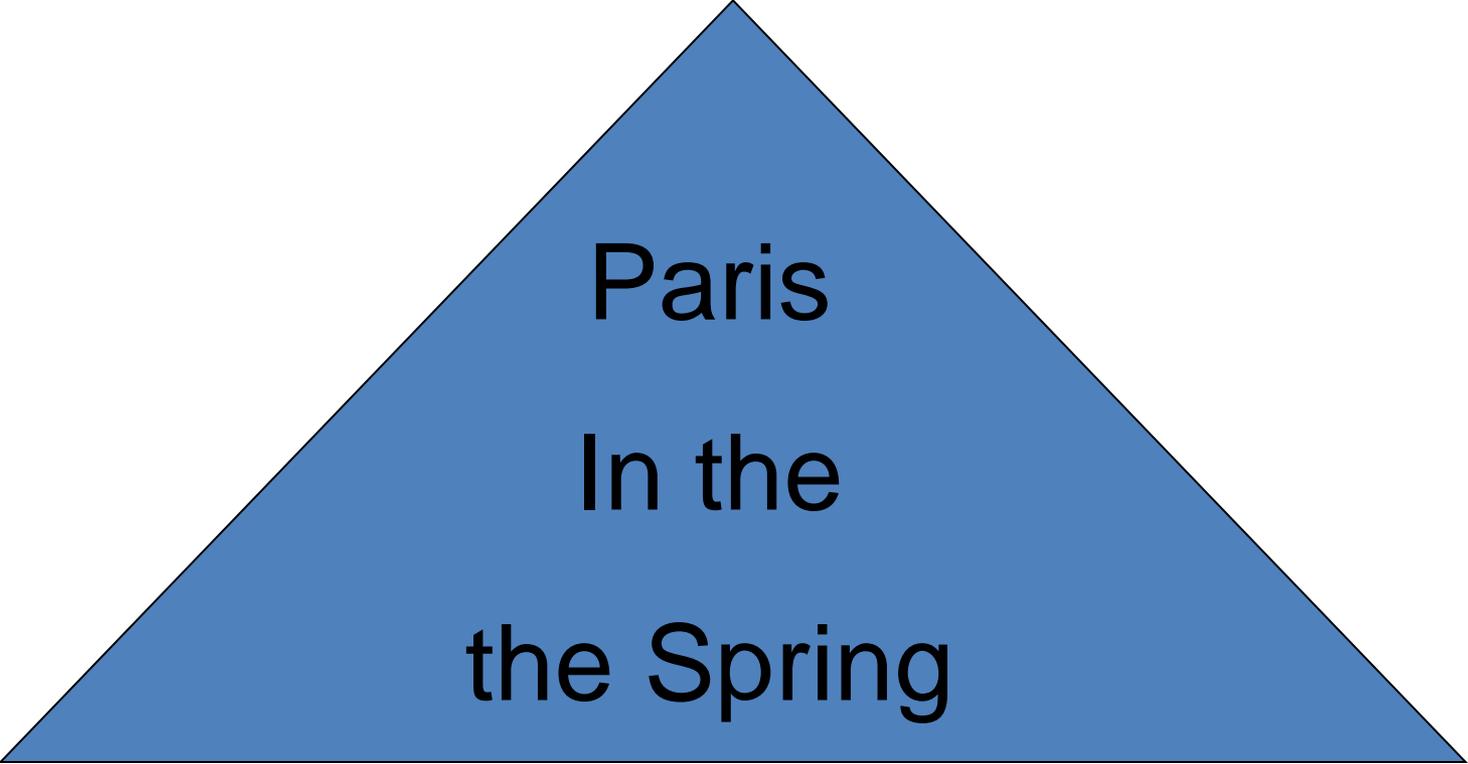
Part 3 : “Thinking Fast and Slow”

Daniel Kahneman, PhD Nobel Laureate

- “Her (his wife’s) favorite position is beside herself, and her favorite sport is jumping to conclusions.”
 - Comedian Danny Kaye

Jumping to Conclusions

- “Jumping to conclusions are efficient if the conclusions are likely to be correct and the costs of any mistakes [are] acceptable, and if the jump saves much time and effort.”
 - Daniel Kahneman
- However, jumping to conclusions become risky when the setting is unfamiliar, the stakes are high, and there is little time for thinking.



Paris

In the

the Spring

Kahneman's Two Systems

- Daniel Kahneman, psychologist and Nobel Laureate describes two systems that we use throughout our day...

Efficiency

- System 1 (Thinking Fast-quick response)
 - Pairing, Assigning
 - Quick retrieval
 - The Path of Least Resistance
 - **WYSIATI**
- System 2 (Thinking slow-analysis)
 - Something

System 1

- First impressions: What You See Is All There Is
 - It is absolutely necessary for everyday interaction with our environment
- Operates automatically and quickly, with little or no effort and no real sense of voluntary control
- This system carries out numerous computations and comparisons constantly. It creates a 3 dimensional image of your immediate world. Anything more complex requires System 2

System 2

- System 2 allocates attention to the effortful mental activities that demand it. (“Agency, choice and concentration”)
- System 2 is about attention and effort
- System 2 is constantly influenced by System 1, but analyzes the data and evaluates responses (DLPFC and ACC)
- This process is described earlier in the self-control/decision-making/creativity discussion.

System 1 or System 2?

- Count to 40 by 7's
- What is the top color of a traffic light?
- Do you like chocolate?
 - What is your favorite chocolate?
- Where is your car?
- How many people are in the room?

The “Law of Least Effort”

- “Applies to cognitive as well as physical exertion.” Kahneman

Declarative and Non-Declarative Memory

Declarative Memory

- Avogadro's number is 6.02×10^{23}
- It is Tuesday
- We will have no more breaks
- These statements are perceived, compared with other memories, encoded, and stored for retrieval.
- Declarative Memory is System 2

Non-Declarative Memory

- Placed in memory by repetition
- Processed in a different area of the brain
- Notices expected cues without conscious processing
- You go on “Autopilot”
- Non-Declarative response is an example of System 1

“A recent study...”

- Some scientists suggest that behavior dependent upon Declarative Memory takes from 11 to 30 times more energy/effort than behavior dependent upon Non-Declarative Memory
- Routines and Rituals
- We divide up our days with routines and rituals

Putting it all in a nice package!

- We consider:
 - Willpower (Self Regulation)
 - Depletion
 - System 1 and 2
- These theories work quite well together

Evidence-Based Practice for Us

- Think about decision fatigue
- What is taxing your resources?
- Avoid decisions requiring intense System 2 effort when you are likely depleted
- Consult with a colleague
- Engage in social banter
- Maintain glucose levels

Evidence-Based Practice for Those we Support

- Assessment of “Resources”
- Help to maintain glucose levels
- Thinking about thinking
- Priming
- Timing of activities, demands

Contextual Support Plan and Depletion

- We “assess” the depletion and the possible effects on performance
- We assess the “status” of the individual
- We act to “support” the individual by reducing stressors

Summary

- Clearly we have our limits
- We now have hard evidence that we deplete our resources rapidly with certain intense activity
- Our resources are slow to replenish
- We choose the “path of least resistance”
- Our responses are significantly compromised by depletion
- There are activities that can help us retain resources and replenish faster

Contact Information

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