



Optimizing Brains
For Better Decisions, Creativity, and Health

February 12, 2018

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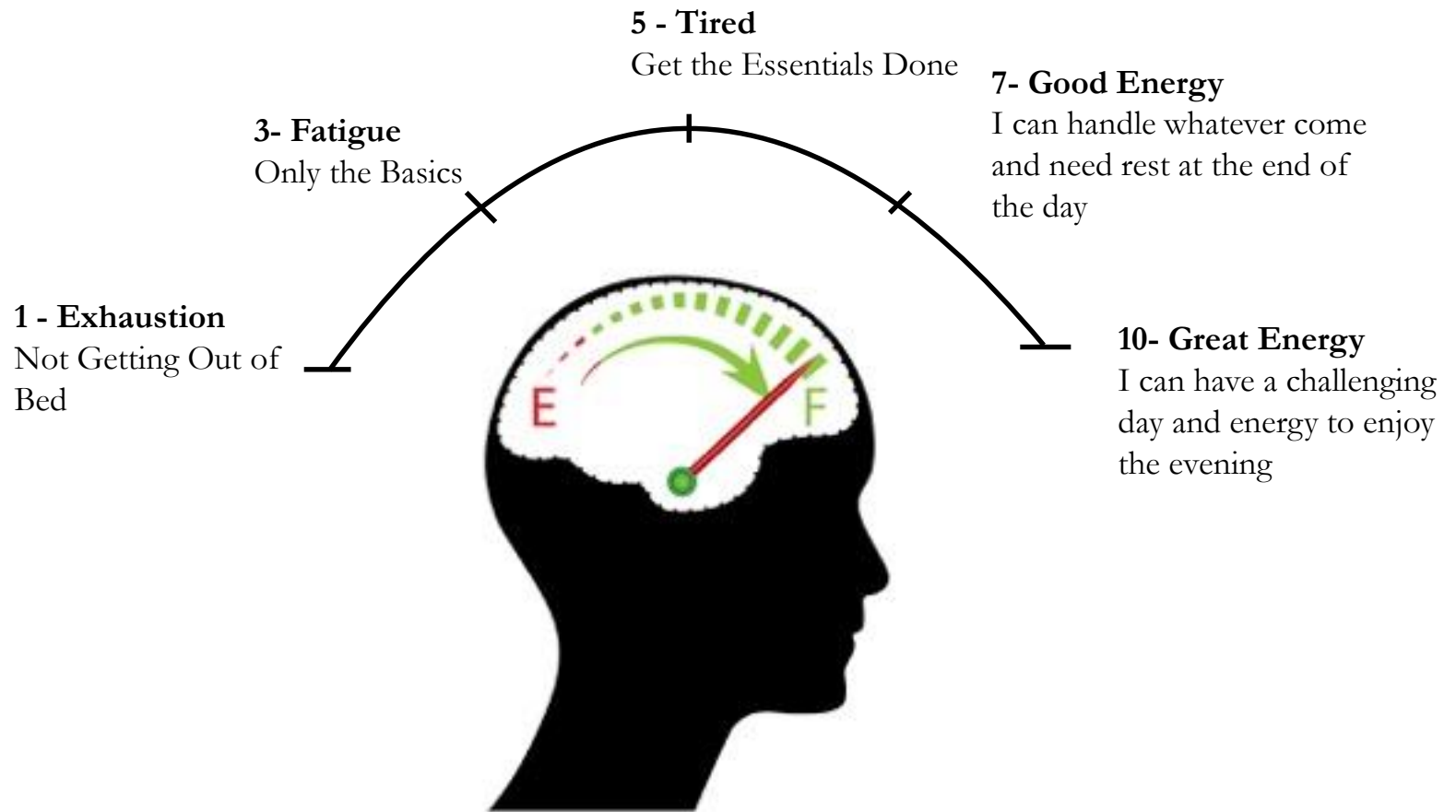
Focus for Today

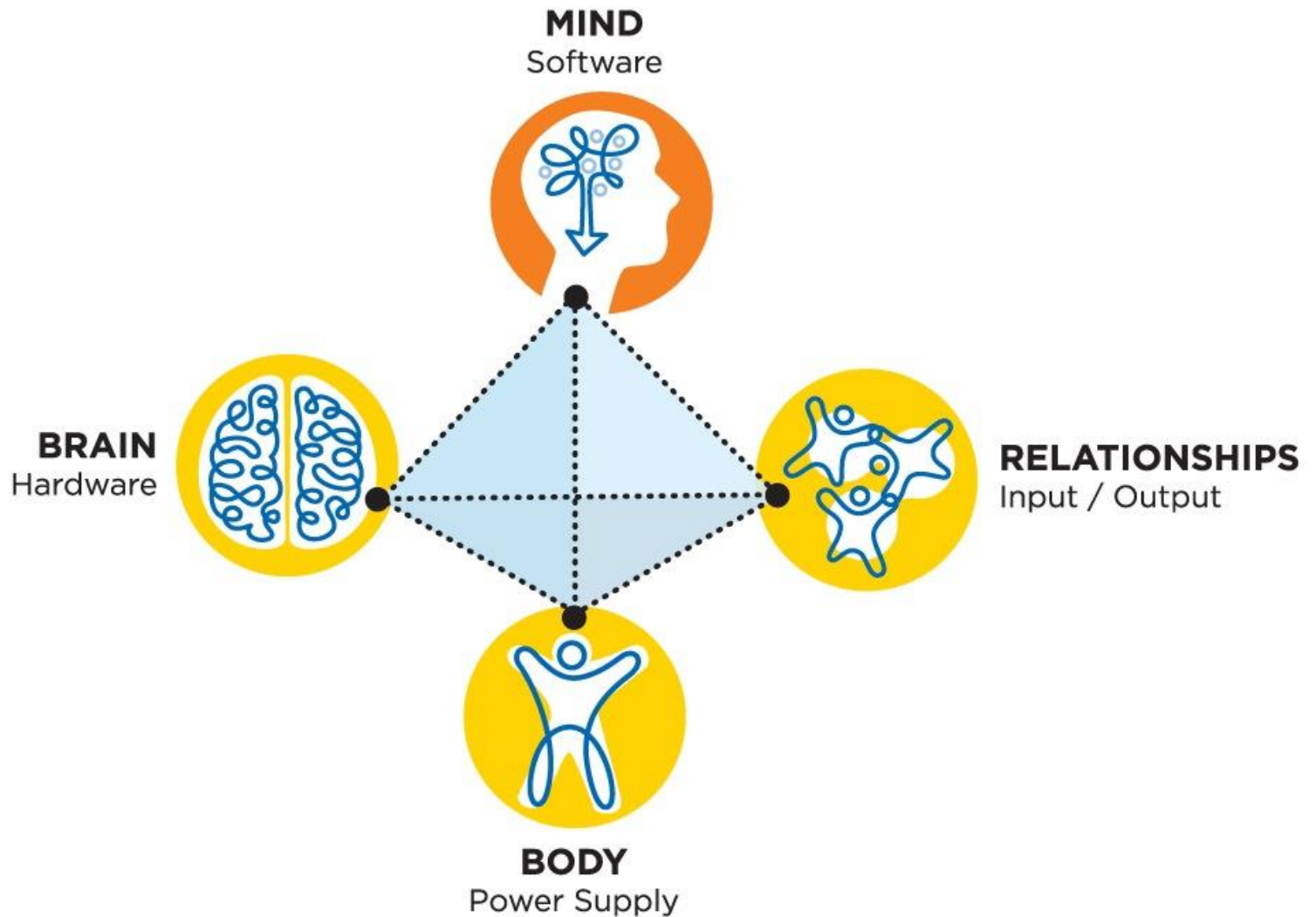
Improving the conditions for decision-making, creative problem solving and health

- What do we know from research?
- What is the science?
- What can you do?
- Review of the Protein for All Project



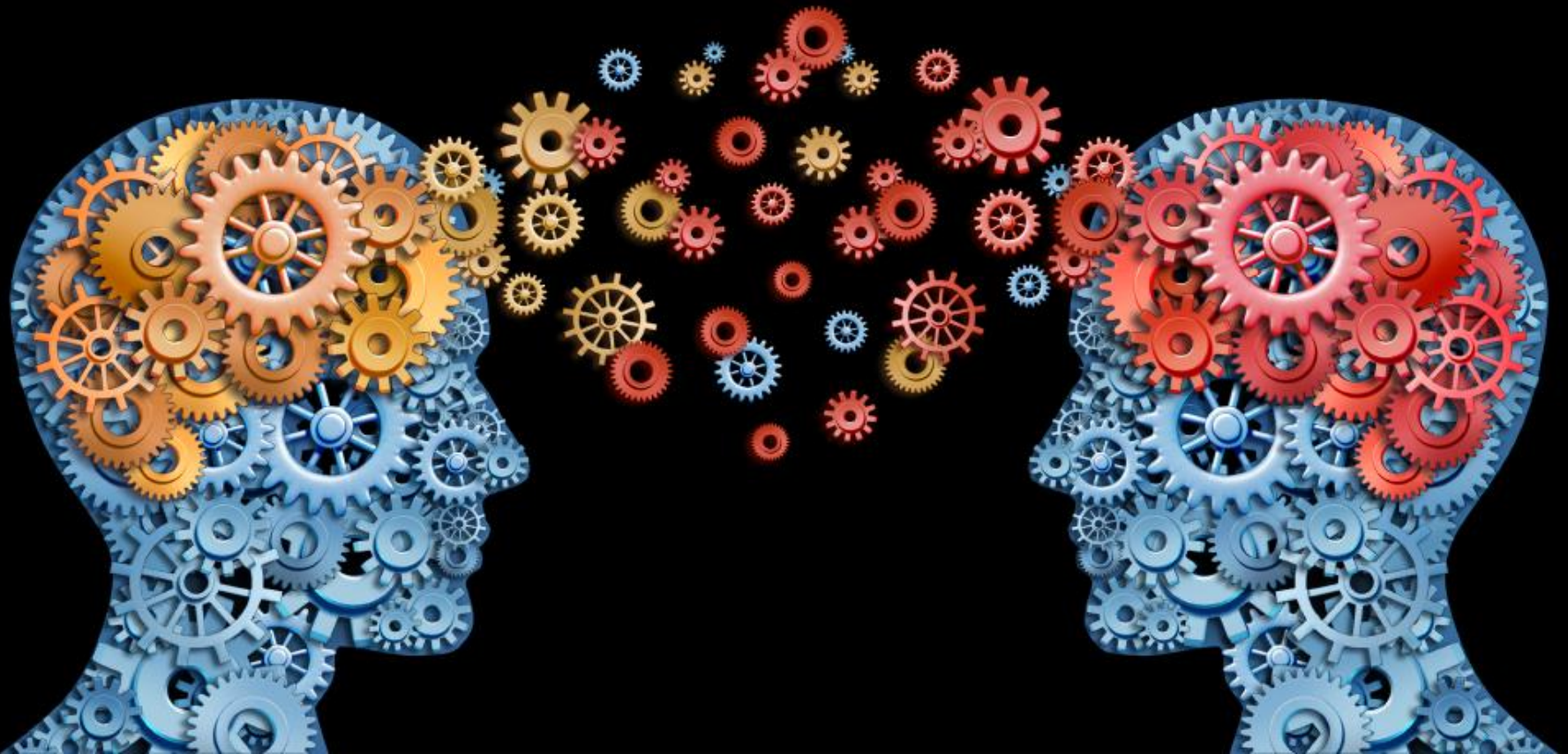
What is your power supply?





*Take care of your body.
It's the only place you have to live.
John Rohn , entrepreneur*

Lawyers: Transactional or Transformational?



A black and white, high-contrast photograph of a man's face in profile, looking towards the right. His hand is resting under his chin, and his expression is contemplative. The lighting is dramatic, highlighting the textures of his skin and the contours of his face.

Incivility price we pay

Productivity

Performance

Creativity

Organizational
commitment

Health and well-being

Partner in law firm cost
\$2.8 Million +



Economic Cost of Depression

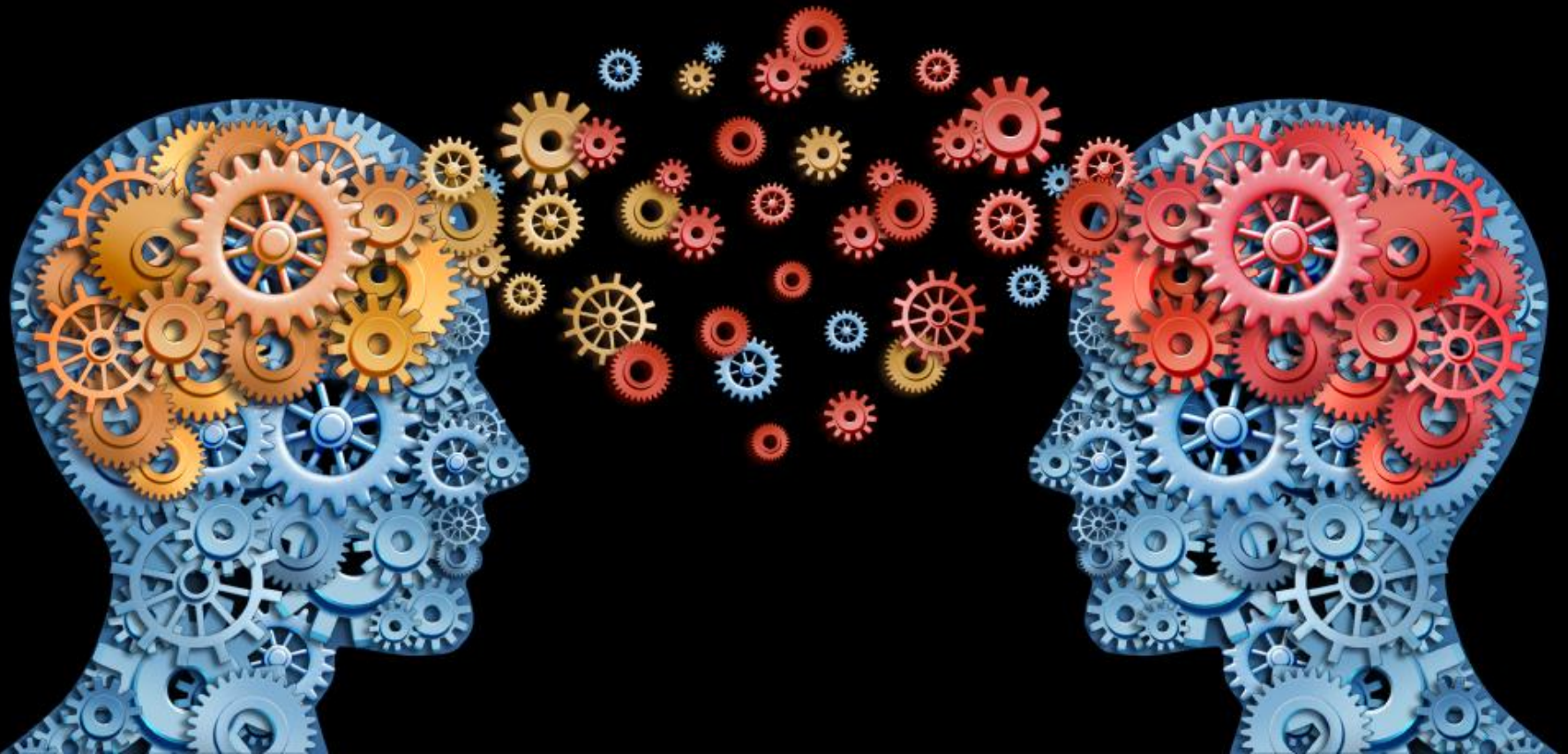
27 lost days of work/year



- Study by the American Bar Association (ABA) Commission on Lawyer Assistance Programs and the Hazelden Betty Ford of currently practicing lawyers that found:
- 21% and 36% of lawyers qualify as problem drinkers
- 28% struggle with some level of depression
- 19% suffer from anxiety



How Food Affects Mood





**Hypoglycemia
can lead to decreased**

- Attention span**
- Emotional regulation**
- Ability to cope with stress**

Hypoglycemia can lead to increased:



Criminality

Aggression

Impulsive behaviors

Addictive behaviors

**Willpower is more
than a metaphor**





“[Found that] habitually violent offenders to have hypoglycemic tendencies when compared to non-violent offenders”

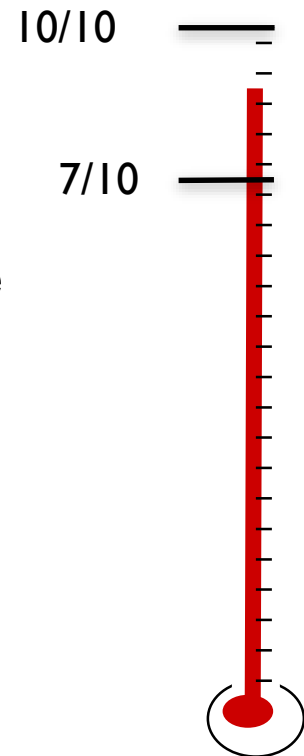
Study: Frontal lobe regulation of blood glucose levels: support for the limited capacity model in hostile violence-prone men. Robert P. Walters . Patti Kelly Harrison . Ransom W. Campbell . David W. Harrison
Brain Informatics (2016) 3:221–231

Anger and anxiety: emotional or hypoglycemic?



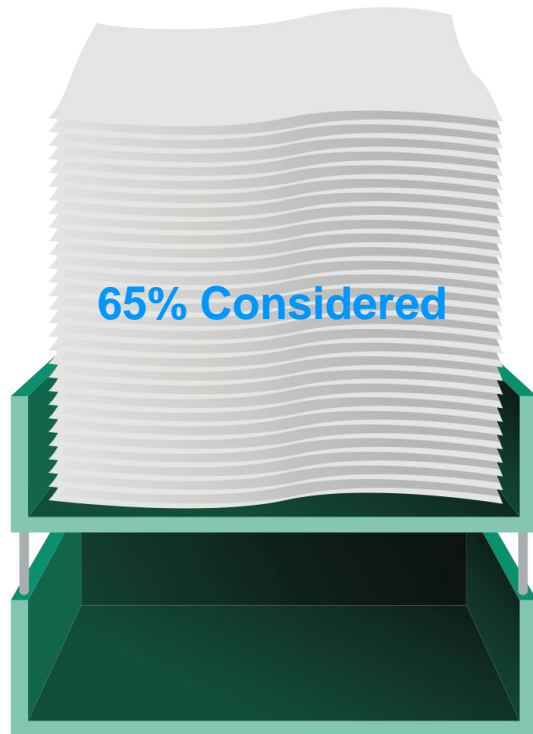
Panic attack/
Extreme anger

Choice and
control become
possible

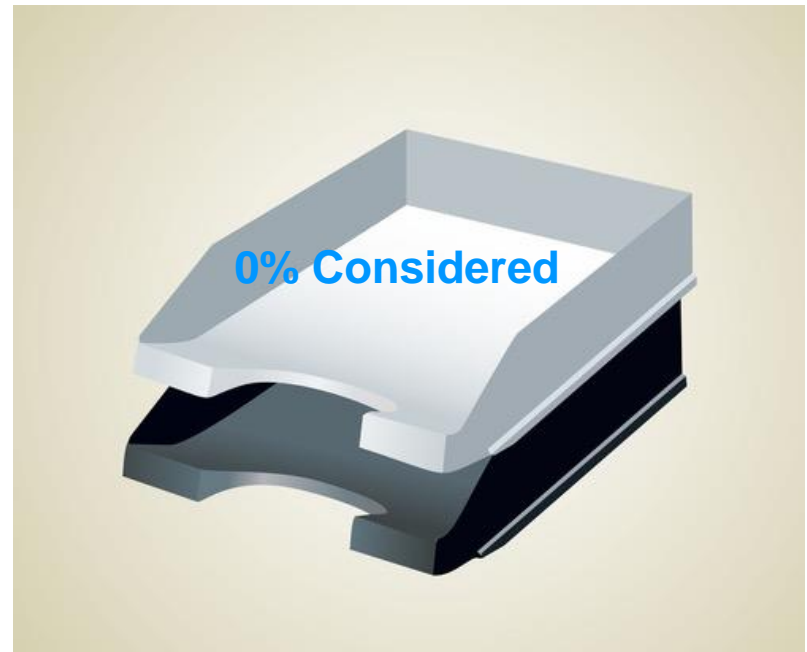


Food: Extraneous factors in judicial decisions

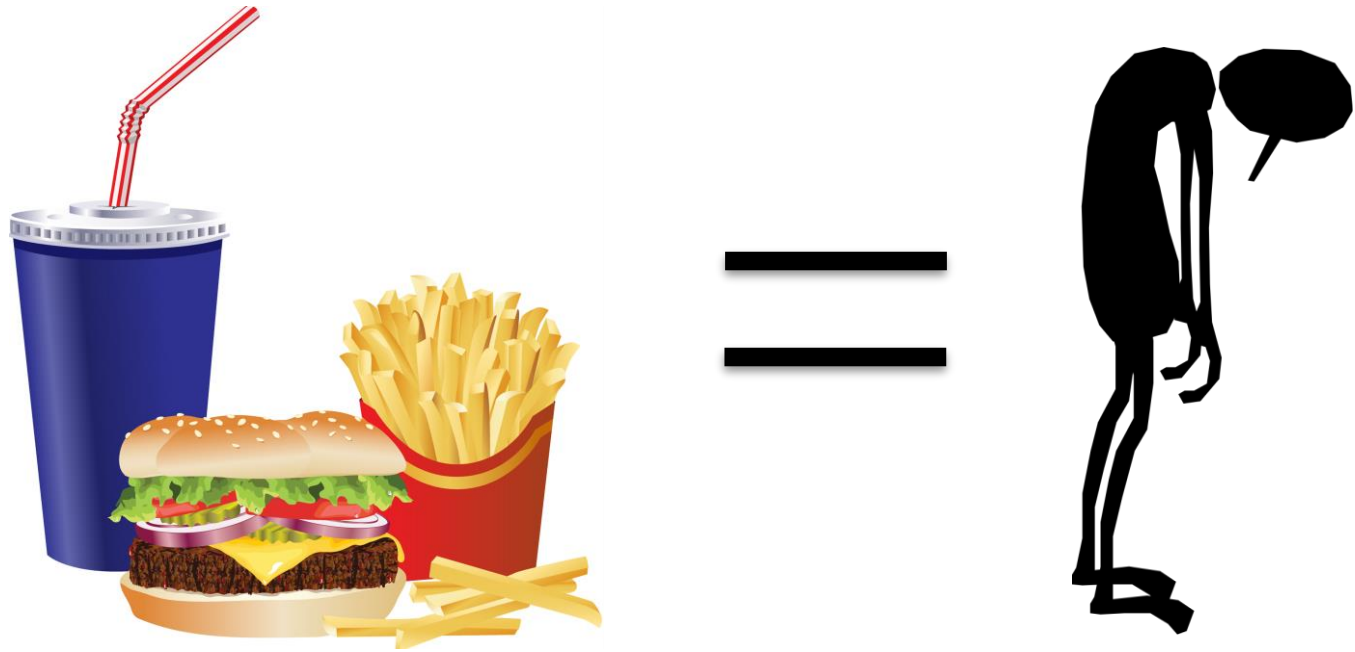
Immediately after a meal



Immediately before a meal



Processed foods and depression



People who consume largely processed foods are **50% more likely to experience clinical depression**

Prospective Study with Adolescents

In a study with 3,040 11-18 years olds:

- Higher quality of diet at beginning of the study predicted higher quality of mental health
- Lower quality of diet predicted higher rates of mental health problems
- If diet quality improved mental health improved

Jacka (2011)

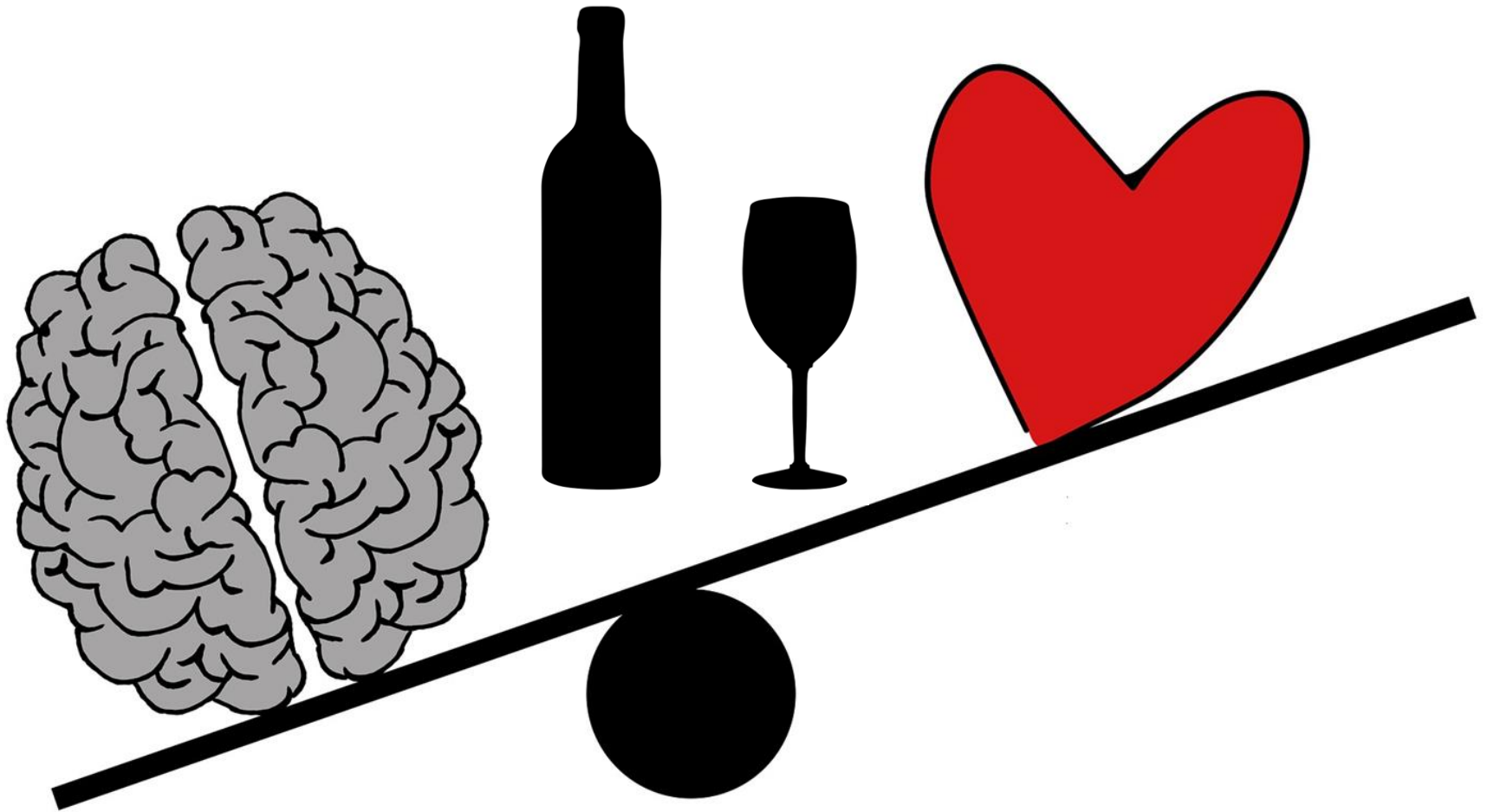


Real food and mood

Lower
likelihood of
depressive and
anxiety
disorders
($p < 0.05$)



There is no amount of alcohol that is protective for the brain



Alcohol: Increases cognitive decline

- 30 year study: 550 men and women with mean age 43.0 (SD 5.4) at study baseline, none were “alcohol dependent” according to the CAGE screening questionnaire, and all safe to undergo MRI of the brain at follow-up.

Compared to abstainers even those drinking moderately (14-21 units per week) at risk:

- three times increased risk of hippocampal atrophy -- a form of brain damage that **affects memory and spatial navigation**.
- Higher consumption was also associated with poorer white matter integrity (critical for **efficient cognitive functioning**) and faster decline in language fluency (how many words beginning with **a specific letter can be generated in one minute**).
- There was no protective effect of light drinking (up to 7 units per week) over abstinence.
- But no association was found with **semantic fluency (how many words in a specific category can be named in one minute)** or word recall.

<https://www.sciencedaily.com/releases/2017/06/170606201359.htm>

BMJ, 2017; j2353 DOI: [10.1136/bmj.j2353](https://doi.org/10.1136/bmj.j2353)

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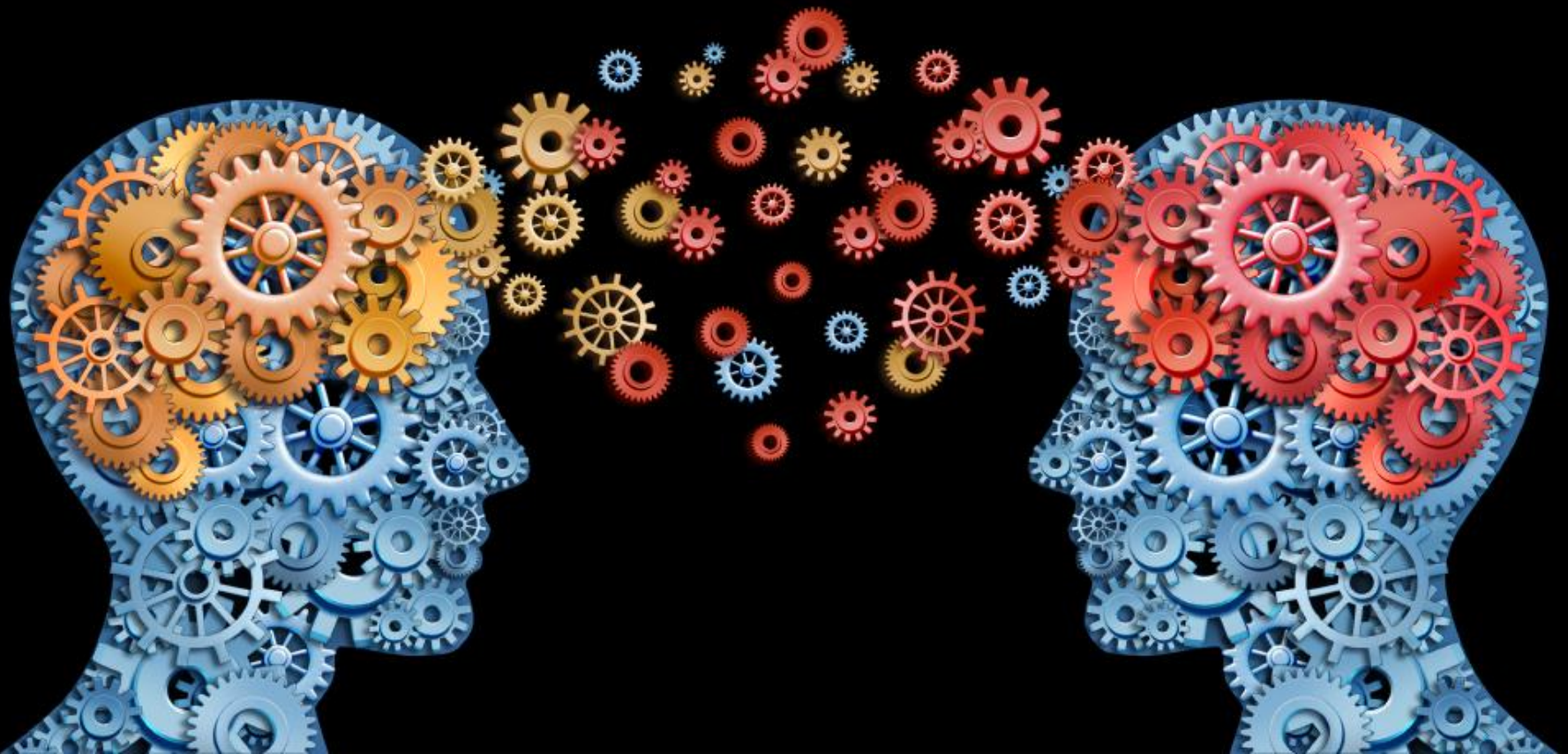
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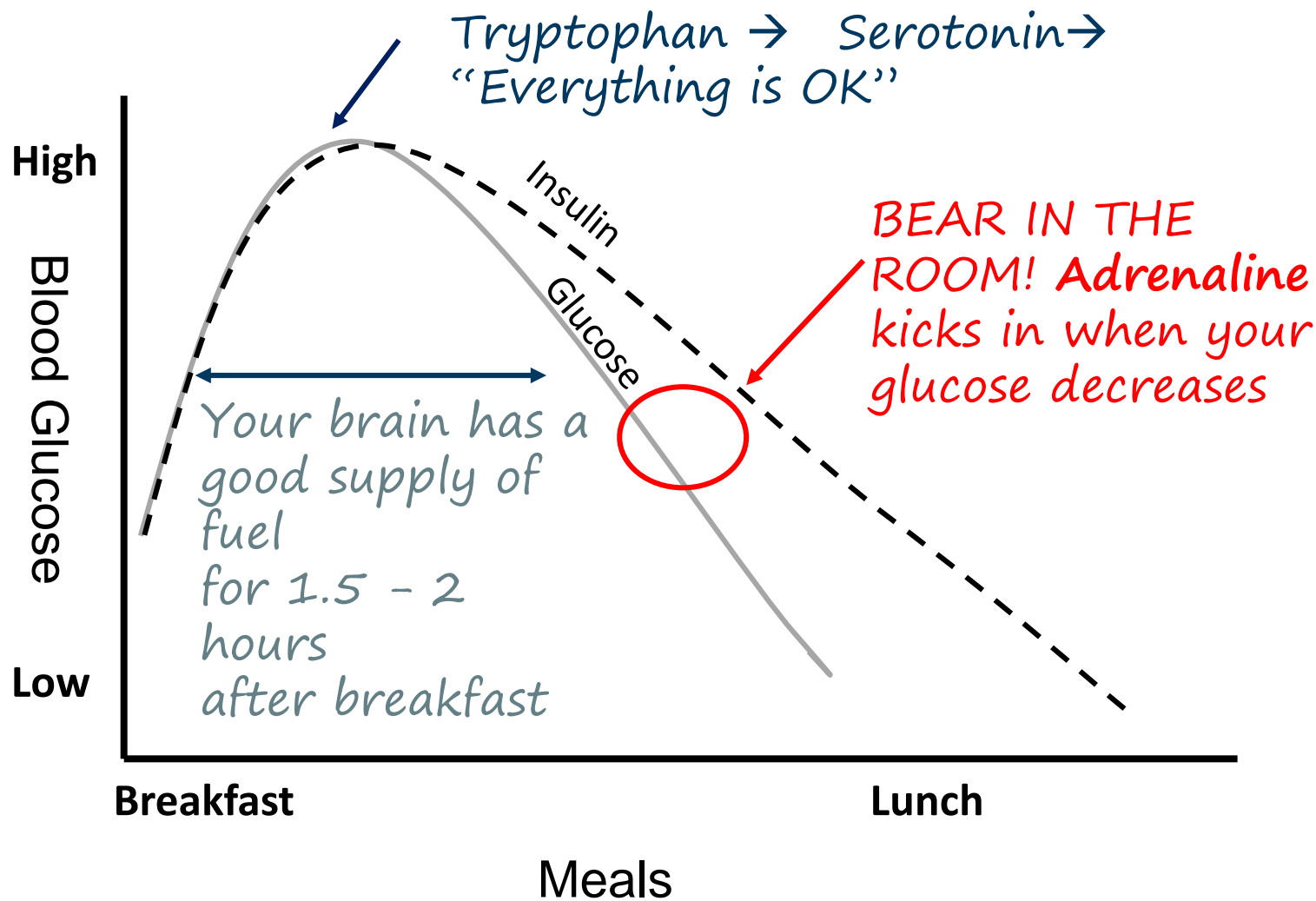
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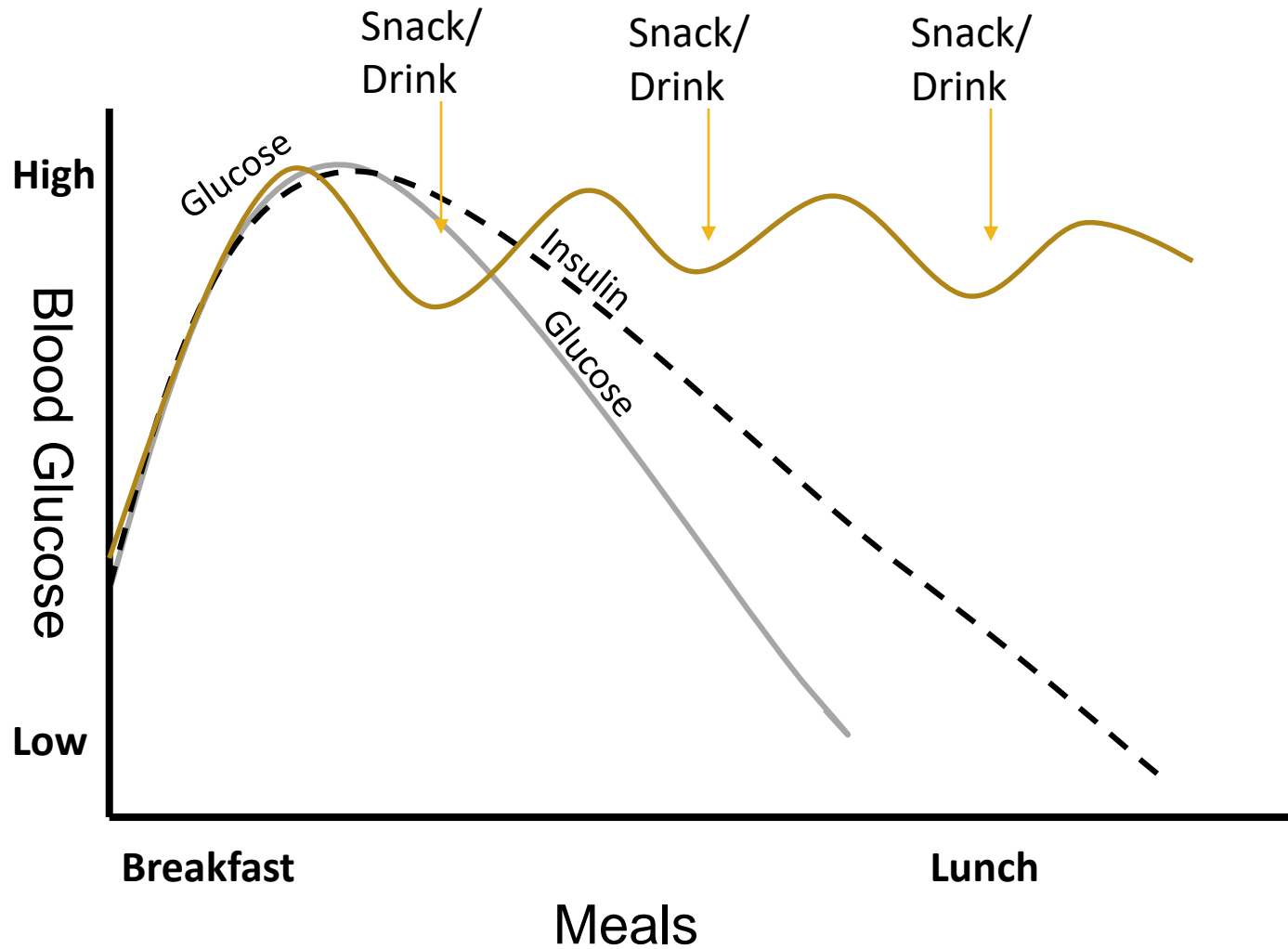
How do we understand it?



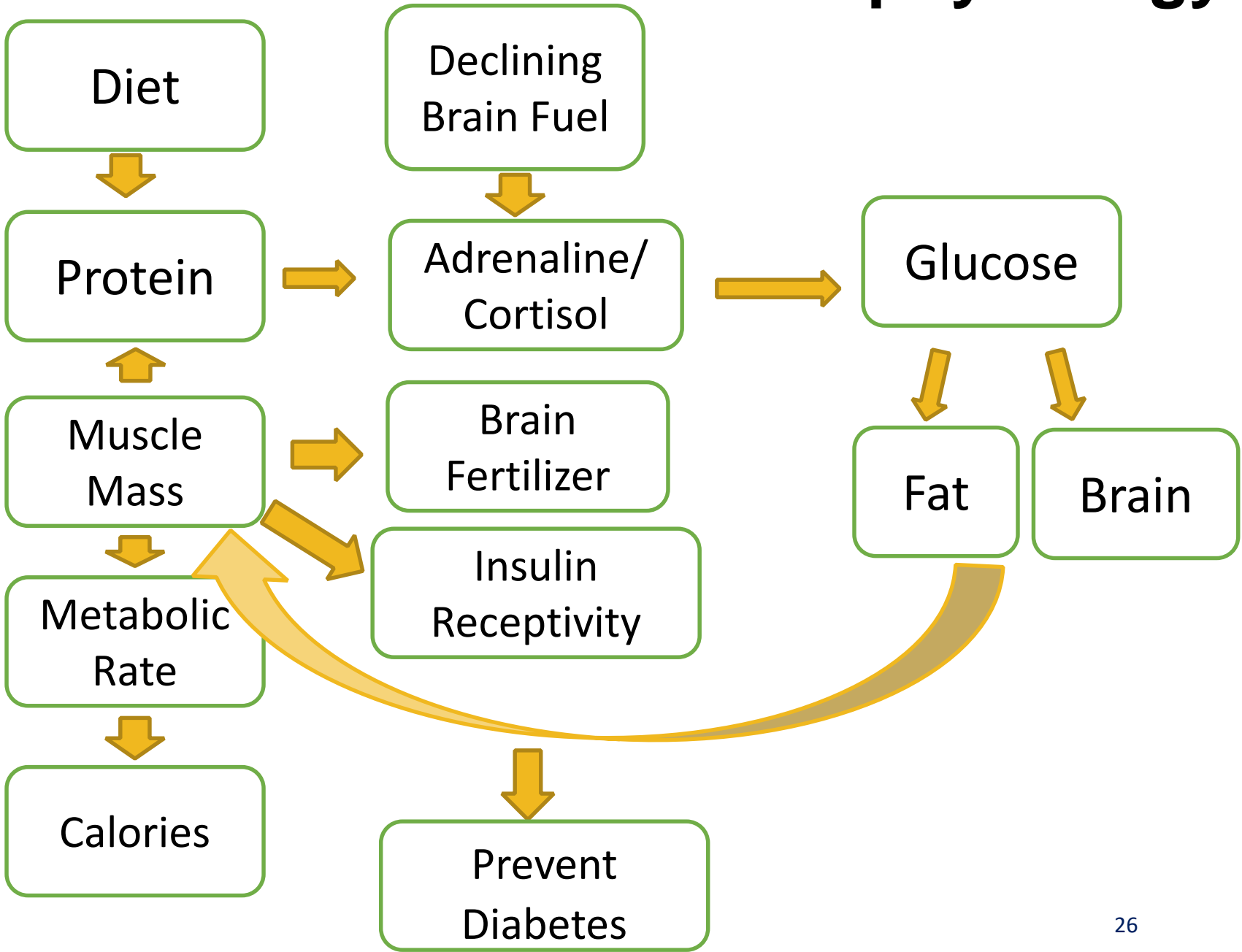
Refined carbohydrate meal or alcohol and glucose



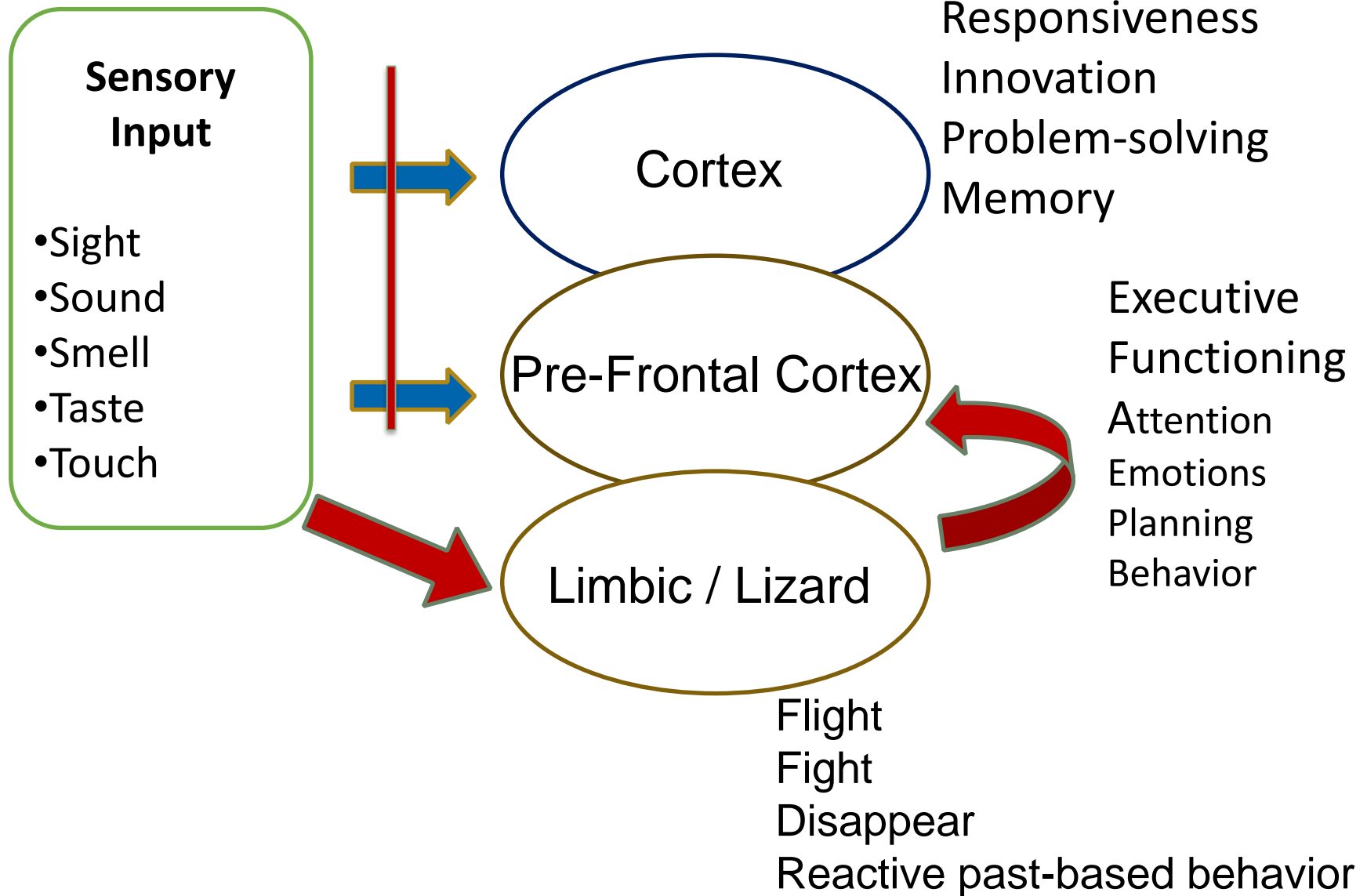
Fueling the brain/hurting the body



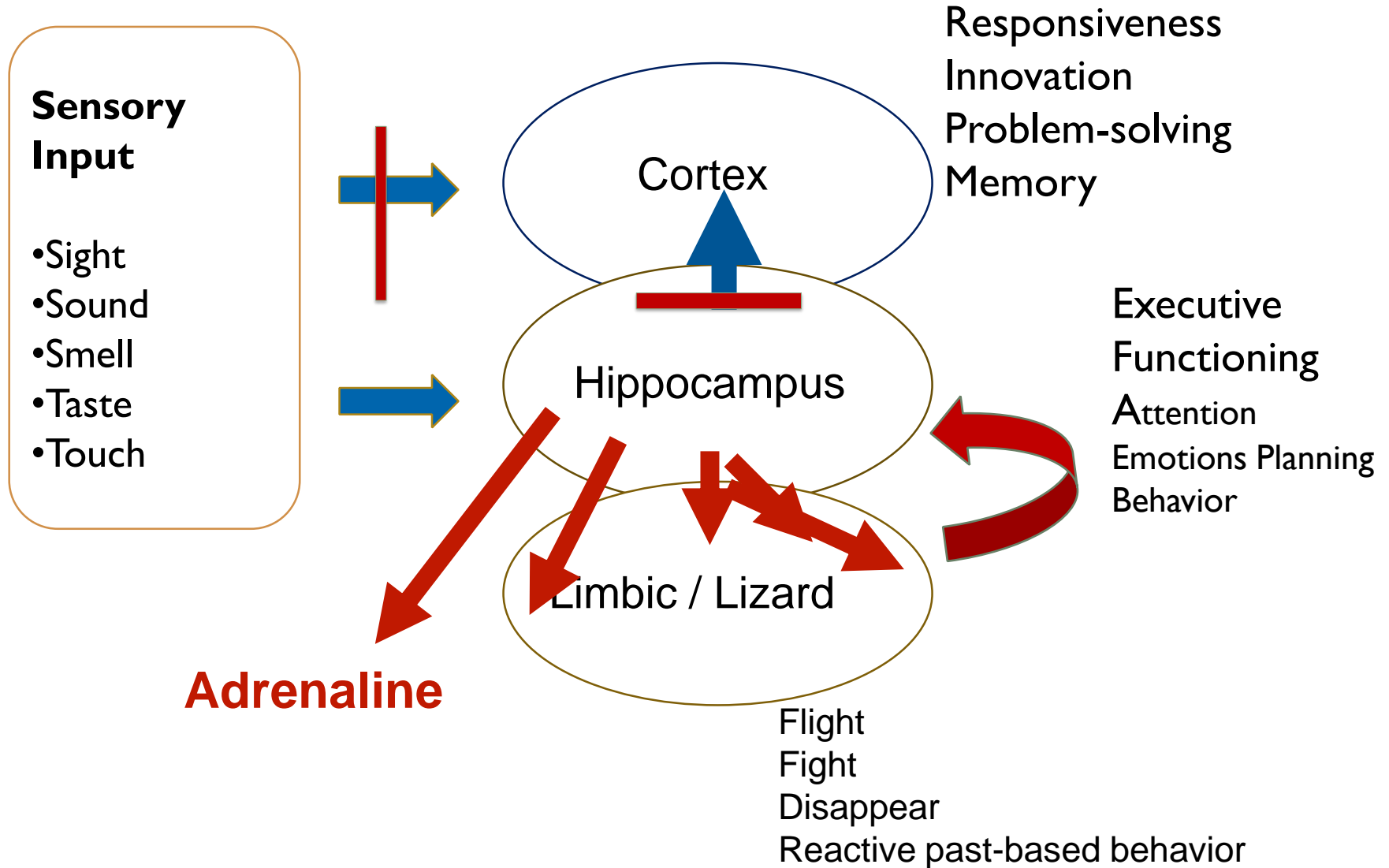
The physiology



The brain on adrenaline



PTSD Information Processing



The Brain's response to chronic trauma

**No
Trauma**

Trauma

Self

Safe

Vulnerable

World

Reasonably
benign

Threatening

Future

Reasonably
hopeful and
manageable

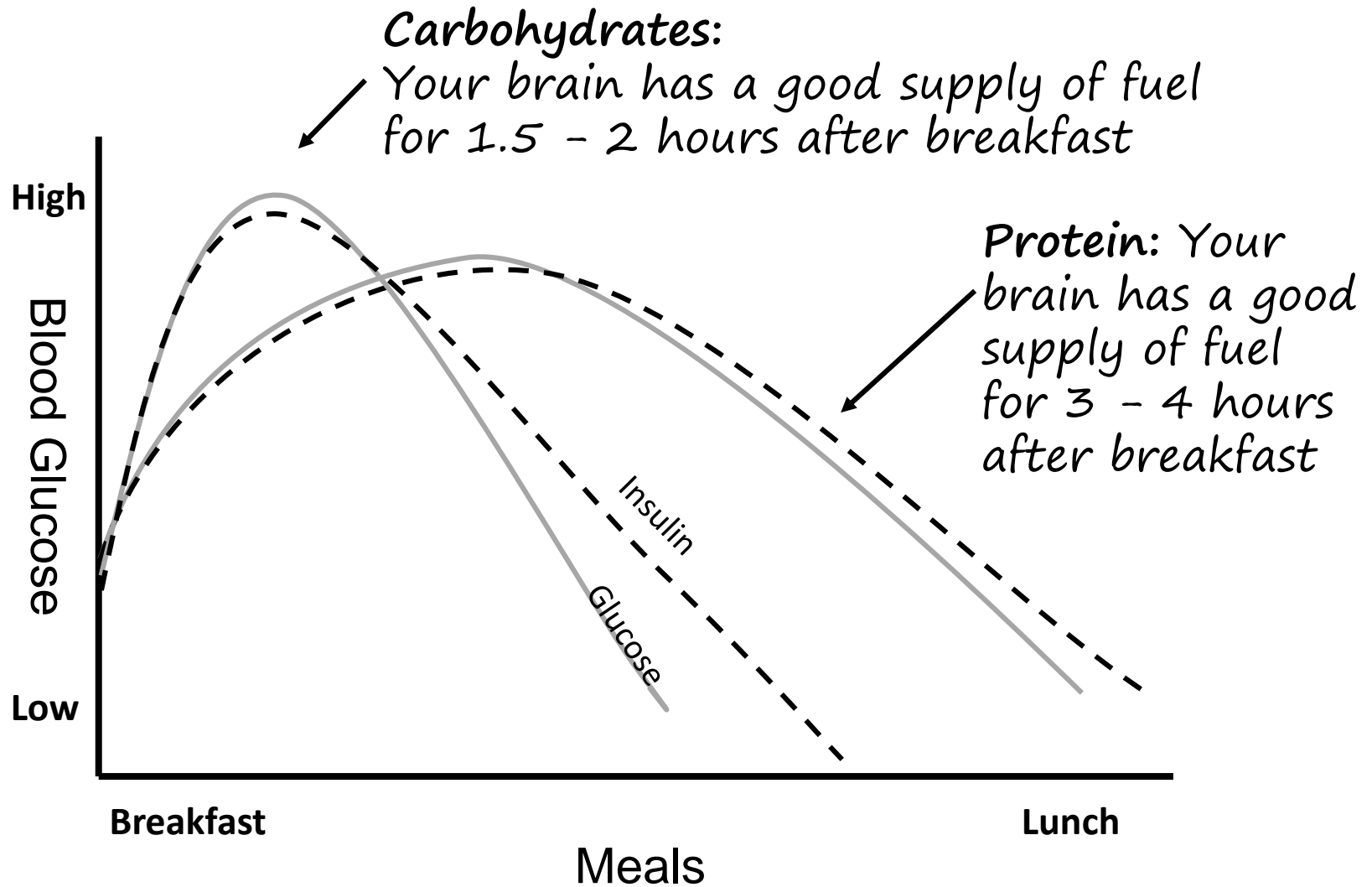
Uncontrollable and
unpredictable

Lizard brain signs & symptoms

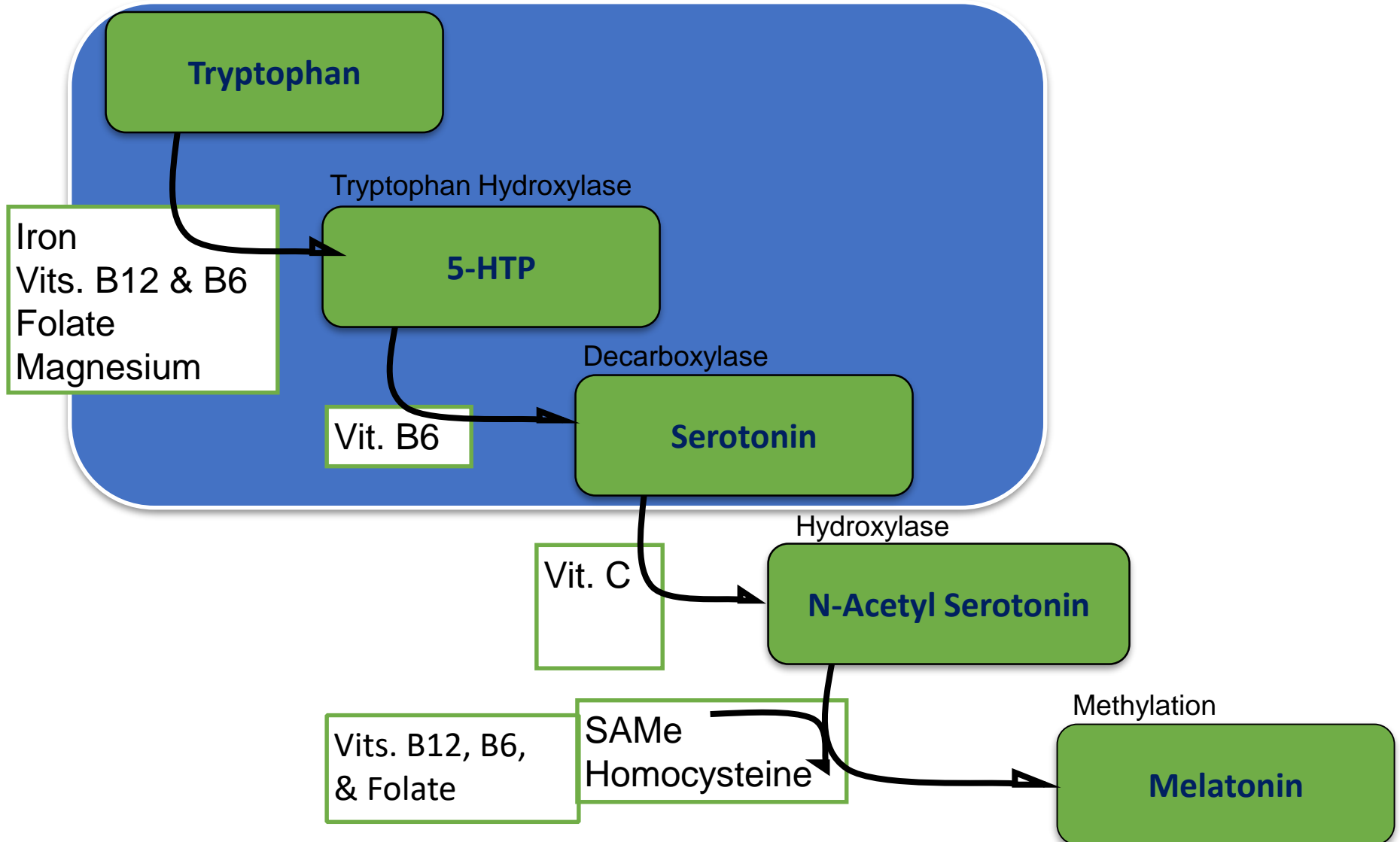
- Being anxious, irritable, or agitated
- Anticipating being anxious, irritable or agitated
- Not hungry in the morning
- Waking at 3 am and staying awake for 2 hours - “3 am Committee Meeting”



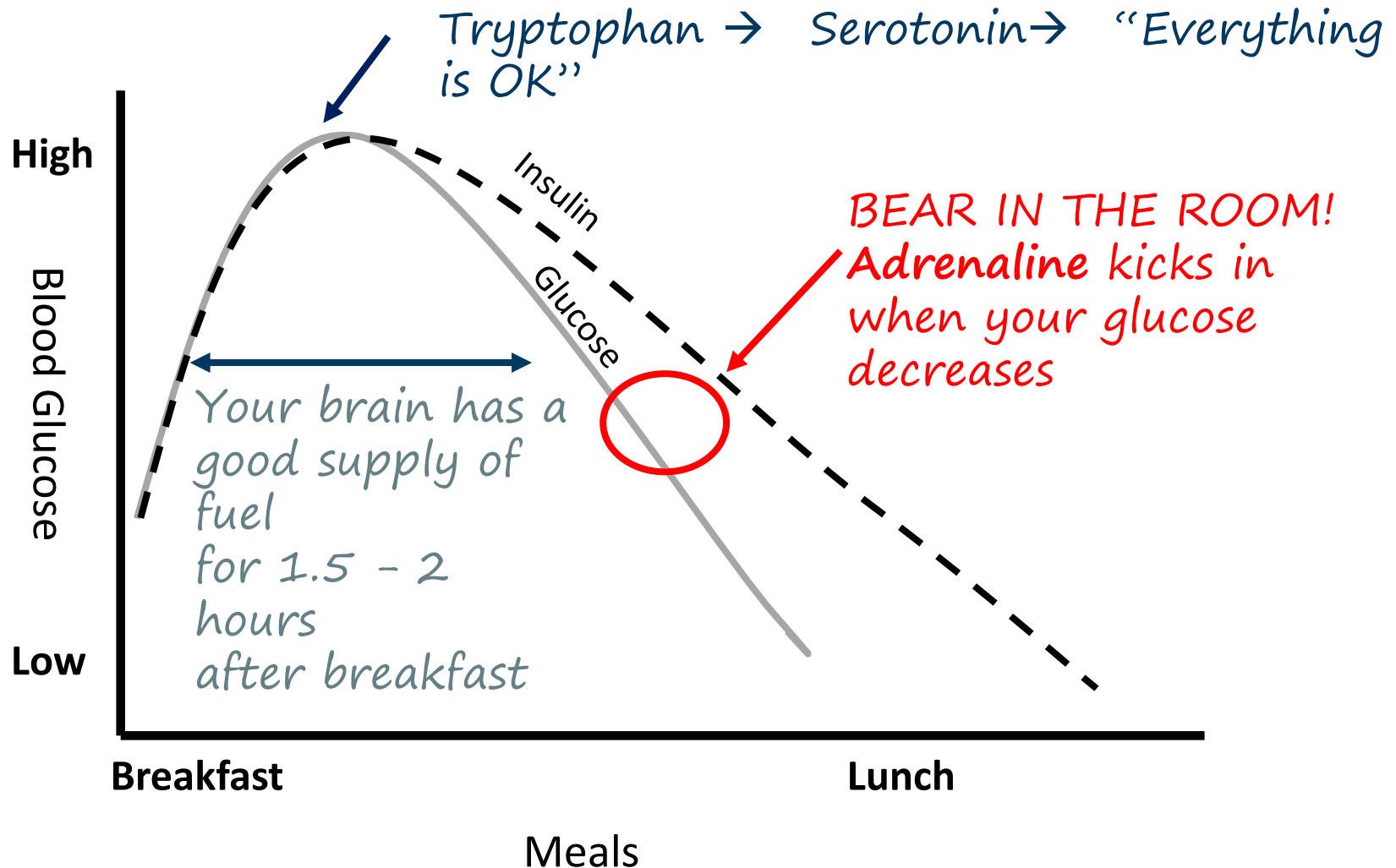
Carbohydrates vs. Protein



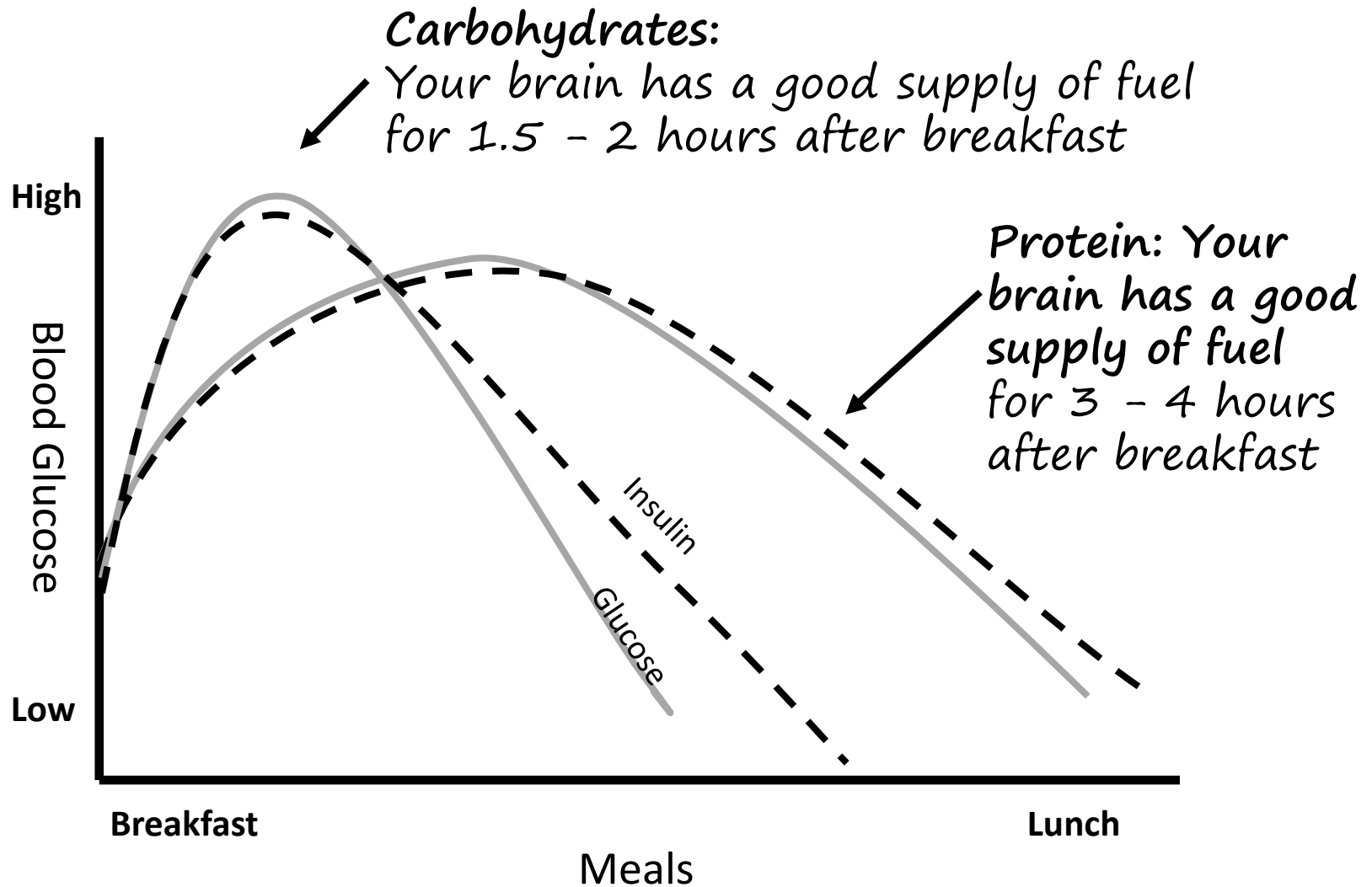
Neurotransmitter Synthesis



Refined carbohydrate meal or alcohol and glucose



Carbohydrates vs Protein

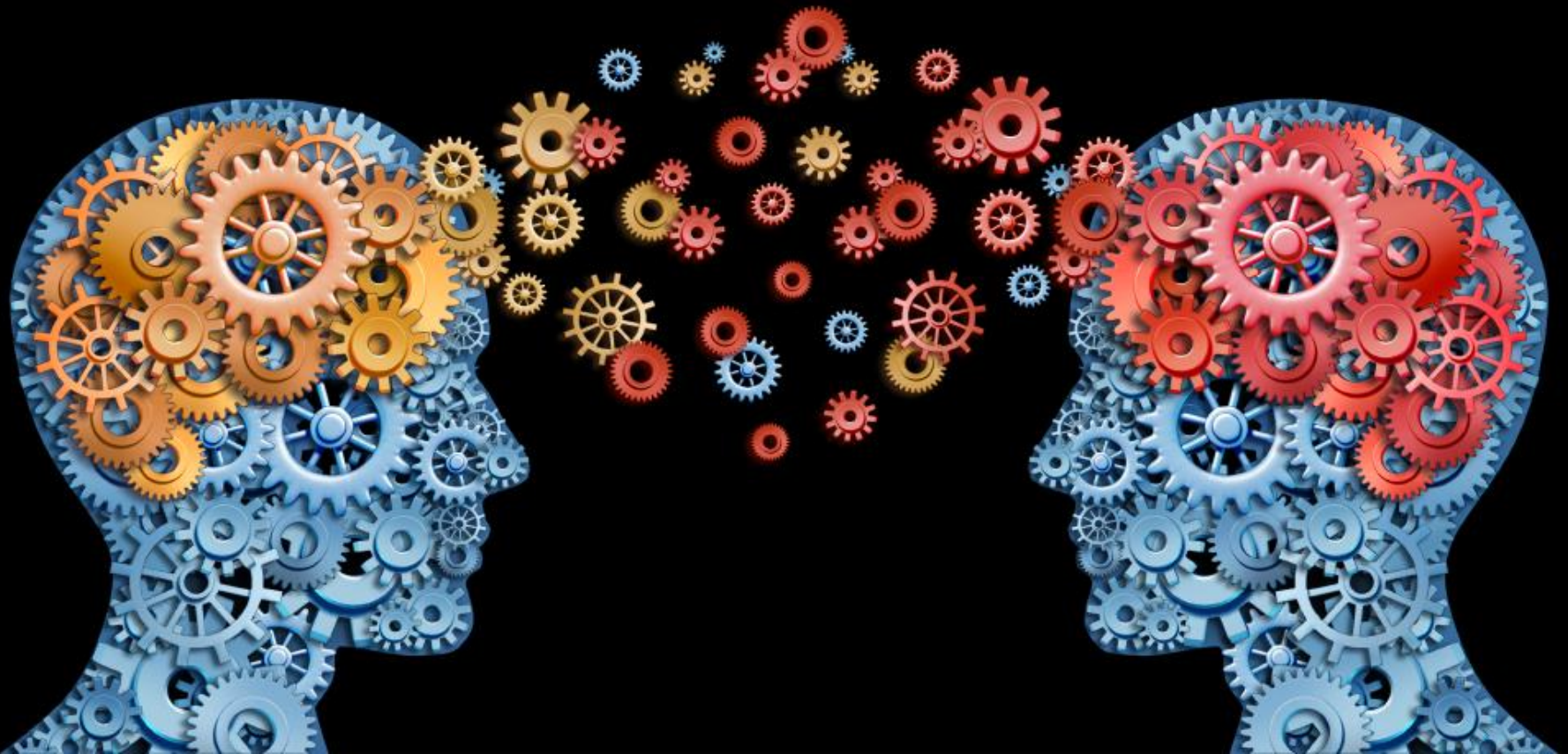


Benefits of eating enough protein

- Better sleep, less early morning waking
- Less fatigue, particularly in the afternoons
- More energy
- Better and more stable moods
- Decreased depression
- Decreased anxiety
- Higher metabolism due to increased muscle mass
- Less frequent hunger



Now what?



How much protein should I eat?

RDA 0.8 gram/kg/day or 8 grams/20 lbs/day
Max protein per day = 120 grams

Your Weight (lbs)	Protein Target (g)	Acceptable Protein Range (g)
100	40	36-45
120	48	43-54
140	56	50-63
160	64	57-72
180	72	64-81
200	80	71-90

Three days eating ridiculous amounts of protein: protein every 3 hours

8 am Breakfast: 1-2 eggs, 1 piece of toast, 1 apple (14 grams)

11 am Snack: 1 handful of nuts, 1 spoonful of nut butter, or 1 spoonful of cottage cheese (6-8 grams)

12:30 pm Lunch: portion of meat the size of a pack of cards eaten by itself or in a sandwich/wrap, soup, or burrito; 1-2 cups of veggies (21 grams)

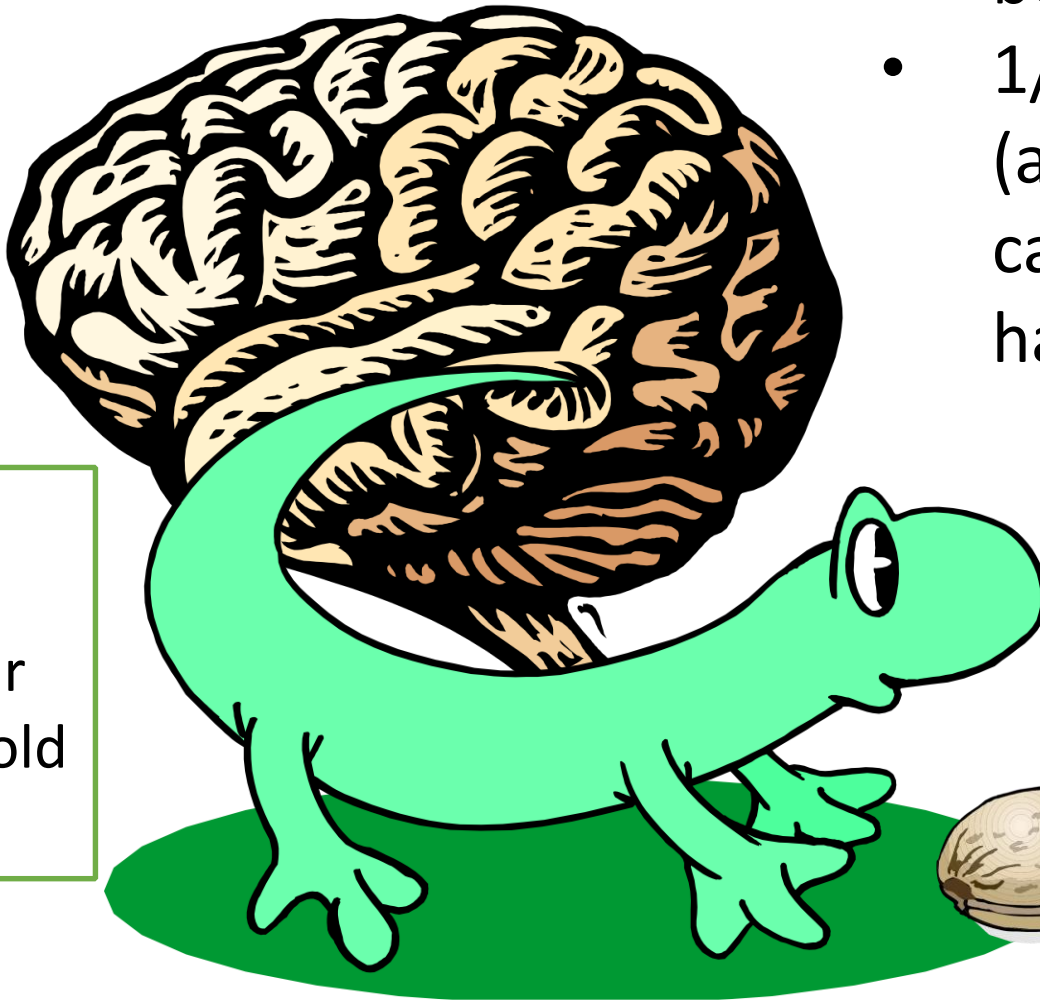
3:30 pm Snack: 1 handful of nuts, 1 spoonful of nut butter, or 1 spoonful of cottage cheese (6-8 grams)

6:30 pm Dinner: portion of meat the size of a pack of cards eaten by itself or in a sandwich/wrap, soup, or burrito; 1-2 cups of veggies (21 grams)

Pre-bedtime Snack: One slice of turkey meat (6-8 grams)

Lizard brain treat

- 1/4 cup of fruit juice or a “tot box” of juice
- 1/4 cup of nuts (almonds, cashews, or hazelnuts)



- Flight
- Fight
- Disappear
- Play the old record

What else impacts decision making?



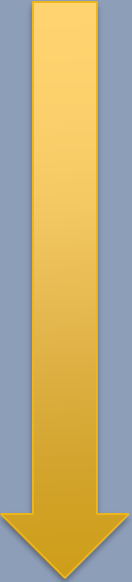
Memory


- What goes into **long-term** memory is what is recalled.
- Emotional events will “**clean out**” short-term memories so they can’t develop into long-term memories
- Smart phones **are impacting** memory



*NOW, WHAT WAS I
SUPPOSED TO REMEMBER?*

Prediabetes: increases cognitive deficits

- 
- Decreased speed of mental processing
 - Decreased immediate and delayed recall
 - Decreased attention span
 - Decreased verbal fluency
 - Decreased motor skills

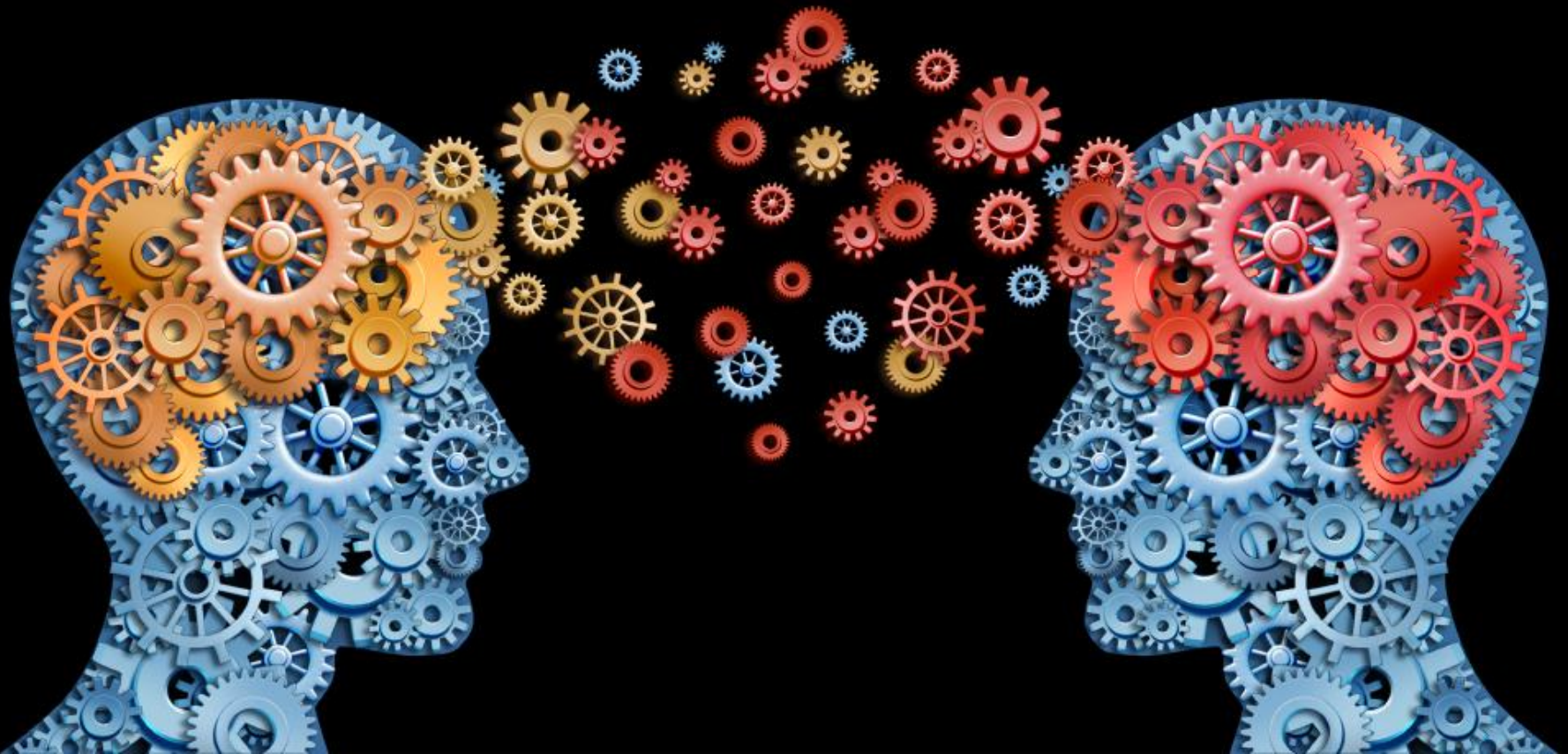
- 
- Increased depression
 - Increased dementia

Hemoglobin A1c < 5.7
Fasting Blood Glucose <100

Potential for pre-diabetes

- Family history of diabetes
- Personal history of gestational diabetes
- Lack of exercise
- Diet largely composed of processed food
- Weight gain
- Hypoglycemia
- Mood swings toward anxiety, agitation, irritation
- Plantar fasciitis or loss of sensation in the limbs
- Fasting blood glucose levels greater than 100
- Hemoglobin A1c of 5.7-6.4 (pre-diabetes)
- Hemoglobin A1c greater than 6.4 (diabetes)

Start with what you have
the most control of--
Yourself



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Sleep Deprivation (< 6.5 hours of sleep per night)



- Increases weight gain
- Increases inflammation and pain
- Increases chronic disease and shortens life
- Decreases attention span and memory
- Decreases associative problem-solving
- **When you don't sleep enough, your cognitive abilities decline and you aren't aware of it**

To move or not to move?

Inactivity

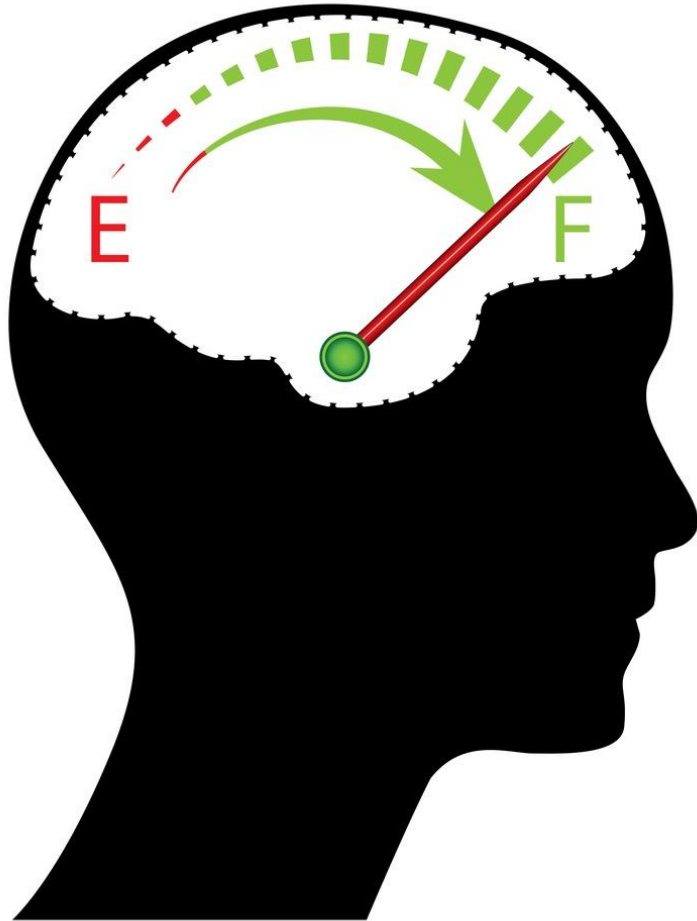
- Decreased bone density
- Decreased muscle mass
- Decreased cardiovascular and metabolic fitness
- Decreased longevity
- Decreased hippocampus
- Decreased prefrontal cortex
- Decreased memory
- Decreased executive function



Exercise

- Increased bone density
- Increased muscle mass
- Increased cardiovascular and metabolic fitness
- Increased longevity
- Increased hippocampus
- Increased prefrontal cortex
- Increased memory
- Increased executive function





What can you do
in 15 minutes per day
that will give you,
10% more energy?

And how would you
know that you have
more energy?



Questions?

Optimizing Brains for Better Decision Making, Creative Problem Solving, and Health

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