Motivating People with Autism Spectrum Disorders

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General Definition of “motivation”

- From the Latin “movere” meaning
  - To energize
  - To activate
  - Or to move
- Motivation (n.) 1. the act or an instance of motivating; 2. desire to do; interest or drive; 3. incentive or inducement; 4. the process that arouses, sustains, regulates human and animal behavior

WHICH STEP HAVE YOU REACHED TODAY ?

Common Motivators

- Minimize physical pain
- Maximize pleasure
- Fulfill needs (eating, drinking)
- Obtain a desired object, hobby, goal, state of being, ideal
- Less-apparent reasons such as altruism, selfishness, morality, or avoiding mortality

Motivation is a:

- Cause
- Process and
- Effect
- It’s the energy for action

Motivation is a challenge

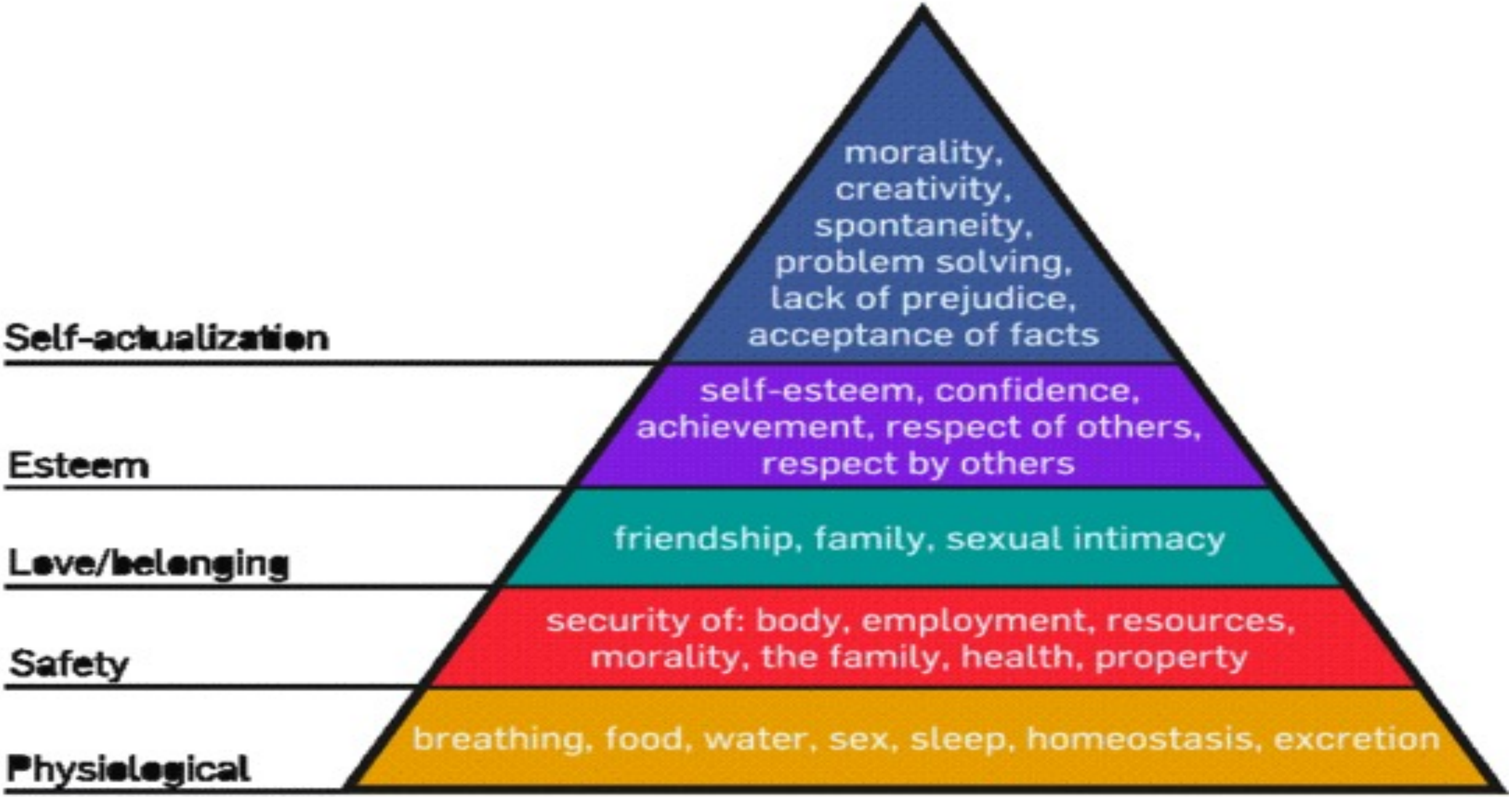
- Lack of motivation leads to:
  - Challenging behavior
  - Crying
  - Noncompliance
  - Inattention
  - Fidgeting
  - Escape behaviors
  - Lethargy
  - ***Decreased mastery over time***

Motivation Theories come from

- Psychology
- Biology
- Business
- Education
- Neuroscience
- Behavioral Economics
- Game Theory
- Etc

“The Reward System”

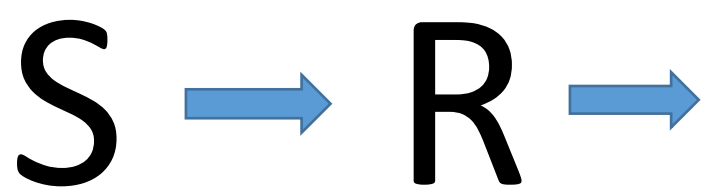
- The term for the part (system) of the brain that is associated with motivation, particularly the system involved with extrinsic reinforcement


morality, creativity, spontaneity, problem solving, lack of prejudice, acceptance of facts
Self-actualization
self-esteem, confidence, achievement, respect of others, respect by others
Esteem
friendship, family, sexual intimacy
Love/belonging
security of: body, employment, resources, morality, the family, health, property
Safety
breathing, food, water, sex, sleep, homeostasis, excretion
Physiological

Other issues that have been demonstrated to affect motivation:

- Emotions
- Executive function
- Grit
- Impulsivity
- Time of the day
- Earlier experiences that day

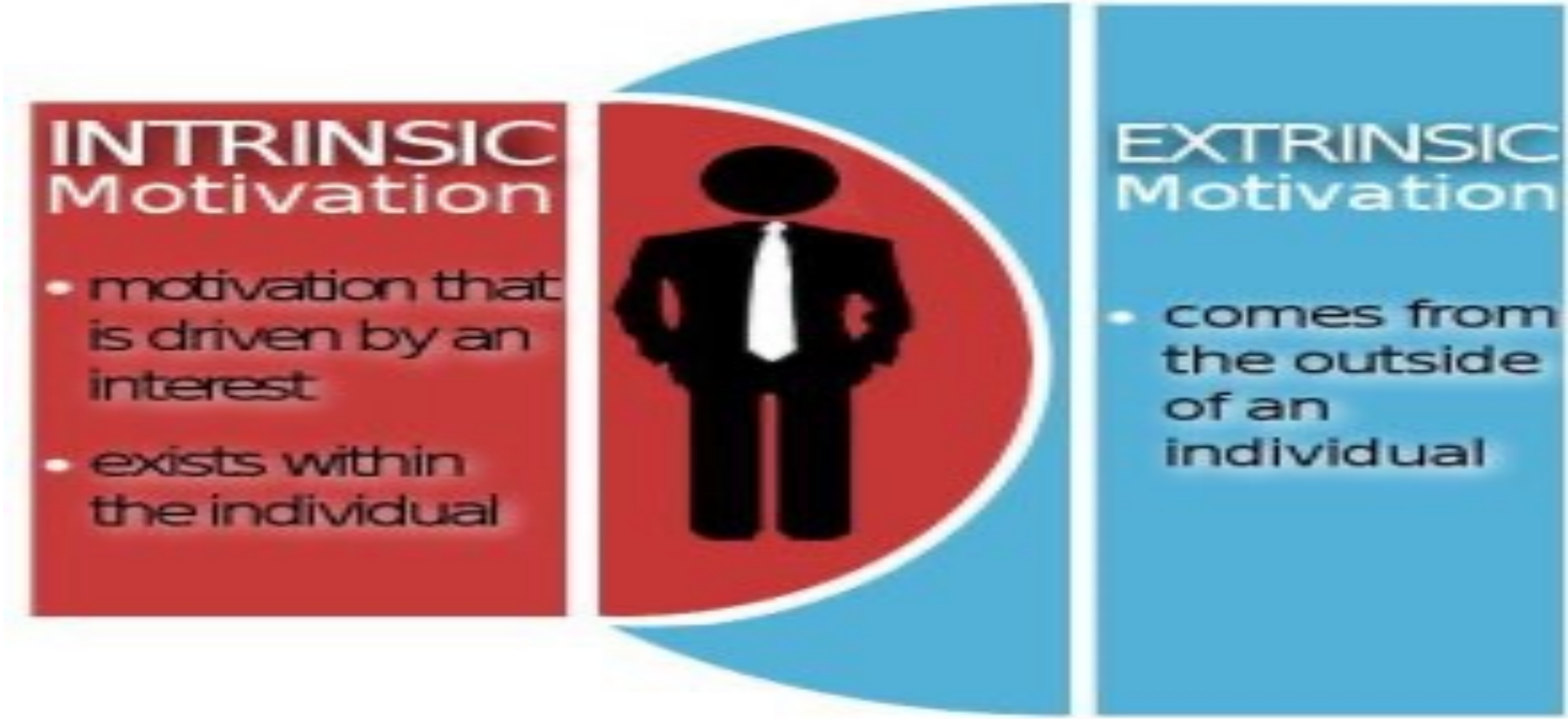
Stimulus, response, outcome



When you talk about reinforcement…

…you must talk about intrinsic vs extrinsic reinforcement

Intrinsic vs extrinsic motivation



Intrinsic value > Extrinsic Rewards

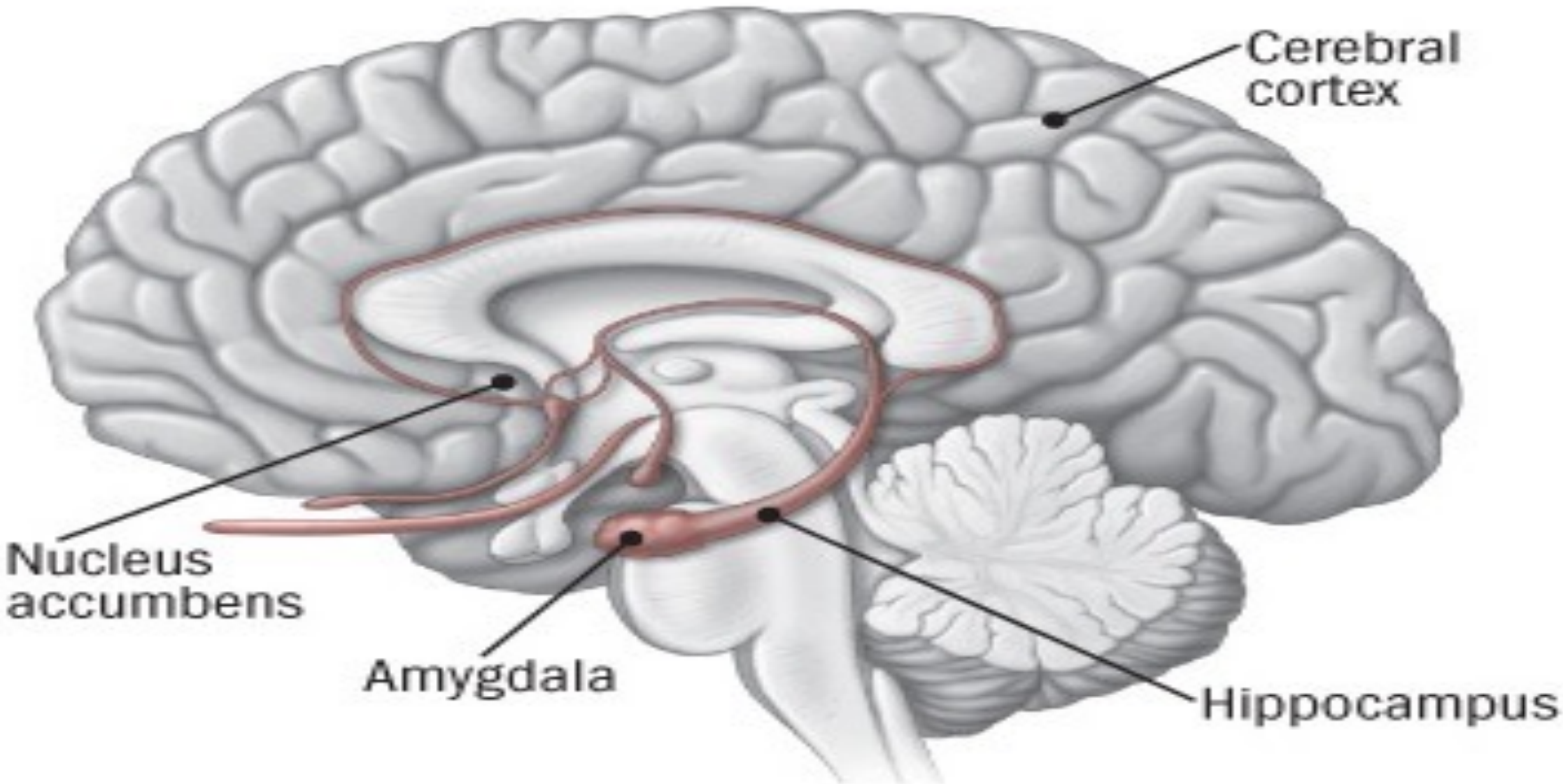
Reinforcement: “It doesn’t work.” Or “It stopped working”

- Possible limitations of reinforcement
  - Reinforcement/rewards only work for about half of the ASD population (Helt, 2008; Vismara & Rogers, 2010)
  - Some factors associated with the effectiveness of reinforcement/reward
    - IQ
    - Age
    - Reward processing
    - Sleep denervation
    - Inattentiveness
    - Level of physical activity
    - Meds
    - Anxiety
    - Depression
    - Boredom
    - Social relatedness-belonging and friendship

Reinforcement in the Brain—“The Reward System”

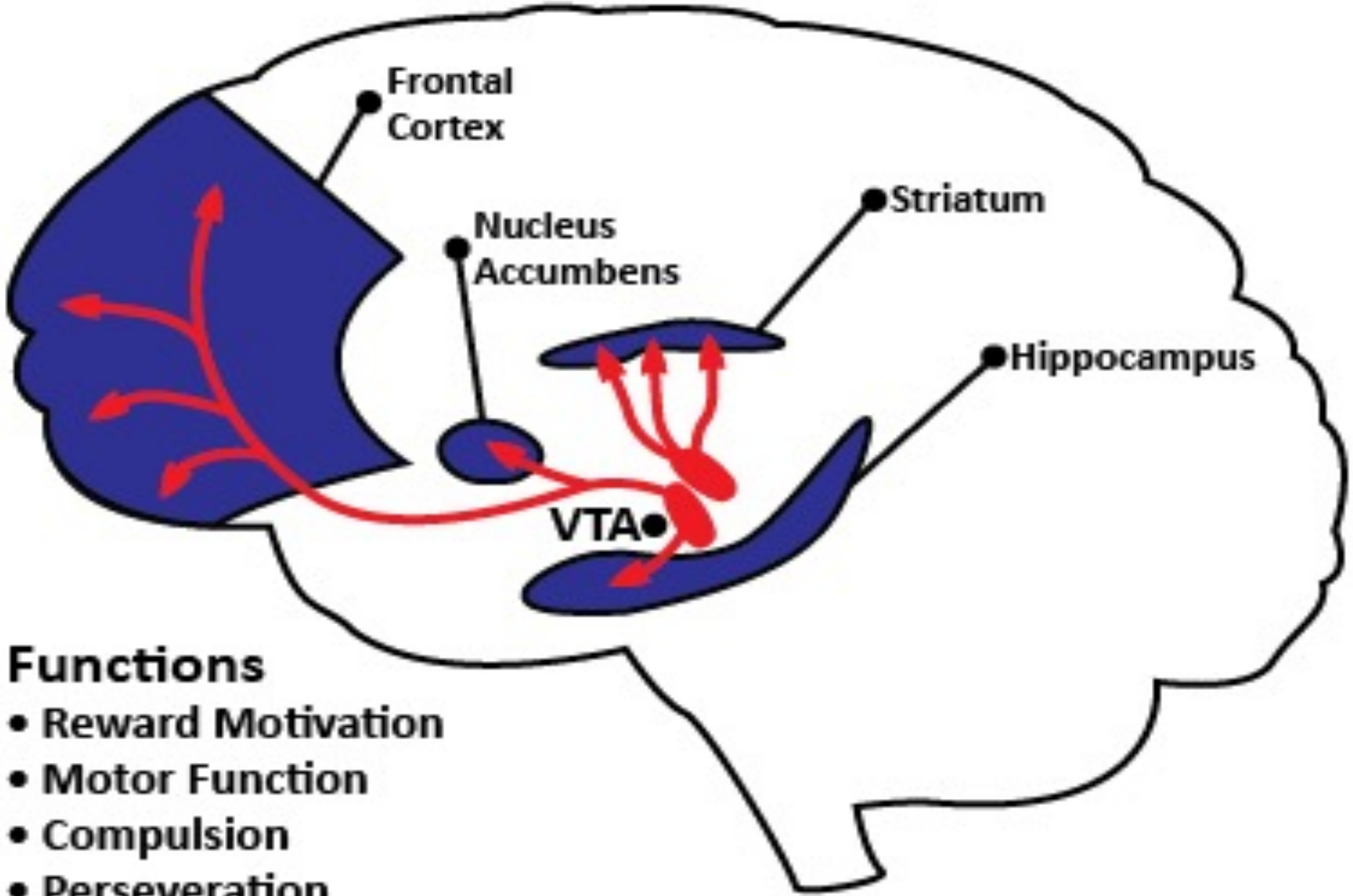
- The neurobiological structure of “The Reward System” in the brain

Brain's Reward System



The neurobiological chemicals in “The Reward System”: Dopamine

Dopamine Pathways

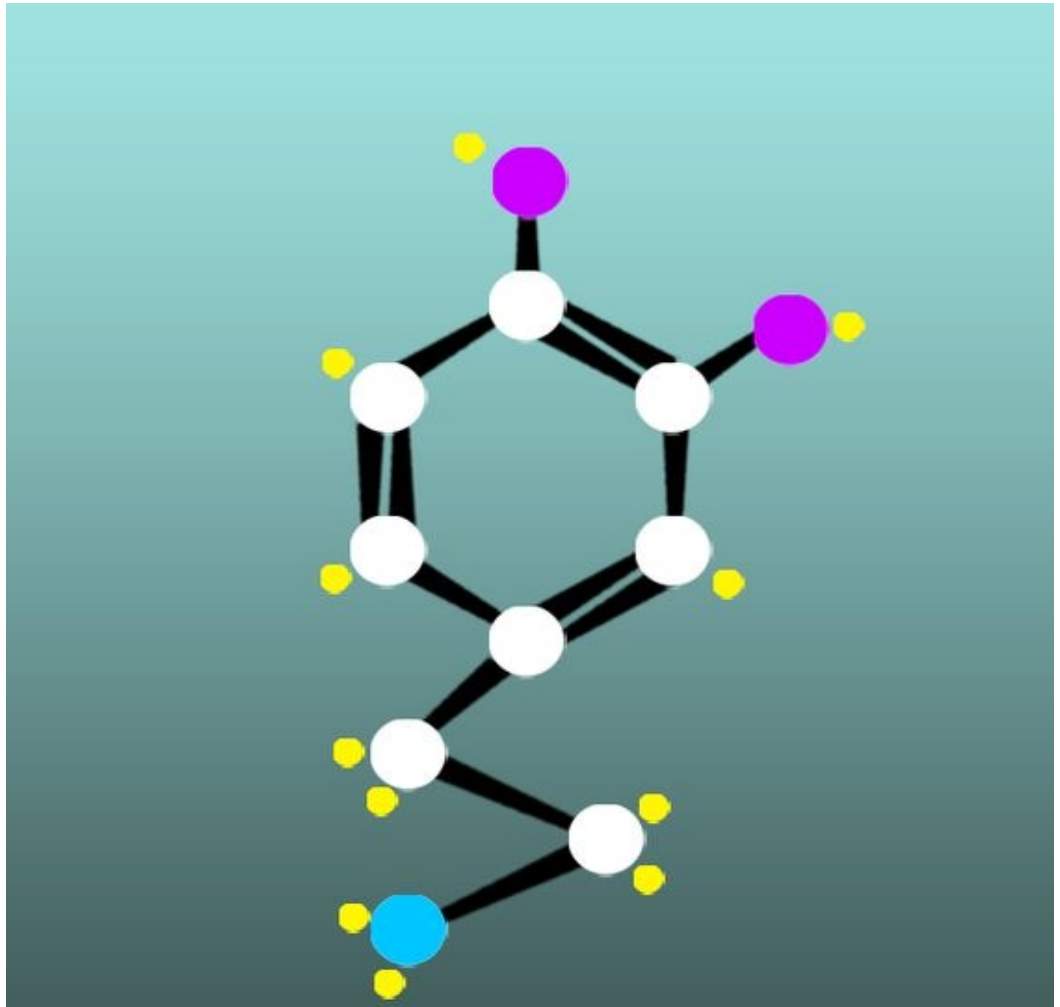


Functions

- Reward Motivation
- Motor Function
- Compulsion
- Perseveration

Dopamine—it makes you feel good

- Its actually a prediction drug
- It confirms the effects discovered in operant conditioning

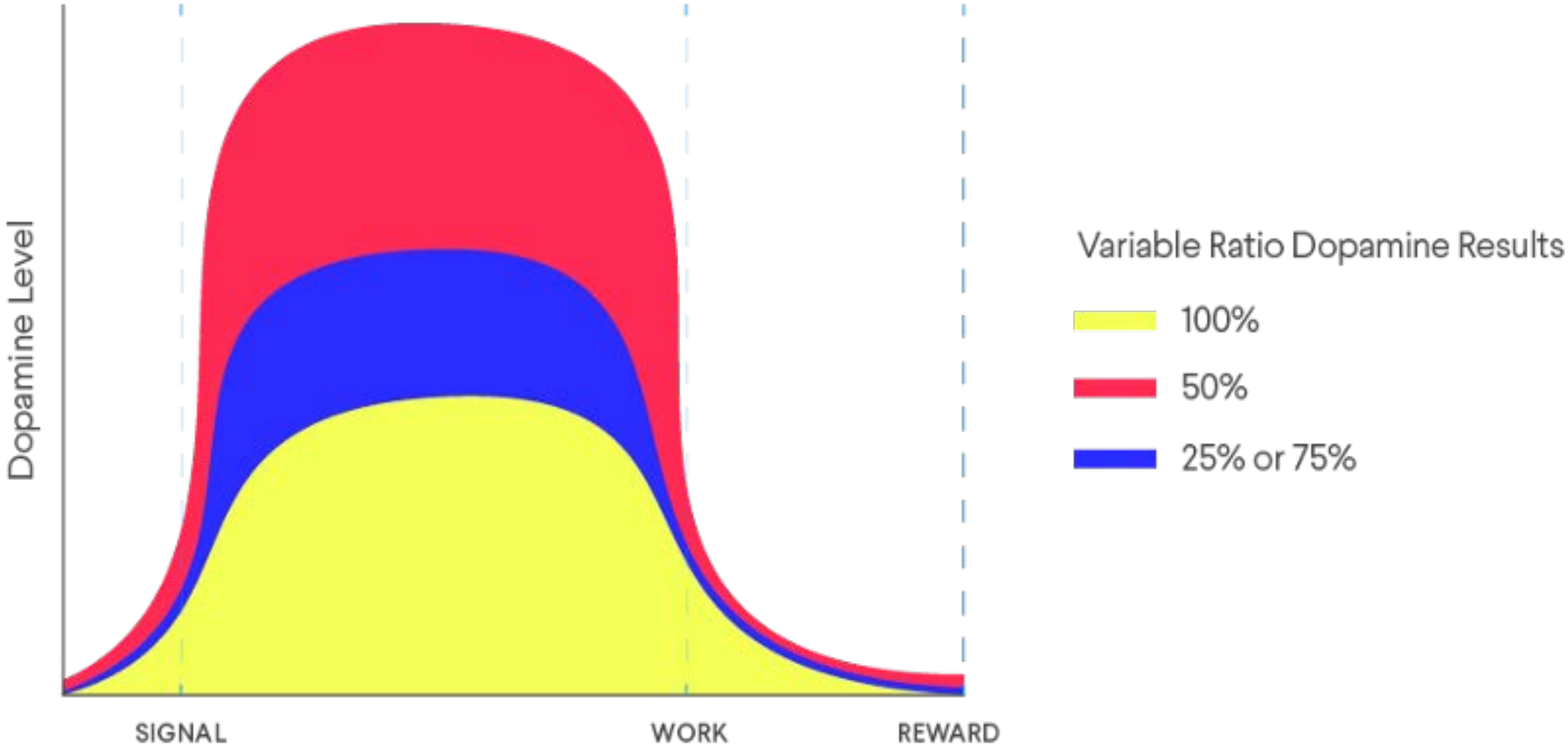


HAPPINESS

$C_8H_{11}NO_2$

DOPAMINE

A compound that affects brain processes that control emotional response and ability to experience pleasure, desire or motivation.


Dopamine Level
SIGNAL
WORK
REWARD
Variable Ratio Dopamine Results
100%
50%
25% or 75%

“The Reward System” in Students who are Typically Developing

- The want and like equally
- The can figure out the probability of receiving the reward
- Could be more effective when moving from novice to proficient then from proficient to master
- Could be more effective for concrete or rote tasks then for abstract or creative tasks

“The Reward System” in Students who are diagnosed with ASD

Differences in neuroanatomy in the brain

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autism brain' - Google Sea... | Brain and Language

nawrot.psych.ndsu.nodak.edu/courses/psych465.s.02/projects/autism/brain areas.htm

autisn brain'

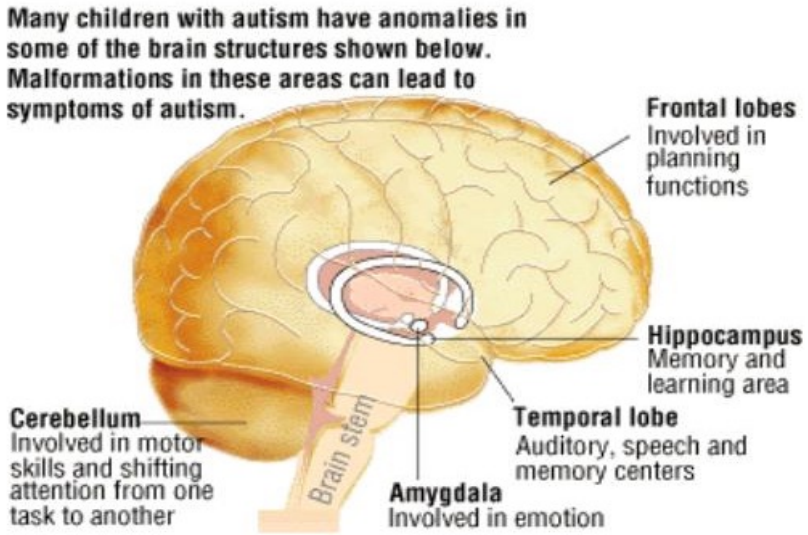

Figure 1 – Areas of the brain that are affected by autism, such as the cerebellum, hippocampus and amygdala.

Picture borrowed from http://seattlepi.nwsource.com/autism/info15.shtml.

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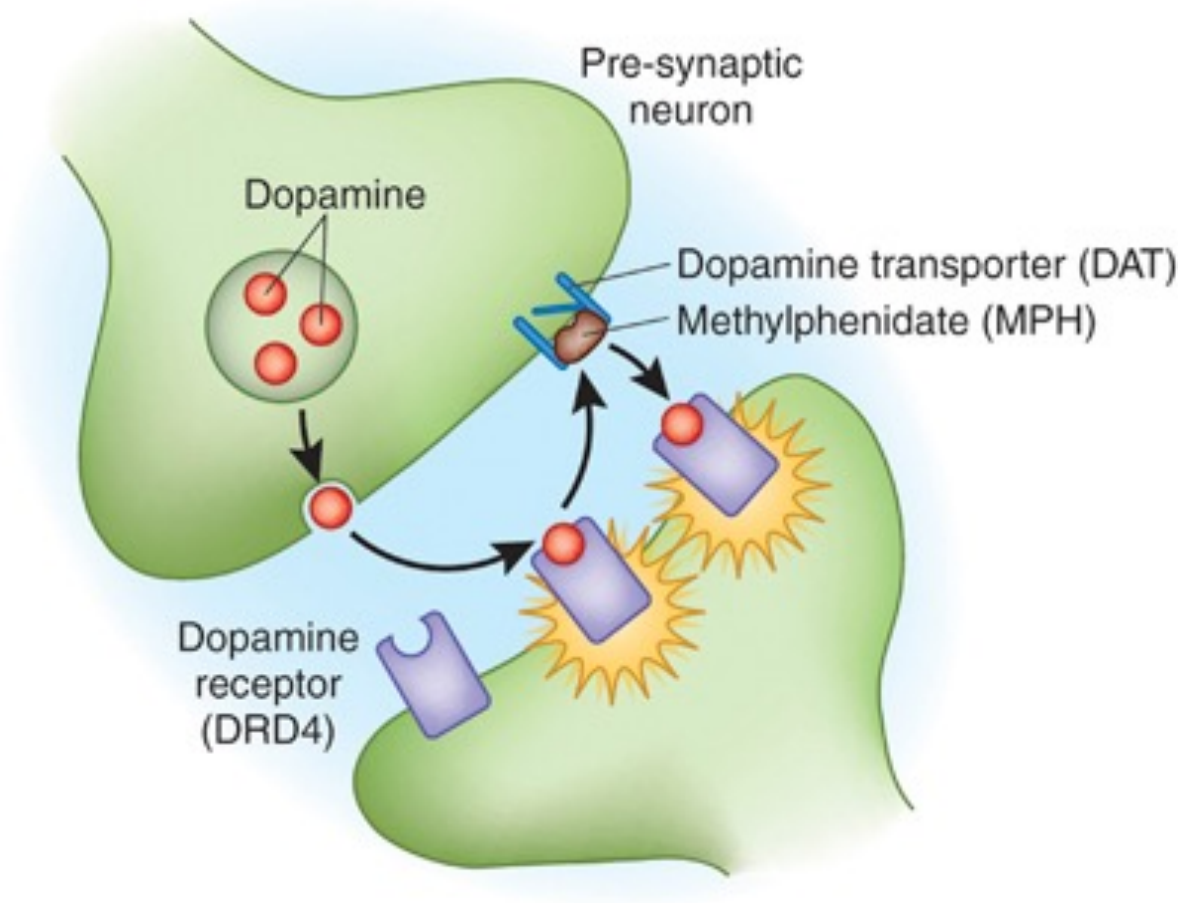
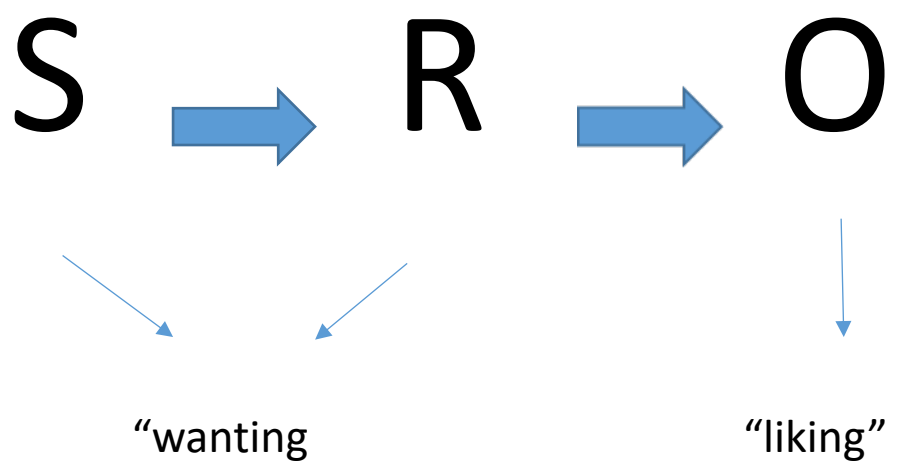
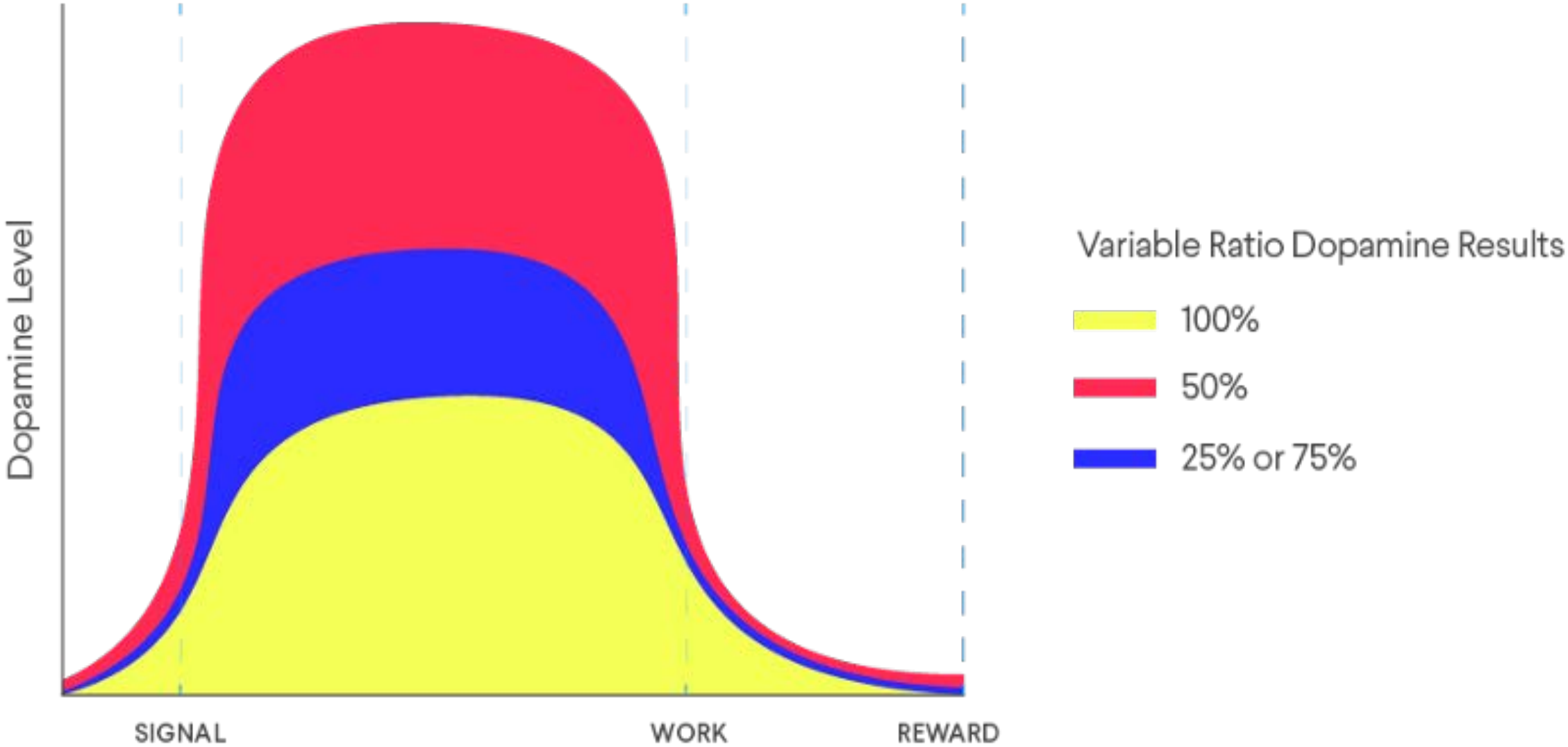
Differences in the neurochemistry



Differences in the behavioral correlates

- S → R → O
- Don’t “want” normally
- “Like” is intact
- Can’t determine the probability of the reinforce
- Even when told the probability may prefer use of their own “rule”
- Extensive teaching may lead to habit, not goal directed behavior


S
R
O
“wanting
“liking”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Interventions to Support the Functioning of “The Reward System” in Students Diagnosed with ASD

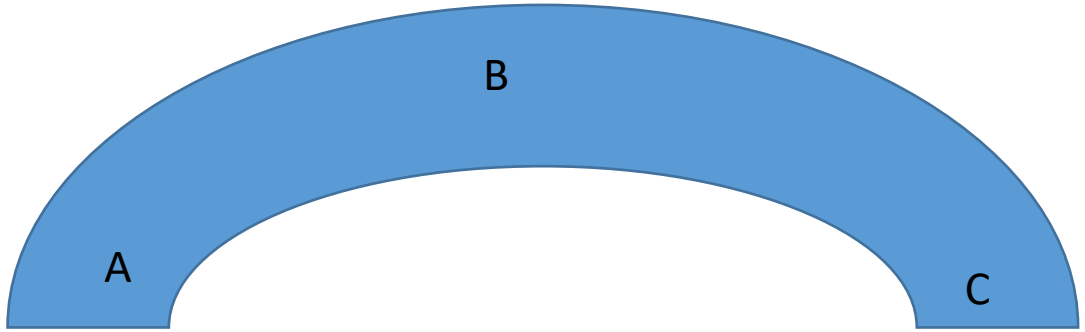
- Diet
- Choice-making* can also be a demotivator
- Using schedules
- Making cues salient
- Increasing the number of reinforcers
- Considering the temporal element
- Avoiding “demotivators”
- Avoiding establishing unintentional habits

Top 10 Dopamine Superfoods
that Make You Happy
Almonds
Apple
Dark Chocolate
Eggs
Banana
Pumpkin Seeds
Beetroot
Strawberries
Salmon
Watermelon
Top 10
Home Remedies

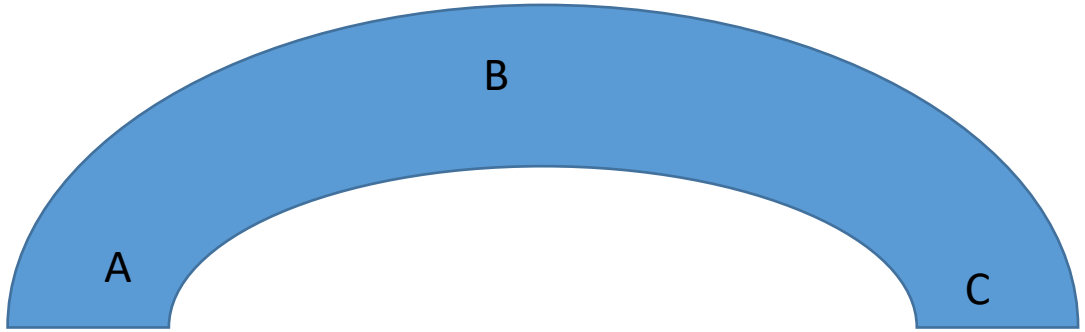
How do we usually motivate students to learn?

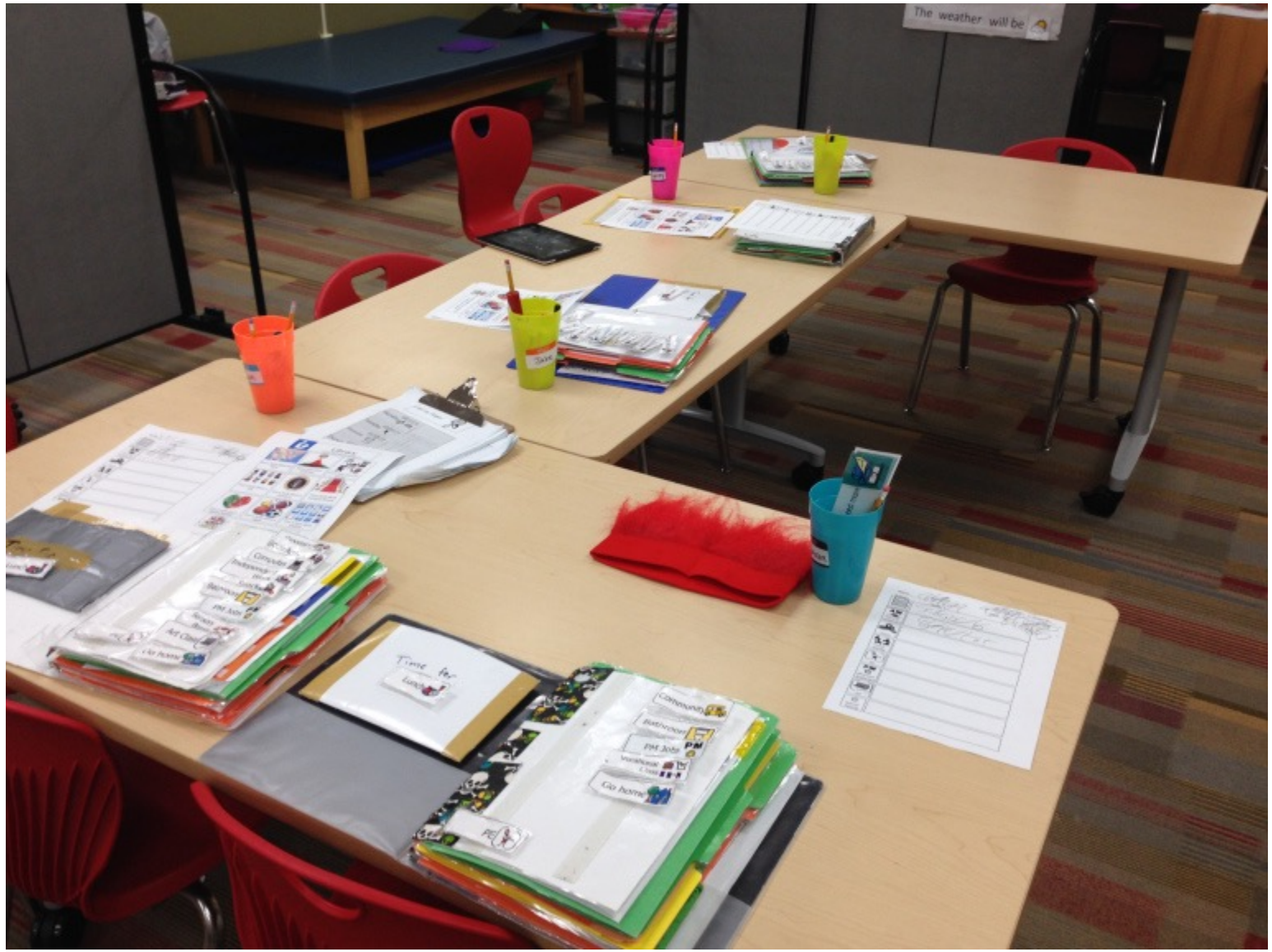
- Praise/encouragement
- Social relationships
- Contingent reinforcement

A simple diagram of learning



Antecedent-based motivation strategies




The weather will be
Time for lunch
Go home

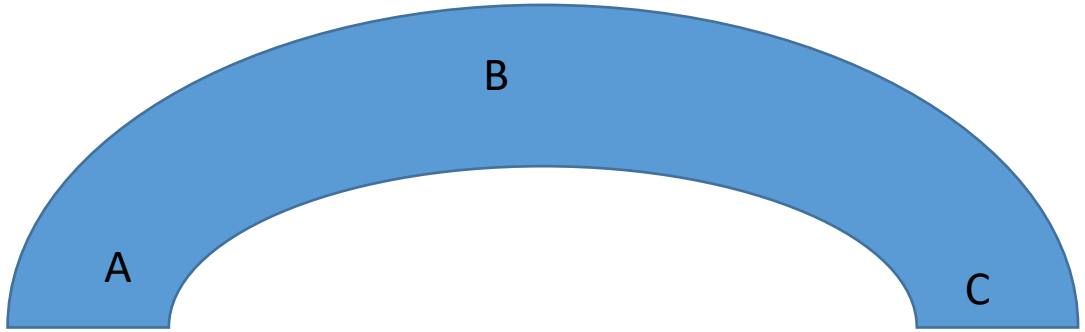
2
4
5
3

Count and Match
4
3
5
Count and Match
1
6
2

Antecedent strategies for motivation

- Environmental arrangement
- Non-contingent reinforcement (NCR involves giving the student access to a reinforcer frequently enough that they are no longer motivated to exhibit disruptive behavior to obtain that same reinforcer.)
- Using child interest
- Single task/varied task
- Pivotal response training (it is play based and child initiated. Its goals include the development of communication, language and positive social behaviors and relief from disruptive self-stimulatory behavior)
- Behavioral momentum
- Choice making
- Error-free learning

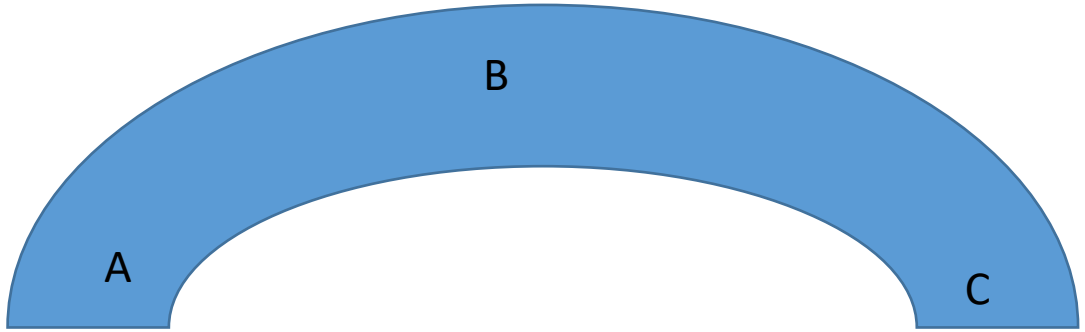
Attention to tasks is motivation



Making the task motivating

- Using student interests
- Using mediums the student likes to use (i.e., technology)
- Checking to see you are only teaching one thing
- Using mastered skills to reach new ones
- Making the task visual
- Making the task clear (task analysis)
- Balancing the demands of the tasks throughout the day

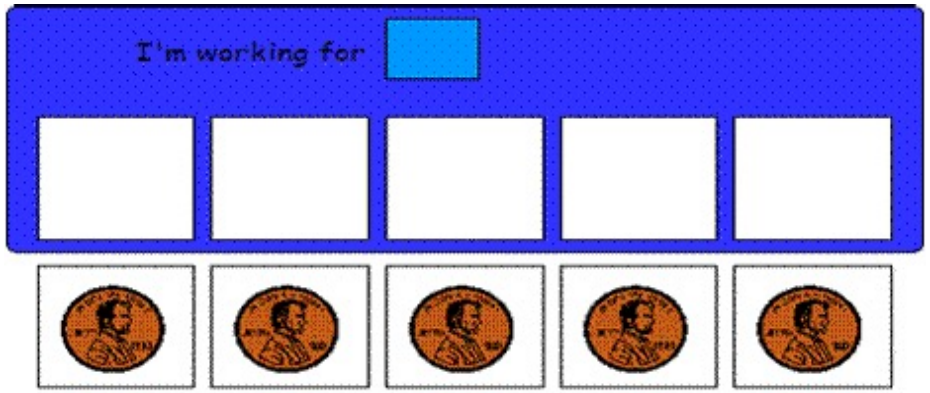
Consequence is motivation

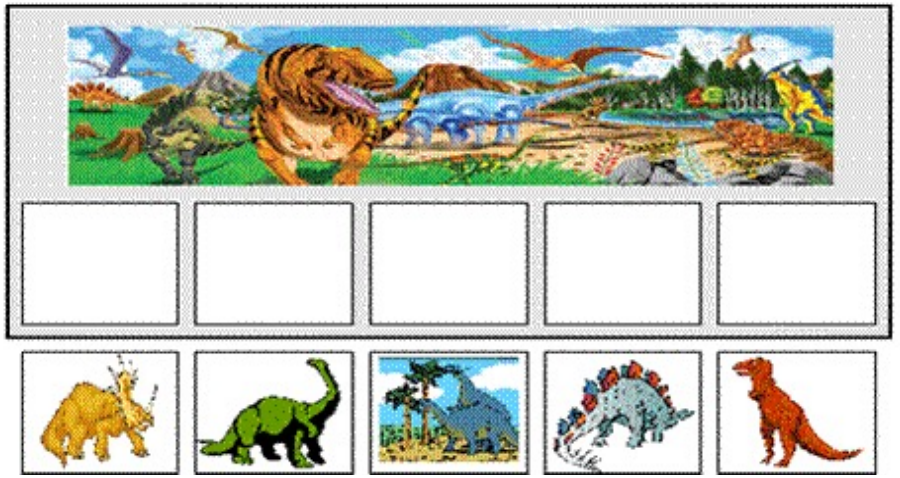


When we concentrate on the consequence for motivations, we use:

- Reinforcement
- positive reinforcement
- negative reinforcement
- Schedules of Reinforcement
- “Penny Boards”

Penny board examples





Principles of Reinforcement

- Motivating Operations
- Matching Law
- Consistent and contingent
- Differentiated from preference
- Idiosyncratic or preservative behaviors ok

Using Reinforcement

- Child must be able to access reinforcement in order for it to be effective
- May reinforce attempts
- Watch for “teasing” or “nagging”
- Vary the reinforcer Pair with social
- Thin schedule
- Matching Law
- Non-contingent reinforcement

BUT….

- Ruined by rewards
  - Praise vs feedback
- Going from concrete to abstract
- Going from acquisition to fluency

So…

- Emotional vocabulary/literacy
- Emotional regulation
- Self monitoring
- Self regulation
- Self Determination

Keep in mind…

- When is this a skill issue
- When is it an instructional issue

Final thoughts

- Remember the real challenges in the reward system in the brain of people with ASD
- Think of motivation as a cause, process and effect, not just as the consequence
- Rethink fatigue, boredom, low levels of engagement and variability in behavior as possible motivation issues
- This is a new area of research in ASD…there’s more to come!