

The Basic Chemistry of Behavior:

We get what we stimulate!



The Young Brain and Justice Series

12 Webinars
for Juvenile Justice
Professionals

Webinar #7

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Welcome...

to the SEVENTH of 12 webinars
designed especially for
Juvenile Justice Professionals.



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Our Webinars Are an Easy Way to Be “In The Know”:

- One or two a month
- Each 45-minutes
- Sessions highlight the links between:
 - *Youth development,*
 - *School discipline practices,*
 - *Trauma-informed care, and*
 - *Preventable emotional and behavioral health disorders.*



Thank you for your participation!

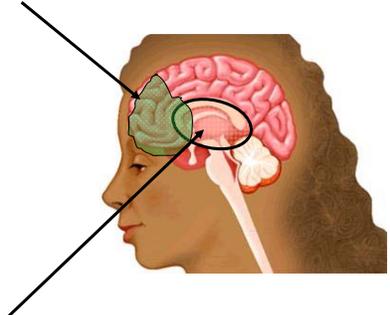
WE WILL BEGIN WITH A QUICK REVIEW OF PREVIOUS SESSION CONTENT.

Our 2 Behavior Centers

Front of Brain (Upstairs): Long Term - BUILDING
 Coping, Resilience & Self-Regulation
 Explicit Learning, Positive Relationships,
 Communities, Cultures & Society

#2

↑
 TWO
 BEHAVIOR
 CENTERS
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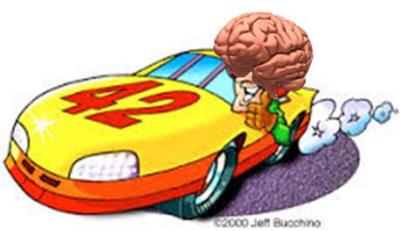


#1

Center of Brain (Downstairs): Short Term - SURVIVAL
 MEET NEEDS REGARDLESS of CONSEQUENCES
 ALWAYS FIRST!

Which Behavior Center?

Built for Long Term Use:
 Calm, Alert & Rational (CAR)



"In Our Car, We Can Go Far!"

Is required for BUILDING,
 i.e., positive relationships,
 community, culture, society.

If we stay in Survival too long, we have "Four Flats":



Fear, Fight, Flight, Freeze

Interferes with,
 impedes, or halts building!

**When we are talking about behavior,
we are talking about chemistry.**



Neurotransmitters:

**Chemicals that send/carry
messages between
Nerve Cells (Neurons) within our
Nervous System.**

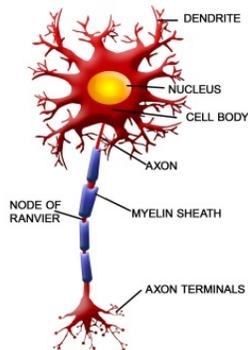
Hormones:

**Chemicals that are
released into our blood stream
by messages from our
Neurons.**

Some are “Neurohormones.”



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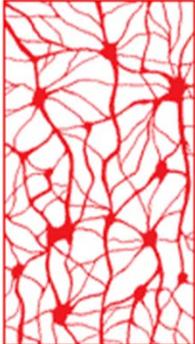
Our brains arrive with 100 Billion Neurons.

**Only 25% are
PRE-programmed, PRE-wired, and PRE-connected into
neural pathways, networks, and highways.**

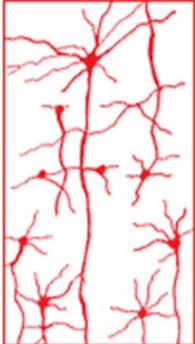
Karen Williams, Williamsgroup, 2015

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Neuroplasticity in Action.



section of a
stimulated brain



section of an
unstimulated brain

Neuroplasticity is our neurons' ability to change in response to *experience*, i.e. *in response to stimulation*.

The process is designed to encode and program (teach) our neurons, and to "wire" (connect) them into neural pathways and networks.

Neurons use chemical neurotransmitters to send each other messages. The more messages, the more pathways and networks are created *in which ever brain center is stimulated.*

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Neurons that are **stimulated, **encode and wire**.**

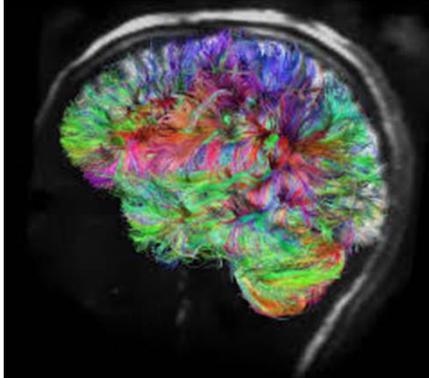
Neurons that **fire together wire together.**

They form **NEURAL PATHWAYS and **HIGHWAYS**.**

The big question is:

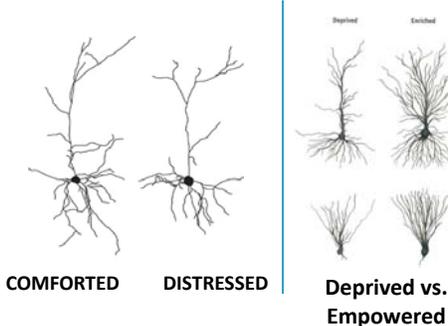
WHAT ARE WE STIMULATING?

What we stimulate is what we get!



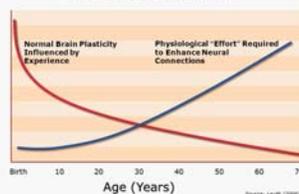
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Our actions give our children chemical stimulation.
 Which chemical we stimulate determines the response.
 Behavior is the only way they can let us know what is happening inside.



In the developing brain, neurons change in a nano-second. Unless youth are taught to manage their own chemistry (via coping skills), they have no way of controlling their behavior.

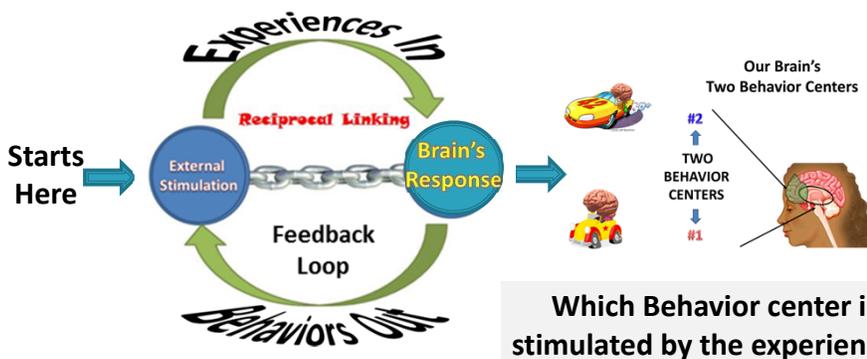
The Ability to Change Brains Decreases Over Time



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**Behavior Formula:
 Experience In + Chemical Changes = Behaviors Out!**



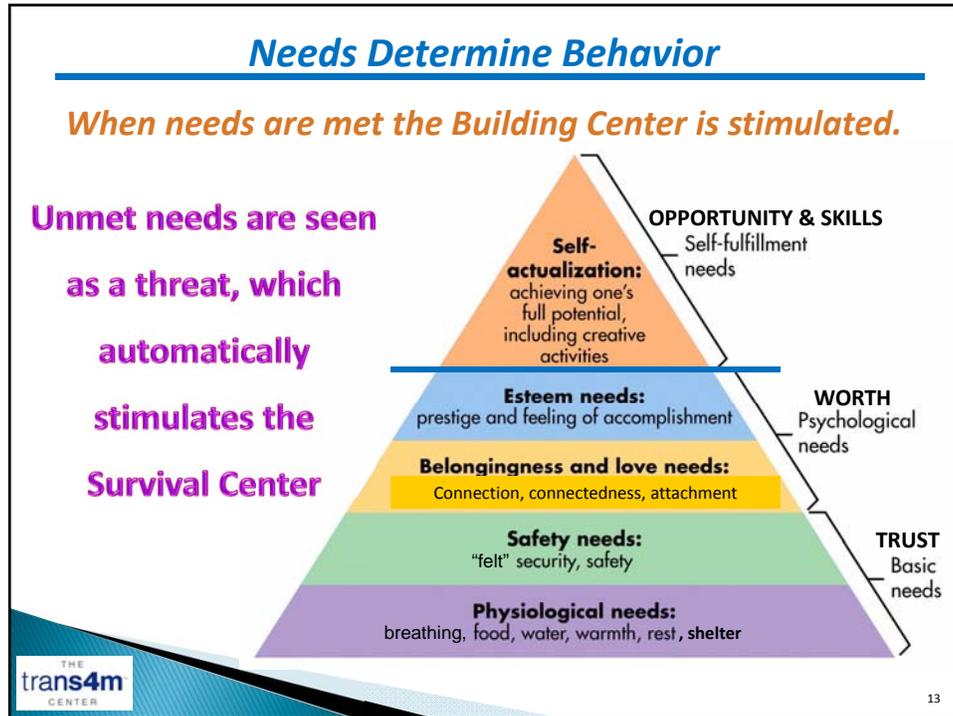
Which Behavior center is stimulated by the experience...

unless the individual has the capacity, ability and support to cope (chemically override) messages to the Survival Center.

determines the behavior that comes out.



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Our body makes hundreds of chemicals that affect our thinking, emotions and behaviors.

We will examine 4 that have the greatest impact on our behavior.

- 1. Oxytocin**
- 2. Serotonin**
- 3. Dopamine**
- 4. Norepinephrine
(Adrenaline/Cortisol)**

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Oxy-T

Sara!
REST, DIGEST, BUILD

Community!
Society
Culture!

SEROTONIN:
RESTFUL ALERTNESS

- Calm, Alert & Rational
- Judgment & Empathy
- Explicit Learning
- Focus & Memory
- Prevents Depression

Oxytocin: TRUST
Essential to Relationships

Dr. Dopa!

Pleasure, Pain Relief,
Comfort & Reward!

Warning:
Addictive!

**"Doctor
Feel Good!"**

DOPAMINE:
COMFORT & JOY!

- Cements Learning
- Creates Motivation
- *Sense of Control*
- Seek It at ALL Times

Nora!
Excitement
Exercise
EMERGENCY!

Auto!
Warrior!
Defender!

NOREPINEPHRINE:
(Adrenaline/Cortisol)
SURVIVAL! FEAR!

- Short-Term ONLY!!!
- Creates Anxiety
- Fight/Flight/Freeze
- Aggression/Mania

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Sara **Nora**

The more Nora; the less Sara!
When this happens....

..we crave Dopa to restore comfort and balance.
A sense of balance is a sense of CONTROL.

Sara

Dopa

Nora

To be able to ask for others' help, we need Oxy-T.
Oxytocin produces trust, which keeps Nora in check, so we can build and maintain positive relationships – and build community & society.

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Living in Adversity
..triggers "Survival Chemicals"
If not TAUGHT behaviors to cope with and overcome adversity, one's Survival Behaviors RULE!

Poverty
Hardship
Homelessness Sofa-Surfing
Foster Care Family Separations
Blended Families Custody Sharing
Family Violence Child Neglect
Child Abuse Sexual Abuse
Substance Abusing Parent/Sibling
Parent w/Life-threatening Illness
Parent/Sibling in Prison/Jail
Multiple Military Deployments

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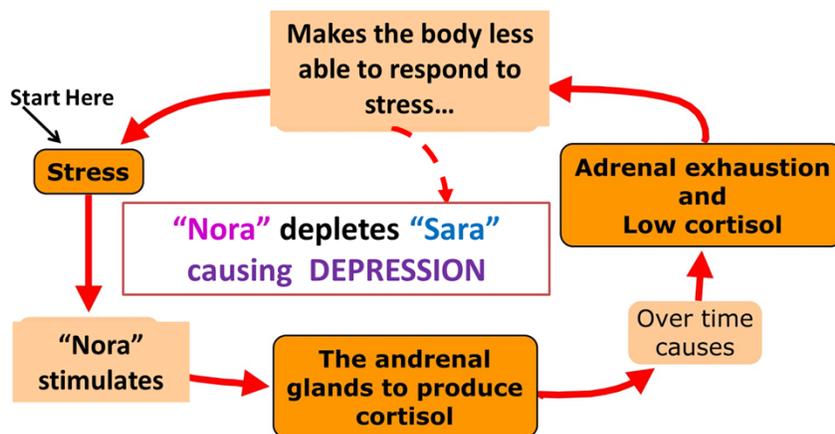
Our Gut is Our "SECOND BRAIN"



Distress, Anxiety and Trauma
SHUT IT DOWN!

- Has 100 Million Neurons.
- Is in constant contact with "First/Big Brain".
- Job: To produce hundreds of the chemicals our brain and the rest of our body use to function (*neurotransmitters hormones and more...*)
- Produces 95% of our Serotonin, which makes Homeostasis and "Rest & Digest" possible
- Houses and programs 70% of our Immune System

The Stress ➔ Anxiety ➔ Depression Cascade



Preventable mental health disorders start with - stress / adversity / unmet needs - in childhood.

Stephen Ferguson, Ana Magalhaes et. al., 2010

Dr. Dopa is never without his “first aid kit”.



It's full of
Endorphins - -
our body's natural
morphine!



Morphine Pump

Endorphins act as both a painkiller and as the pay-off for our body's reward system. Dopamine is the “trigger”.

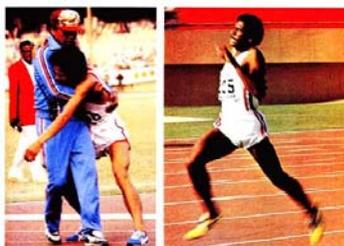
The “Pleasure Route”:

Basic needs, play, dancing, music, singing, laughing, recreation, art, bike riding (both kinds), petting a cat or dog, eating, learning.... MORE.

The “Pain Route”

Extreme exercise – often called a “runner's high,” which refers to the euphoric feeling when “running through the pain”. It can be physically harmful and become addictive.

The Pain Route

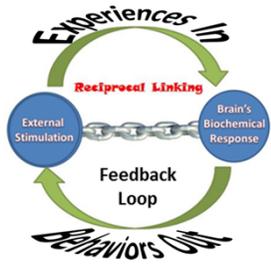


“Running through the pain” prompts Dr. Dopa to release a dose of endorphin (morphine) – allowing the runner to “feel no pain” and experience a euphoric state, a “lift”, just long enough to finish the race.



The same chemical response team (Dopa and Endorphin) respond to both physical and emotional discomfort. Self-inflicted physical pain allows a person to deal with emotional pain by “tricking” Dr. Dopa into releasing an endorphin “lift, i.e., a fix”.

Unfortunately, tolerance means one has to increase the pain in order to gain.



It's like a game of tennis except children don't get to serve, i.e., they don't control the experiences!



ALL BEHAVIOR HAS a PURPOSE: It is the only indicator we have that an experience is meeting youths' needs, or they have been taught how to cope with discomfort.

Behavior is the leading indicator of child's emotional & coping health.

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If we want to change behaviors, we must first change the experiences!

In order for a child to “cope” with adverse experiences, he/she must be taught, i.e., receive modeling, training and coaching in coping skills.

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THANK YOU!

Join us for Webinar #8:

April 28, 2015

11:30 to 12:30 CST

“Balance and Behavior”



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