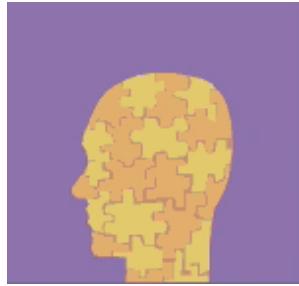


Hey! My Brain Doesn't Work That Way! or Using the Body to Lead the Mind

Understanding Brain Differences and How the Stress System Interferes with Life



Jan 19, 2017

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space provided by:
Glenn & Charity Tait

HEY! My Brain Doesn't Work That Way!

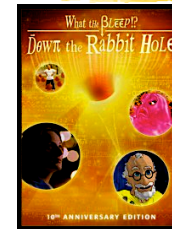
Toxins & Our Species - Profits trump Health

Brain Differences - Neuroscience - Boy/girl differences - How basic neurology affects learning

Neuroplasticity - How it Works and How to Promote it

The Stress System - The Sensory Side of Stress

Using Sensory Strategies to Manage Stress



THE VENUS PROJECT
BEYOND POLITICS. POVERTY. AND WAR.

Using Strength Based Models



Positive Deviance - The "How She Did That" approach

Look at how people harness resources from their own lives and environments during different situations. Manage own routines and resources. The answers are all around us. We learn through **Experimentation** and **Observation**.

Professionals are Advocates and Participant Observers

Positive Psychology - The "I Can" approach

Focus on optimism, strengths, resources. Create the "flow", the "just-right challenge". Self Understanding leads to better strategies and Self Advocacy, more resourcefulness in novel situations. Fosters sense of Self Efficacy and Self Determination.

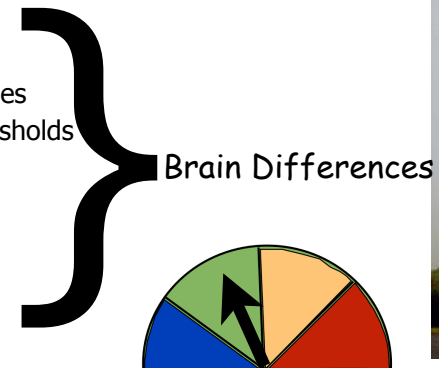
Professionals are Advocates and Participant Observers

SP2 - p 13

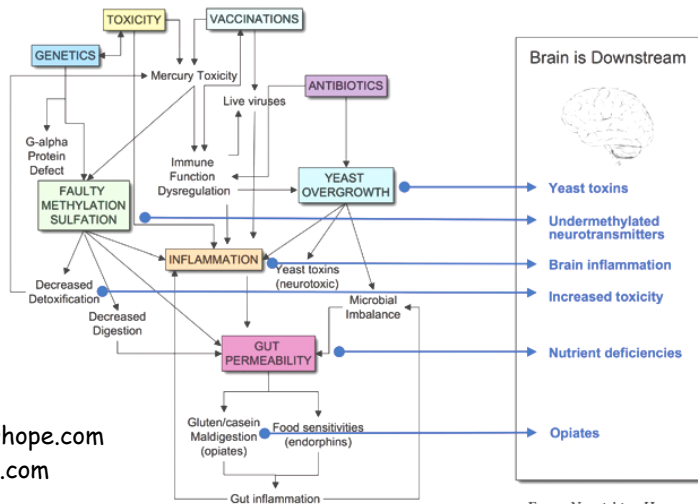
Spectrum/Cloud Theory

Everyone has some of the qualities that are on a specific spectrum. It is how many or how much which determine how much that spectrum will interfere with learning and doing.

Intelligence
Autism
Learning Disabilities
Neurological Thresholds
Brain dominance
Learning Styles
Sex Differences
Toxic Exposures
Level of Arousal
Inclusion



Autisms as Systemic Issues



nourishinghope.com
autismfile.com

The Life Sciences Institute is leading one branch of Canadian Autism research @UBC
See their recent presentation at the Vancouver Library:
<https://www.youtube.com/watch?v=ds10duad-8o&list=FL0cDZY0Z6aMNw-8h7A7Erfg&index=2>

Toxic Threats around and inside us!

<http://www.psr.org/chapters/boston/resources/in-harms-way.html>

Learning, behavioral and developmental disabilities including Attention Deficit Hyperactivity Disorder (ADHD) and autism prevent our children from reaching their full human potential. Seventeen percent of children in the United States have been diagnosed with one or more developmental disabilities. These disorders have widespread societal implications, from health and education costs to the repercussions of criminal behavior. Though trends are difficult to establish with certainty, there is a growing consensus that learning and behavioral disorders are increasing in frequency.

These disabilities are clearly the result of complex interactions among genetic, environmental, and social factors that impact children during vulnerable periods of development. **Research demonstrates that pervasive toxic substances, such as mercury, lead, PCBs, dioxins, pesticides, solvents, and others, can contribute to neurobehavioral and cognitive disorders.** Human exposure to neurotoxic substances is widespread. A review of the top twenty chemicals reported released under the 2000 Toxics Release Inventory reveals that nearly half are known or suspected neurotoxicants. Over 2 billion pounds of these neurotoxic chemicals were released on-site by facilities into the air, land or water. As our knowledge about these neurotoxic chemicals has increased, the "safe" threshold of exposure has been continuously revised downward. Toxic exposures deserve special scrutiny because they are preventable causes of harm.

In 1998 Greater Boston PSR launched the project **In Harm's Way: Toxic Threats to Child Development** to explore this important issue.

EVERY YEAR, MORE THAN A MILLION CHILDREN ARE POISONED BY COMMON HOUSEHOLD CHEMICALS*

* Source: U.S. Environmental Protection Agency



CHILDREN EXPOSED TO SYNTHETIC HERBICIDES EARLY IN LIFE ARE FOUR AND A HALF TIMES MORE LIKELY TO DEVELOP ASTHMA*

*Source: Department of Preventative Medicine, Keck School of Medicine, University of Southern California



Toxic Threats inside us! We allow this **why** ???



But aren't the FD&C dyes certified to be safe?

No. They are certified to contain no more than the amount of lead, mercury, arsenic, benzidine, and other contaminants that the Food & Drug Administration (FDA) considers acceptable. They are certified to contain a minimum percent of actual color as specified in the [Code of Federal Regulations](#).

The manufacturer must submit a sample of each batch of dye to the FDA for certification. In 2009, almost 20 million pounds of coloring were certified.

Consider [benzidine](#). Yellow #5 & Yellow #6 are each allowed to have 1 ppb (parts per billion) of benzidine. That is a really tiny amount; benzidine is known to cause cancer ([see toxicological profile - 242 pages](#)), but it apparently can't be easily removed from the dye, so the FDA decided to allow it at that amount. But how much is *really* in there?

Drs. Peiperl and Prival wanted to see how much benzidine is actually in the Yellow #5 and #6 you buy in the supermarket, so they bought bottles and tested them. In 1993, they found that half of the 53 Yellow #5 samples they tested contained 7 to 83 ppb of benzidine, and in 1995, they found that half the 67 samples of Yellow #6 contained more than 10 ppb benzidine, with some as high as 104 ppb, and one at 941 ppb. Separately, Dr. Lancaster, in Canada, did a similar study in 1999, reporting that he was finding levels of benzidine ranging from less than 5 to 270 ppb.

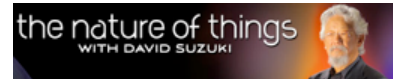
Consider [lead](#). That is a big subject, well covered by the [Mayo Clinic's website](#) on lead poisoning, and the FDA tells us to avoid it because it damages the brain of both children and adults. Yet it is an interesting bit of trivia that while the synthetic food colorings are allowed to have no more than 10 ppm (parts per million) of lead, many of the "D&C" colors used in medications and given multiple times a day to sick people are allowed to have double that amount.

Fluoride now officially labeled as a neurotoxin,
one which cannot be excreted from the body.

www.eartheasy.com www.ewg.org

curcumin blocks the damage

Brain Function -Controversial Truths



The Autism Enigma

- Some multiple antibiotic treatments can cause gut imbalances and overgrowth of some bacteria including clostridium which, as a by-product, release neurotoxins into the body. The neurotoxins cause brain and nerve damage. These cases can have symptom reversal with vancomycin and some improvement with probiotics
- Microbes that colonize the gut in childhood tend to remain through life and can be hard to alter, at this time

If you flattened out your intestines, you'd have the area of a tennis court.
This patch of gut has more diversity of flora and fauna than any same size patch on earth.
Are antibiotics the only toxins we dump onto this system that upset the balance??

- Kids that crave white foods and carbohydrates may be addicted to propionic acid, which is used as a preservative and is formed when carbohydrates ferment in the gut.
- The dose of propionic acid in rats was associated with frantic behaviour, hyperactivity, hypersensitivity, and non-social behaviour shift.
- Propionic acid in the body has been shown to cause damage that affects brain function.
- It is an environmental toxin that may trigger a genetic change (turn on or off an allele).
<http://www.cbc.ca/natureofthings/episodes/autism-enigma>



Are Toxins Toxic?

Not if you believe big business or big government!

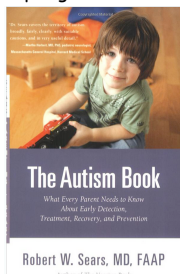
- There is no "safe" level where toxins are not toxic!
- 20-30 of 85,000 chemicals tested for impact on developing brain.
- Toxins affect genes and gene expression/switching.
- Toxins affect all body systems, including digestion/metabolism
- Toxins resembling natural chemicals can trick our bodies.
- All toxic exposures affect brain development.
- Toxins in combinations are untested and unpredictable.
- Cord blood of babies contains hundreds of toxins

Every human being on every developed nation on Earth, whether living in a rural or isolated area, in the middle of a large city, now contains at least 700 contaminants in their body including pesticides, pthalates, benzenes, parabens, xylenes and many other carcinogenic and endocrine disrupting chemicals.

Martha Herbert MD, PhD Harvard Medical School
The Autism Revolution ©2012



Dr Anita Bratt ND
Naturopathic Physician
www.drbratt.com



Robert W. Sears, MD, FAAP
Author of The Autism Book

Science and Environmental Health Network
Wingspread Statement ©1998

The Precautionary Principle

- The basis of Europe's chemical policies.
- Exposures to man-made substances should demand prior proof of safety.

- "When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically"



Autism - The Diet

It's NOT just for autism
Different Examples:



These are NOT acceptable on the Feingold diet

<http://www.autismepicenter.com/autism-diet.shtml>

<http://www.cbc.ca/news/health/story/2007/09/27/autism-study.html>

<http://www.autismndi.com/>

<http://www.autismweb.com/diet.htm>

<http://www.pecanbread.com/>

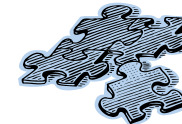


But these are okay - we teach you what to choose.
www.feingold.org

<http://www.feingold.org/Hope.ppt>



Additional resources are available.



local ND
www.drbratt.com

The Feingold Diet

It's NOT just for autism

www.feingold.org <http://www.feingold.org/Hope.ppt>



Stage One:

Stage One is the initial period during which the items listed below are eliminated from the diet.

- **Artificial (synthetic) colors** Food dye may be listed as "food coloring," "certified color," or "color added." It may also be listed by its name (i.e., "Tartrazine"). Sometimes the words "artificial color" or "color added" actually refer to a natural coloring such as carmine or titanium dioxide. You will not know this, however, without a Feingold Association's Foodlist & Shopping Guide, which is available in the U.S. and Canada.
- **Artificial (synthetic) flavors** Artificial vanilla (vanillin) is a synthetic flavoring generally identified by name. Most of the thousands of artificial flavors are listed only as "flavoring," "artificial flavoring" or "natural & artificial flavoring."
- **Three preservatives**

BHA BHT TBHQ

(Butylated Hydroxyanisole) (Butylated Hydroxytoluene) (Tertiary Butylhydroquinone)

- **Aspartame** Aspartame and similar sweeteners - Equal, Nutrasweet, Spoonful, Equal-Measure, Benevia, Misura, NatraTaste, E951, Neotame, Alitame - are now excluded from the Feingold Program. Sucralose (Splenda) and other synthetic sweeteners are not officially excluded, but products containing them are not added to the Foodlist & Shopping Guide. Products containing alcohol sugars (names end in "-ol") are allowed, but marked with a "(CS)" since they are related to corn syrup. Stevia and agave are sweeteners made from plants, and they are allowed.
- **Salicylates** These are chemical compounds found in some foods, medicines, and personal care products.

Stage Two:

After observing a favorable response to Stage One, salicylates may be reintroduced and tested for tolerance one at a time. While some people find they need to remain on Stage One, others are able to tolerate some salicylate-containing items occasionally, and still others can eat them freely. The artificial colors, flavors, preservatives, and sweeteners listed above are not reintroduced.

Some chemical additives are not routinely eliminated, but products containing them are marked in the Foodlist & Shopping Guide, so that they can be avoided at the start of the diet or later if necessary. They are: Calcium Propionate (CP), Corn Syrup (CS), Sulfite (SF), Sodium Benzoate (SB), Monosodium Glutamate (MSG/HVP), Nitrites/Nitrates (N), and Natural Smoke Flavor (SM).

No artificial sweeteners or High Fructose Corn Syrup

Artificial Sweeteners: The Worst of the Worst



Sweeteners, both artificial and sugar-derived, top the list of addictive additives. But artificial sweeteners are the absolute WORST things you can put in your body. Consider aspartame, sold under the brand names NutraSweet and Equal. Diet cola, which often combines aspartame and caffeine, is the perfectly addictive beverage. These two agents create a very unique but deadly combination of excitotoxins that kill off your brain cells. However, before they do so, they go out with a bang by giving you something akin to a buzz. It's the perfect plan to get you to go back to the store to buy another soda. And maybe a supersized soda—after all, it has ZERO calories, no matter how much you consume!

But not so fast. You are sipping your way into a trap.

Studies now show that, in spite of their zero-calorie status, many artificial sweeteners actually cause weight GAIN because they stimulate your body to crave carbohydrates. But weight gain may be the least of your worries. Aspartame causes formaldehyde to build up in your brain, which results in all sorts of potentially serious medical problems, including:

Frontal lobe inflammation	Visual disturbances	Migraines
A syndrome similar to multiple sclerosis	Seizures	Cognitive problems
Chronic fatigue syndrome and fibromyalgia	Symptoms similar to Parkinson's disease	Symptoms similar to attention deficit disorder

Ban
Neotame,
Aspartame,
aminosweet

Avoid
nutrasweet,
equal, etc.

In fact, pilots' associations are aware of the visual disturbances and caution pilots to avoid using aspartame due to its potential to compromise their ability to pilot a plane.

The food industry claims that aspartame is safe. However, if you look at the studies that claim to support aspartame's safety, you will see that 90 percent of them were funded by the food and beverage industry. When you examine independent aspartame studies, it's a totally different story. Ninety percent of those have found serious health problems related to aspartame. The FDA merely evaluates the studies that the industry submits—it doesn't have a team of researchers conducting those studies itself, contrary to what you might think.

Aside from **cancers and tumors**, top researchers have linked aspartame with the following symptoms and diseases: Headaches, Memory loss, Seizures, Vision Loss, Coma, ADD, Lupus, Fibromyalgia, Muscular Dystrophy, Alzheimer's, Chronic Fatigue, Diabetes, Depression

Dr. Mercola is the founder of the world's most visited natural health web site, Mercola.com. You can learn the hazardous side effects of OTC Remedies by getting a FREE copy of his latest special report The Dangers of Over the Counter Remedies by going to his [Report Page](#).

Heal the GUT ---Heal the BODY ---Heal the BRAIN

A complex process involving building a probiotic population that will kill clostridium, candida, yeast and other opportunistic flora that produce toxins.

www.gaps.me

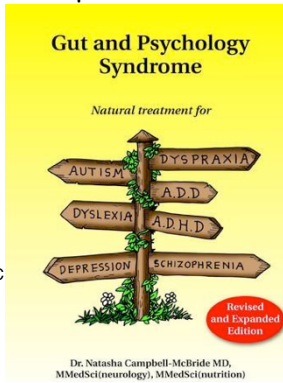
www.gapsdiet.com/

www.westonaprice.org

Kate Hutchinson Vancouver, BC
Tel: 604-708-8205
kate@wholefamilynutrition.ca
www.wholefamilynutrition.ca

Allegra King North Vancouver, BC
Tel: 604 910 5742
allegraking@gmail.com
www.azensoup.com

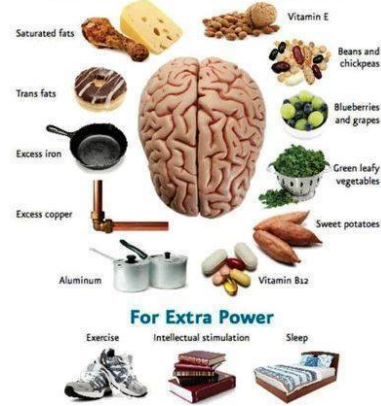
Neil Tessler ND White Rock, BC
604 542-9759
ntessler@shaw.ca
www.drneilhomeopath.com



Probiotics are the most important supplement.

www.youtube.com/watch?v=Z_ONvcJZwa8&feature=youtu.be

Brain Threats Brain-Protectors



BRAIN BUILDERS	BRAIN DRAINERS
<ul style="list-style-type: none"> • Avocados • Bananas • Beef, lean • Brewer's yeast • Broccoli • Brown rice • Brussels sprouts • Cantaloupe • Cheese • Chicken • Collard greens • Eggs • Flaxseed oil • Legumes • Milk 	<ul style="list-style-type: none"> • Alcohol • Artificial food colorings • Artificial sweeteners • Colas • Corn syrup • Frostings • High-sugar "drinks" • Hydrogenated fats • Junk sugars • Nicotine • Overeating • White bread

Innovative Sciences

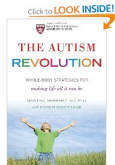
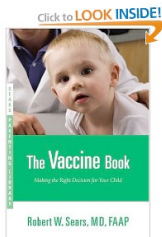
immune network science - a network that is adaptive, individual, ever changing

adversomics - the study of the genetic and immune basis of adverse vaccine reactions

vaccinomics - the development of personalized vaccines

nutrigenomics - the study of the effects of foods and food constituents on gene expression

personalized medicine - a medical model which includes information about one's unique genome, bacterial makeup, immune system, toxic load, blood chemistry, and past medical information



Epigenetics

copy number variation (CNV)
single nucleotide polymorphism (SNP)
gene damage does not mean it is inherited

up to 2193 genes, 2806 SNPs, 4544 CNVs, 158 linkage regions involved in autism

The Brain is Important in Learning !!

Mamallian Brain / Mesocortex
satisfaction/contentment

Human Brain / Neocortex
connection/relationship

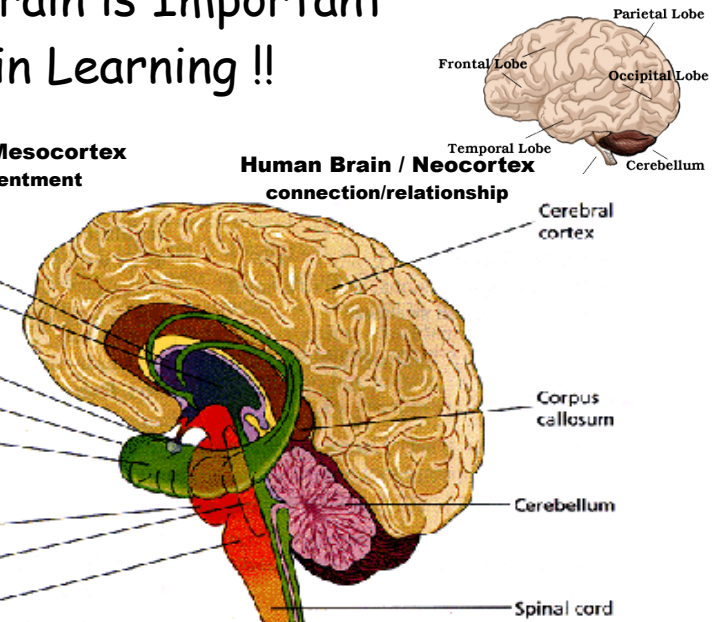
LIMBIC SYSTEM

Thalamus
Hypothalamus
Pituitary
Amygdala
Hippocampus

BRAIN STEM

Pons
Reticular formation
Medulla

Reptilian Brain / Paleocortex
survival/safety



Brain Hierarchy		
Lower level must achieve end goal to move on		
Brain Area	End Goal-	How to Support-
Cortex Human Brain Neocortex	Connection Relationship	Collaboration Acceptance choices/ problems
Limbic System Mammalian Brain Mesocortex	Satisfaction Contentment	Positive Regard Comfort Belonging
Brainstem Reptilian Brain Paleocortex	Survival Safety	Peace Calming Parasympathetic

Bottom-Up
Brainstem influences higher centres

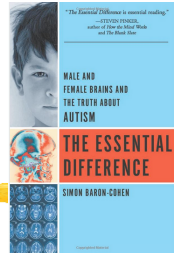
Top-Down
Thinking affects influences lower centres

17

Early Brain Differences Empathy v. Systemizing

The Minds of Boys
Saving Our Sons
from Falling Behind
in School and Life
MICHAEL GURIAN
and Kathy Stevens

right brain v. left brain
female v. male
or
whole brain activation



Very definite differences between boys and girls

girls have:
more access to right brain functions
better multi-tasking and transition skills
better language processing with visual inhibition
less intense movement needs
eye contact and language enhance relationship

boys have:
more access to compartmentalized left brain functions
more uni-sensory functioning
better visual processing with language inhibition
more intense movement needs
physical interaction and movement enhance relationship
slower development of frontal lobe

Boy & Girl Differences



Boys ability to remember words is much more limited than the ability to remember visuals. Boys are more dependent on vision. They are more easily distracted by non relevant visuals around them, and 'act out' more in low light situations.

- Boys have a harder time maintaining eye contact, especially when trying to use language or access emotions (both facilitated by movement). Forcing eye contact increases stress hormones.
- Adding stories, descriptions increases interest more in girls, boys become more engaged when counting and systemizing tasks are introduced.
- Boys require more time and movement to transition between sensory modalities and tasks.
- Oxytocin vs. Vasopressin

Differences in boys & girls



Hippocampus - Boys need more time to memorize written information than girls, but do better with lists/categories/systemizing

Boys have more dopamine in their blood and more blood flow in the cerebellum. They learn better when they are moving or physically engaged.

Higher estrogen and oxytocin levels in girls are related to increased language

Higher testosterone and vasopressin in boys related to increased aggression and territoriality.

Boys use less of their brain at one time and compartmentalize, do better when focusing for long periods on one task, going deeper and deeper. They don't learn as well when they are required to move quickly from one task to another; this increases frustration, the amygdala swells, more stress hormone is released (cortisol), adrenaline goes up, 'behaviours' happen.

Girls do not have a neural rest state as boys do, and in boys it is critical to brain function. When this is not allowed, boys go through periods where they force themselves to fidget, tap pencils, etc. to try to stay alert.

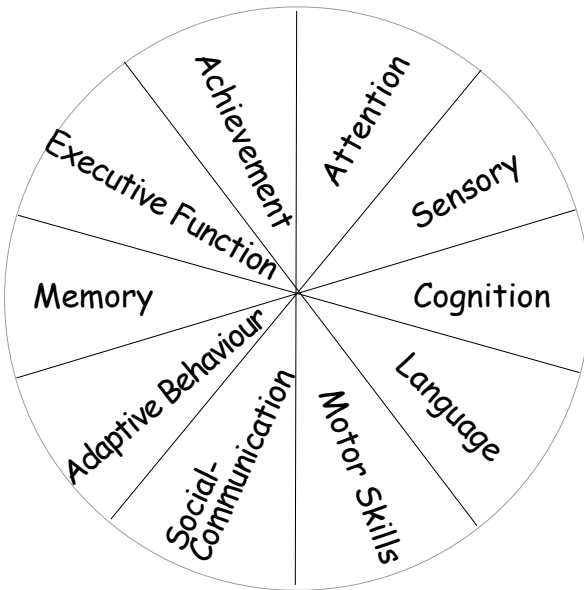
The female brain tends to link fine motor and verbal activity together, scaffolding development.

Mis-Attribution

©Michael L. Harris, M.A., L.P.

Four key things to know about misattribution:

1. Just because we think we know why a person is exhibiting a certain behavior doesn't mean our belief is true
2. Just because a person can sometimes act the way we expect her to doesn't mean she is choosing to act that way
3. Believing that a person chooses to act the way she does will create conflict, frustration, failure, and defeatism
4. The basis for interventions is to determine why a behavior occurs and to make an intervention based on that instead of a misattribution



The 19 Cognitive Areas of Cognitive Function

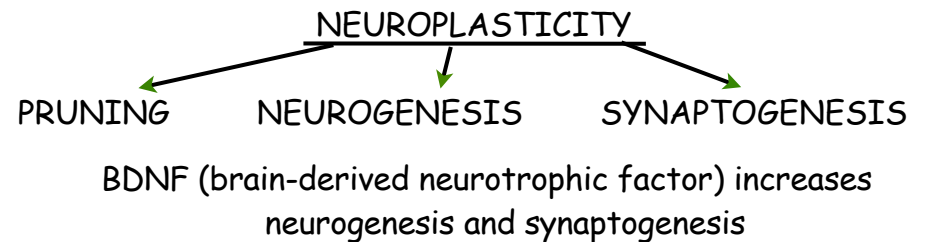
- | | |
|-----------------------------------|---------------------------|
| 1. Motor Symbol Sequencing | 11. Kinesthetic Speech |
| 2. Symbol Relations | 12. Artificatual Thinking |
| 3. Memory for Instructions | 13. Narrow Visual Span |
| 4. Predicative Speech | 14. Object Recognition |
| 5. Broca's Speech Pronunciation | 15. Spatial Reasoning |
| 6. Auditory Speech Discrimination | 16. Mechanical Reasoning |
| 7. Symbolic Thinking | 17. Abstract Reasoning |
| 8. Symbol Recognition | 18. Primary Motor |
| 9. Lexical Memory | 19. Supplementary Motor |
| 10. Kinesthetic Perception | |

Howard Eaton

A Vision For The Future

Needs to start with all children feeling safe, grounded, and belonging, so that the lower brain supports the higher brain. This requires understanding of sensory & stress systems.

- Realize what is missing in most recommendations is the understanding of neuroplasticity and brain change.
- We know cognitive processes can be improved (Arrowsmith, FastForWord, CogMed).
- Target cognitive intervention to improve these cognitive processes.
- Target achievement intervention once these psychological processes are improved – or during the process of improvement.
- Expand our conceptual understanding of the psychological processes that result in learning disabilities.



Pillars of Brain Health

- 💡 **Exercise/Movement** (increases energy to brain)
- 💡 **Nutrition** (Energy and glial support)
- 💡 **Stress Management** (Brainstem and Limbic Load)
- 💡 **Socialization**
- 💡 **Mental Stimulation** (May be work or, better yet, PLAY!)

www.nognz.com

nognz brain fitness

Exercise & Move to Grow Your Brain

They Can't Pay Attention? Give Them a "Time IN" !!!

Exercise improves cognition/protects neurons

- brain systems work better
- cellular systems in the brain work better
- stimulates production of GABA in hippocampus

this calms brain function, increases stress resistance, reduces fight/flight reactions, triggers growth of new neurons



Movement cures a bad mood

- improves impulse control, attention, motivation, balances arousal, anxiety regulation, entire pre-frontal area

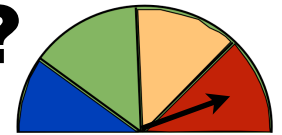


see <http://www.johnratey.com>

<http://www.youtube.com/watch?v=hBSVZdTQmDs>

www.bokskids.org

What is AROUSAL?



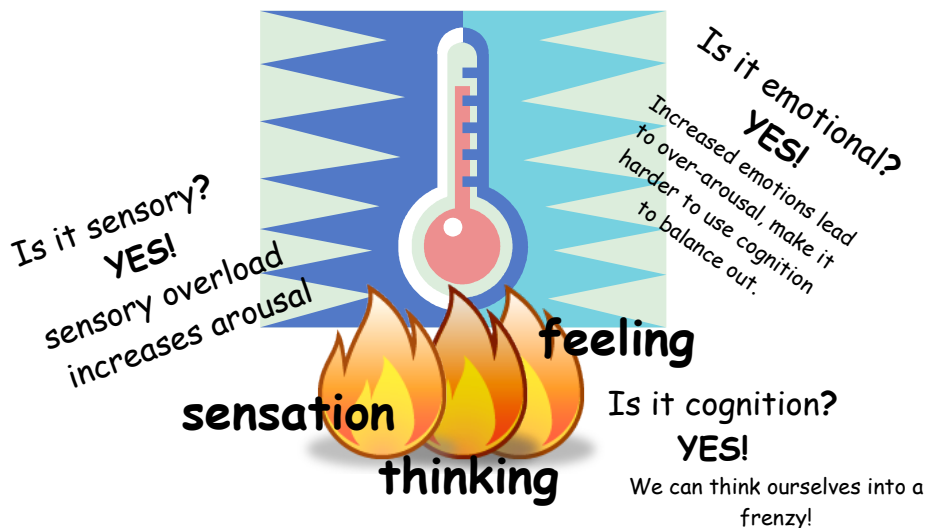
Heartbeat
 Respiration rate
 Temperature
 Blood pressure-blood flow (plethysmography)
 Galvanic skin response (+ or -) (MIT device)
 Thalamic and reticular activation
 Neural thresholds

Averted or fixed gaze
 Dramatic colour changes (red ears)
 Gagging, coughing, yawning
 Sighing, crying, restlessness
 Hyperalert states
 Diffuse motor activity

Norepinephrine
Dopamine
Serotonin
Acetylcholine
Histamine
Oxytocin

Factors in AROUSAL

Sensation and Emotion are neurobiologically hard wired together and affect thinking (reticular system, amygdala, locus coeruleus, etc.)



We retrieve memories and formulate action plans according to the level of arousal of our body.



Gray zone level of arousal connects with memories and responses from other lethargic and mellow situations from the past.



Green zone level of arousal connects with memories and responses from other calm and alert situations from the past.



Red zone level of arousal connects with memories and responses from other agitated and frazzled situations from the past.



What stress hormones do



Cortisol - The Stress Hormone

29



Stress Response System

(primarily sympathetic activation)



If lower levels of the brain recognize incoming input as having content that is initially unfamiliar, new, or strange, the brain initiates a stress response. Originates in lower parts of the brain and has connections to all brain areas.

Poorly regulated or altered function can affect all brain areas.

Locus coeruleus - clump of norepinephrine neurons where "Fight or Flight" response originates. Output goes to all cortical areas where thinking and behaviour are influenced. This output is not consciously controlled or mediated.

Activated by increased activity in adrenaline and noradrenaline systems to arouse and activate, dopamine gives motivation and competence, Human reward system helps to de-activate. We suppress normal "shaking off" of the stress response.

It takes time for parasympathetic system to effectively deal with effect of stress response. Do not address emotions during this refractory period. Wait, then focus on what would have been a better way to respond. Focusing on the negative only strengthens it by activating more protective defense mechanisms.

Increased threat/fear leads to increased activation. When survival is threatened, new learning cannot happen, as hippocampus is fragmented.



Stress Response System

(primarily sympathetic activation)

Activation leads to: shutting off frontal areas, increased peripheral awareness, increased limbic activation, release of stress hormones.

Panic leads to hyper-arousal and loss of any cortical control or influence.

Dissociation is the most primitive response ("freeze") and occurs around the brainstem level, joins stress response and surrender.

Stress Hormones cause us to focus on body, environment, time with a very self-centred orientation. This is survival mode. Attention and impulse problems can be the result of change in organization of neural networks. Initially these would most often support survival, but not when repeatedly activated post-trauma.

"Developmental trauma" - A few minutes of stressful experience early in life can change a rat's stress response system forever. Everyone's stress response system is unique, influenced by individual experiences.

Dissociative and hyper-arousal pathways can become overactive and sensitized, affecting one long after initial trauma. When this happens, it looks just like hyperactivity, ADD, Oppositional Defiant Disorder, coloured by a desperate need to be in control.

In humans, stress system can be triggered by thinking.

Stress response can be modulated by presence of familiar people, humour, and play. Oxytocin is an anti-stress chemical, if not mis-interpreted.

Chronic loss of control leads to paralyzing fear, a form of learned helplessness.

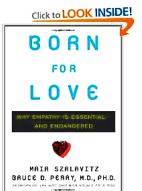


Human Reward System

(primarily parasympathetic activation)



- Neurotransmitters lead to positive feelings, which increase the likelihood of behaviour repeating itself.
- Dopamine helps us to feel happy, but also strong, motivated, confident, adventurous. Drugs and over eating may boost dopamine levels.
- Serotonin (5-HT) involved with mood, muscle contraction, memory and learning.
- Endogenous opioids, enkephalins and endorphins act to sooth, relax, reduce pain, make us feel satisfied and happy.
- Oxytocin increases bonding, interaction, language
- Can be activated by behaviours and environment, as well as by anticipation, memories, and association, as well as a feeling of being in control.
- Parasympathetic links with heart, face, brain, gut, genitals to ↑ love and social. "If you give psychostimulants to animals when they are young, their rewards systems change. They require much more stimulation to get the same level of pleasure. So on a very concrete level they need to eat more food to get the same sensation of satiation. They need to do more high-risk things to get that little buzz from doing something." Bruce Perry





Foods & Neurotransmitters



Research shows that some foods such as bananas and turkey have proteins that help to create the chemical serotonin.

Serotonin release is triggered by a carbohydrate load (sugar, etc.) and there are many who feel that eating Carbohydrates under stress is aimed at this serotonin release.

When serotonin is present, tension is eased. When dopamine or norepinephrine are released, we tend to think and act more quickly and are generally more alert. Eating carbohydrates alone seems to have a calming effect, while proteins increase alertness. Complex carbohydrates, which raise the level of tryptophan in the brain, have a calming effect. Serotonin is inhibited by candida and clostridium, which feed on sugars, artificial sweeteners, and simple carbs.

Protein promotes the production of dopamine and norepinephrine, which promote alertness. Protein meals containing essential fatty acids and/or carbohydrates are recommended for increased alertness. Avoid foods high in saturated fats; consumption of pork or fried foods, such as hamburgers and French fries, leads to sluggishness, slow thinking, and fatigue. Fats inhibit the synthesis of neurotransmitters by the brain in that they cause the blood cells to become sticky and to clump together, resulting in poor circulation, especially to the brain.

Consume more carbohydrates than protein if you are nervous and wish to become more relaxed or eat more protein than carbohydrates if you are tired and wish to become more alert.

Beware: The body will react more quickly to the presence of sugar than it does to the presence of complex carbohydrates. The increase in energy supplied by the simple carbohydrates is quickly accompanied by fatigue and depression. **Probiotics are the most important supplement.**

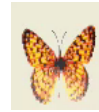


Activity & Neurotransmitters

Serotonin Management or Mindfulness?

Most people never heard of serotonin management, or even considered it at all except for medications. Serotonin management amounts to paying attention to the little things that make you feel good and systematically including them in your daily routine. We know, instinctively, that pampering ourselves is a door to a sense of well being, but we may not take time to schedule pleasant surroundings, favorite music or food, or even quality time with loved ones into our daily agenda.

Just getting out of bed and into a warm shower elevates serotonin levels, making it easier to get into a positive, constructive frame of mind. And generally speaking, depression if it is mild enough can sometimes be managed without prescribed medications. Aerobic exercise, watching your carbohydrate & alcohol consumption, getting up early and moving, even if you don't feel like it, forcing structure on your life, using meditation and imagery (if you can concentrate, which depends on how depressed you are), and seeking a support group or therapy, have all proved helpful.



Seemingly little things that taste good, smell good, or delight the senses can be very significant when systematically included in your daily routine. Violets for the soul may be one of your best investments, especially if you consider the fact that people who feel good are significantly less likely to be tardy, absent, ill, or involved in accidents of all kinds.

Much serotonin (5-HT) is produced in the gut, and this production starts with the beginning

Handling Stress

Implementing Change



Common reactions to stress are **ESCAPE** and **AVOIDANCE**. These interfere with task performance and need to be worked on. Baseline cortisol levels set in first 6 years of life.

Stress challenges us to adapt or cope, and these are better strategies than avoidance. Stress that makes us stronger is usually moderate, predictable, and patterned, unless it happens when the individual/system is overloaded. Stress (cortisol) damages the hippocampus, involved in new memory/learning. Neurological reactions to stress and anxiety can be neurotoxic if not modulated.

Perceptions of what is stressful can change, and are often controlled by autonomic function (sensory processing) and emotional and cognitive factors.

Rather than avoiding a stressor, we can seek to reduce the reaction we generate to the stressor. We do this with cognitive and sensory strategies, building buffers to stress.

Learning to expect and accept stress can help to take the power away from our stress reactions.

- What is stressful for a child can be very different from what you might expect, and is very different for different brain types, different environments, families
- Stress factors: anxiety, demands, energy levels, illness, toxins, sleep, diet, love, movement



Environment vs. Sensory Processing Style

The Environment can be the Stressor

Visual-

- Is the lighting is too bright or shining directly into the child's eyes.
- The flicker of fluorescent lighting or computer monitors may be bothersome.
- Look at what is in the child's usual line of view, is it visually overstimulating (i.e. too bright, too cluttered)?
- Keep visual tasks and work area clear, neat, and meaningful.
- Some children will miss important visual cues because of competing visual input.
- Does the child need to process some or all of his/her work in a separate calm area?
- Are there too many things or people in the visual field between the child and the teacher?
- Is there a quiet area that is darker than the general environment and visually calming to withdraw to for calming purposes?



Auditory-

- Is the noise level too high? The child may need to work in a quieter area to decrease stimulation. (Just how loud and disorganizing is your lunch room?)
- Would white noise help? (Headphones by themselves or with accompanying soft sounds, such as ocean or nature music, classical or new age music)
 - Is the child too near to fans, heaters, discussion groups?
- Why do the bells need to be that loud? Put a muffler on it. You may need to take extra precautions for fire alarms. The hypersensitive child with autism may need to be absent or leave immediately.
- Constant streams of language can be very stressful with a language processing delay/disability.



Environment vs. Sensory Processing Style

The Environment can be the Stressor

Auditory - (cont)

- *Rhythm is often tolerated better than loud speech.
- *Try adding a carpet to absorb noise, or place slit tennis balls under the chair legs.
- *Some children don't hear their name called when attending to distracting background noise, others make continuous sounds to try to block out the background noise.
- *Are excess noises muffled in the quiet area? Use room dividers, carpeting, blankets, and other soft, sound absorbing textures.



Tactile

- *Note reactions to hard and soft materials.
- *Observe differences due to temperature of items (metals are colder).
- *The child may avoid different textures. If the child does not tolerate play-dough, glue, fingerpaint, mud, and other goopy textures these may need to be introduced very gradually.
- *If the child will only hold items with his/her fingertips, tactile hand desensitization may need to precede activities. Handling things from a "feelie box", brushing the hands, or starting with a deep lotion hand massage are examples.
- *A hard chair may feel cold to the child, if so, use a pad or cushion.
- *Provide a variety of textured materials and objects in the quiet area.
- *Is the child's clothing well tolerated? Transitions, including seasonal changes in clothing, may need to be slow and gradual. Don't fuss over long sleeve vs. short sleeve. It may be necessary to allow the child to leave on coat/jacket until ready to have it off.
- *Have the child be first or last in line if lightly bumping or touching peers is irritating.
- *The sound or feel of water may be irritating or scary, especially when unexpected or not in control.

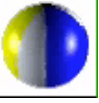


Environment vs. Sensory Processing Style



Vestibular-

- *Some children will crave movement and seek the feeling of heights and swings. Assess safety factors (balance and grip on swing). Generally, the child who craves these sensations can handle them.
- *Try incorporating movement into activities (getting materials, sharpen pencil, etc.) Or allow short movement breaks during tasks/chores.
- *Try sitting on a ball, air cushion, t-stool, allow alternate positions
- *Is the child fearful of heights, stairs, ladders on slides? If so, beware of stands or stairs with no back (you can see through to behind them), as they are more threatening. Gravitational Insecurity is real and is rooted in neurology, not behaviour.
- *Plan an alternative route if a child is not ready to use an escalator or an elevator.
- *Children who are fearful of heights or movement may react with fear on playgrounds. often, remaining on the periphery and watching others may help. The child may need to very gradually explore a playground area, in isolation, at a quiet time of the day.



Buffers to Stress Reactions

situational or personal characteristics which assist in increasing our ability to deal with stress and help us recover from stress responses.

sense of humour

sensory/motor and
sensory diet
strategies

internal control

social supports (oxytocin)

hardiness (ability to accept
challenge, with commitment,
confidence,
and self control.)

Adequate sleep

positive self talk

positive outlook

physical fitness

⇓Level of arousal

self esteem

optimism

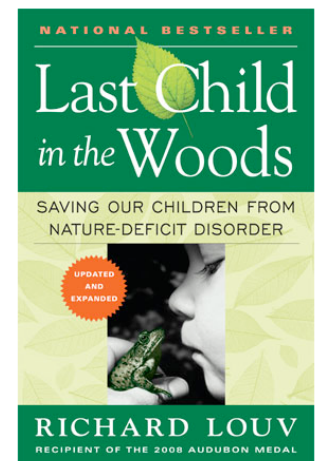
expectations



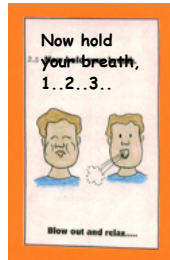
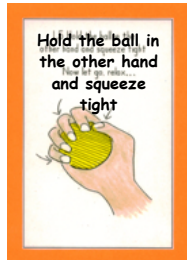
Nature - Healing and Grounding

- ≡ Invite native flora and fauna into your life. Maintain a birdbath. Replace part of your lawn with native plants. Build a bat house. For backyard suggestions, plus links to information about attracting wildlife to apartments and townhouses, see the National Audubon Society's [Invitation to a Healthy Yard](#).
- ≡ View nature as an antidote to stress. All the health benefits that come to a child come to the adult who takes that child into nature. Children and parents feel better after spending time in the natural world-even if it's in their own backyard.
- ≡ Spend time along the beach, sea wall, park, trail, pond, stream
- ≡ Help your child discover a hidden universe. Roll over an old log in the woods and look at what's living there. Watch for a while. Return to this universe once a month, lift the log and discover who's new.
- ≡ Revive old traditions. Collect bugs, watch them, release them. Make a leaf collection. Keep a terrarium or aquarium. Explore streams and ponds.
- ≡ Nature experiences can be Calming, Alerting, or Organizing, and can incorporate every sensory modality.

Eco-Psychology



Self Awareness & Progressive Relaxation



Must be practiced often, initially.

Spend time on the feeling of the relaxation in each area. Talk about this. Be insightful.

Use sensory-motor strategies that affect level of arousal (deep calming input, fidget items, movement, heavy work, etc.).

Mindfulness, breath control, Heart Math, Brain Gym, many areas may be worth exploring



Deep Breathing is the fastest way to clear adrenaline and activate the body's calming system (parasympathetic system).

I love MindUP! It is a way to focus your mind, calm down and reflect on a situation when you need to make a choice.
- Tyler G., Seventh Grade Student

™Dr Ross Greene

<http://www.livesinthebalance.org/>

Collaborative & Proactive Solutions (CPS)

❖ Precede CPS with sensory reduction, calming strategies, mindfulness

❖ The Empathy Step

- ❖ Gather information to hear other's concern and perspective
- ❖ Neutral observation of what's going on ("So your concern is...")
- ❖ Add/explore sensory perspective
- ❖ Don't jump to conclusions - WANT to understand

❖ Define The Problem Step

- ❖ Introduce YOUR concern or perspective ("My concern is..." or "The thing is...")
- ❖ Discuss, don't force (both sides tend to rush past this step)

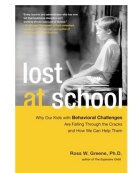
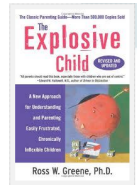
❖ Invitation Step

- ❖ Work TOGETHER - brainstorm with ("Do you have any ideas?")
- ❖ Can't do this step if you need to control the outcome
- ❖ Options need to be realistic and mutually satisfactory

❖ Hear, clarify, understand, validate, address

❖ Prove that you are as invested in making sure his/her concern is addressed as you are in making sure that your concern is addressed.

❖ When a child/person can do better, he/she WILL !!



42

Mental Rehearsal - The Social Story Enhanced

Neurons can be activated by mental rehearsal, just as by activity
Imagine as many details as possible, with desired performance and outcomes
Experience Thoughts and Feelings so the body perceives it as reality
Rehearse in advance to build skill and confidence.
Rehearse (after difficult situations) what you would have done differently, to weaken negative pathways

Positive Self Talk

I am calm and relaxed I can do this! I can! I can!
I remember what it feels like to be calm I can handle it!
Build positive talk into your interactions
Do your own positive self talk so the child can hear
Talk about the feeling of accomplishment and how it feels to be done.
Positive self talk must be honest

Visual Imagery "The Safe Place"

Introduce after relaxation and after enjoyable activities
Find that special place (It does not have to be calming for YOU)
Describe and explore in a calm, positive voice. Give it a simple name
Make it multi-sensory (add smell, sound, touch, movement, visual)
Reinforce and Practice. This is key in activating parasympathetic system and coming down from RED ZONE

The Sensory Treasure Chest

- ❖ nature is best
- ❖ use many senses
- ❖ define & describe
- ❖ play guess what
- ❖ feel on different parts
- ❖ play without vision
- ❖ give hints
- ❖ use sensation words

- ❖ Builds sensory skills
- ❖ Builds relationship skills
- ❖ Builds language skills
- ❖ Builds Resilience



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Supporting Stress Management

Stage One: Identifying Stressors

1. Get information from as many sources and perspectives as possible. Detective work pays off.
2. Consider all sensory and environmental factors.
3. Respect the child's communications and behaviours.
4. Need input from parents, teacher, child, neighbour, SLP ...

Stage Two: Building Buffers

5. Use sensory based therapy and sensory preference checklists. Reinforce self regulation. Reinforce or teach self awareness, in terms of what it feels like to be in different zones and also what it feels like to engage in a sensory motor experience.
6. Always teach progressive relaxation. Include breathing, yoga, meditation as indicated. Call attention to the feelings (felt sense) of relaxation after each muscle release or deep exhalation.
7. Use schedules to slow down thinking and make time more predictable.
8. Practice using positive self talk throughout the day.
9. When possible, practice visual imagery "safe place" during play sessions, closing eyes and talking about a special place and how it feels to be there. Use as many senses as possible and talk about the felt sense, i.e safe, relaxed, etc.

Stage Three: Preparing to Face Major Stressors

10. Use social stories and picture rehearsal. Develop specific stories for major stressors. Review these stories during very safe and attentive times. Have the child retell the story in the same manner. Then use the same familiar social story just before facing the actual situation. Be sure social stories incorporate positive self talk, relaxation, and imagery.
11. Clearly schedule the target event or situation. When possible, practice on a smaller scale and build up to full participation in the actual target.
12. Model, praise, reinforce a positive, self confident approach.

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Brain Science

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www.marclandry.ca



Visit my website for the following:

"Workshop Materials"

Recommended Reading and Links

Relaxation Book & Social Stories

"What Works" "Red Zone" and "Safe Place" forms

Teaching Self Regulation Handout

The Scarfe Papers ("Play")

Advocacy Support

Resources

Information about my private practice ("About Me")

Self Regulation gauges

Fine Motor Planner

My Newsletters