

# Community Care Behavioral Health's Social & Racial Justice Training Series

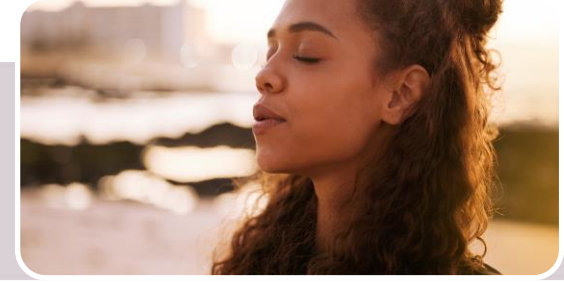
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Community Care Behavioral Health

## Generational Trauma:

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# How Suffering Shapes Our Worldview and the Inheritance of Dysfunctional Attachment

# Breathe Lower and Slower



Sit comfortably with your spine straight and shoulders relaxed

Pay attention to the breath entering your body

See if you can draw your breath lower into your body

See if you can slow your breath down

If you can, make your exhalation slower and longer than your inhalation

A good way to do this is to count on your in-breath and increase the count for your out-breath

Try breathing in through your nose and out through your mouth through pursed lips

This is the shape your lips would be in to blow gently on a liquid, whistle, or blow out through a straw

# Using Senses To Ground



1 thing you can see



1 thing you can touch



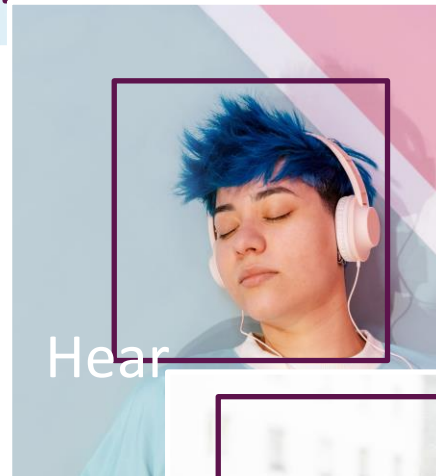
1 thing you can hear



1 thing you can smell



1 thing you can taste



Hear



Touch



Smell



Taste

# Today's Roadmap-Humanize Rather Than Pathologize



What is Generational Trauma?

Early Research

Shift in focus-Nature/Nuture

Current Research

- Epigenetics
- Polyvagal Theory
- Neurobiology of Empathy

Signs of Generational Trauma

Interventions\*

\* The provider of care is responsible for clinical decisions

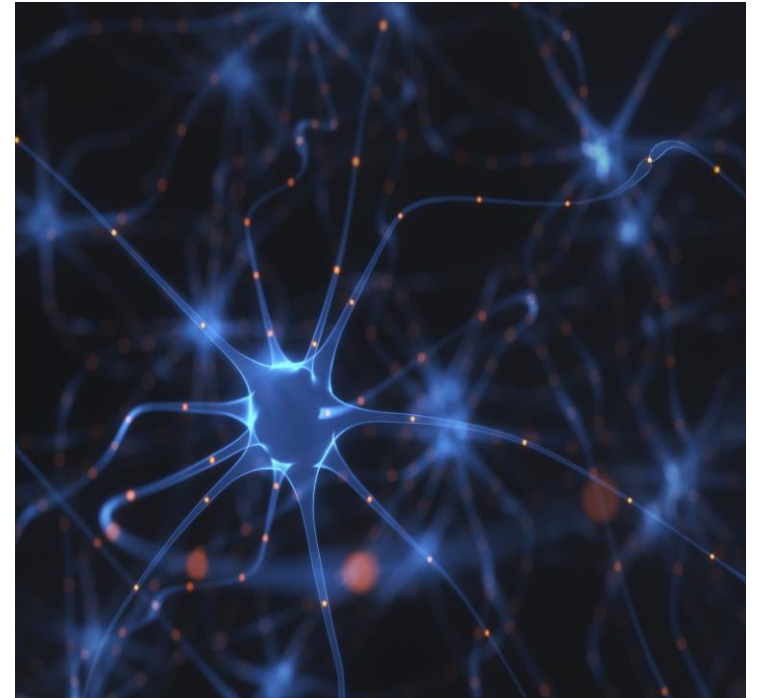
# Biology and Neurobiology of Trauma and Stress Snapshot

- Basic Biology and Applied Neuroscience, too complex to talk about all the areas
  - Too many cells
  - Too many brain regions
  - Too many systems
  - Too many levels of study
  - Too many Models/Animal Populations
  - Too many mechanisms of measurement
  - Too many sites of impact on functioning
    - Neurodevelopmental (ID, Epilepsy)
    - Neurodegenerative (Parkinson's)
    - Physical manifestations of trauma (TBI, stroke, etc.)
    - Peripheral (MS)



# Biology and Neurobiology of Trauma and Stress Snapshot

- Still too much to talk about effectively
  - Brain Structures
    - Amygdala, hippocampus, brain stem, prefrontal cortex, Limbic system
  - CNS, PNS and the ANS
  - Neurotransmitters, glial cells, and hormones
    - The role of cholesterol, serotonin, epinephrine, cortisol, oxytocin, etc.
  - The hypothalamic–pituitary–adrenal (HPA) axis
  - Default Mode Network
  - Polyvagal Theory, Neurovisceral Integration model, Biological Behavioral model, Resonance Frequency model, Psychophysiological Coherence model.
  - Fascia and interoception
  - Microbiome
  - Telomeres
  - Chronic Stress and inflammation



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*Pain wanders through families until somebody is willing to feel it.* — Katja Duregger, German Journalist, Director, and Documentary Filmmaker whose grandmother was sexually assaulted during the Italian Occupation of Tyrol, Austria



# Historical vs. Generational Trauma

- **Intergenerational/Multigenerational/Transgenerational** are sometimes **used interchangeably** in the **psychological** and sociological literature but have **specific physiologic definitions**. From a biological standpoint, **transgenerational** usually refers to **inherited traits without any direct exposure** to the soma or germline. **Intergenerational** refers to inherited traits from a **direct exposure to the germline**. **Multi-generational** refers to anything that relates to or involves **more than one generation**.
- **Generational trauma:**
  - Trauma passed down **from those who directly experienced the trauma** to subsequent generations.
- **Historical trauma**
  - Traumatic experiences or **events shared by a group of people within a society, community, ethnic group**, or nationality that shows **widespread effects, collective suffering, and typically arise from malicious intent from an aggressor**.

# Historical Trauma Can Be Further Complicated By

- **Historical unresolved grief**
  - When **historical trauma has not been adequately expressed, acknowledged, or otherwise resolved** then there can be unresolved grief that complicates the effects of the trauma. This is typically the **mechanism by which historical trauma becomes generational trauma**.
- **Disenfranchised grief**
  - **When the grief around the historical trauma cannot be publicly voiced or is not openly acknowledged by the public** then disenfranchised grief can further complicate resolving the historical trauma. This lack of recognition of the trauma often keeps the traumatized group isolated from the rest of the population and keeps them from seeking out help to resolve any generational trauma.
- **Internalized oppression**
  - This occurs **when a historically traumatized group internalizes the views of the oppressor** and perpetuates a cycle of self hatred that manifests itself in individual negative behaviors, as well as outward aggression and anger towards the members of one's own group.

# What Does “Transgenerational Trauma” Mean?

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Generally, refers to the idea of the **subconscious transmission of traumatic experiences** to subsequent generations and to society.

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It can be found that **subsequent generations show symptoms of trauma** without having directly experienced the trauma themselves.

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This can **affect individuals or a group of people**, with the term “**collective trauma**” denoting times when a **trauma affects a larger group of individuals or effects members outside of a specific family** that may have experienced the actual trauma.

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**Because the roots of transgenerational trauma lie outside of the typical transmission of trauma, it is often ignored or dismissed.**

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It can be typified by **feelings of guilt and shame**, and **treated as taboo to discuss**, both within the family and within the community that might be affected



# The Complexity of Transgenerational Trauma

- **Understanding transgenerational trauma becomes essential to working with children and families to ensure that we have realistic expectations about the barriers to treatment and engagement**, which might not be readily apparent on the surface. At the same time separating out confounding factors is difficult. For example:
  - **How do we separate historical abuse (Holocaust, Slavery, Indian Schools, etc.) from its effects?**
    - How do we separate out **the effects of historical abuse** that show up in generational **patterns of poverty, abuse, substance use, and incarceration** from the **shared stress experiences** (race-based traumatic stress) of marginalized populations such as Black, Indigenous, or other People of Color **that perpetuate generational patterns** of poverty, abuse and incarceration from the **missed opportunities** and continued marginalization and oppression that lead to generational patterns of poverty, abuse and incarceration?

# The Complexity of Generational Trauma

- How do you separate all of that out from **poor parenting, dysfunctional attachment, and heritability of mental health issues**? How do we separate out passed down generational traditions, mores, and values such as “spare the rod, spoil the child”
- How do we separate out the effect of the **abuse you did not directly experience from the abuse that may have occurred in your lifetime** or the negative cycles of abuse?
- How do we even approach separating these things out when we have youth in **juvenile justice, foster care, adoptive situations**, and shelters, where our ability to assess generational trauma and its effects are gone because the **family of origin information is unreliable or absent**?

# Generational Trauma: Early Research - Holocaust

- In 1966 Canadian psychiatrist Vivian M. Rakoff, MD, started to notice an increase in mental health issues and psychiatric admissions for children of Holocaust survivors. (OHS-Offspring of Holocaust Survivors)
- Further studies found that in comparison to control group families (also Jewish), families where **at least one parent had been in the concentration camps** or where, up until the time of forced separation, one parent had been in **close personal contact with members of their immediate family who eventually perished in the camps**, manifested greater difficulties in self-control and in being able to control their children, as well as showing overvaluation of the children and a greater degree of sibling rivalry (where there was more than one child). The most significant effects seem to be related to the inability of the parents to be able to move past the mourning process and the **depleted emotional state of the parents**.
- A 1988 study showed that grandchildren of OHS were **overrepresented in psychiatric care referrals** by around 300%

Rakoff, V., Sigal, J. J., & Epstein, N. B. (1966). Children and families of concentration camp survivors. *Canadas Mental Health*, 14(4), 24-26.

Sigal JJ, Rakoff V. Concentration Camp Survival: A Pilot Study of Effects on the Second Generation. *Canadian Psychiatric Association Journal*. 1971;16(5):393-397. doi:10.1177/070674377101600503

Sigal JJ, Dinicola VF, Buonvino M. Grandchildren of Survivors: Can Negative Effects of Prolonged Exposure to Excessive Stress be Observed Two Generations Later? *The Canadian Journal of Psychiatry*. 1988;33(3):207-212. doi:10.1177/070674378803300309

# Indian Residential School System

- Researchers in Canada also began to focus on First Nation peoples to see if they could find the same broad effects of generational trauma among children and grandchildren of First Nation and Native Americans who had been victims of the Indian Residential School (IRS) system (1880 to mid 1990) in Canada.
- Children as **young as 3 were legally and forcibly taken from their families** to live at residential schools, were taught to be ashamed of their language and culture. Education was largely sub-par and there were multiple mortalities and disappearances.
- IRS also **weakened social bonds, community, traditions and social structures as well which affected not only personally but generationally in the ability of the group to self-advocate.**

Bombay A, Matheson K, Anisman H. The intergenerational effects of Indian Residential Schools: Implications for the concept of historical trauma. *Transcultural Psychiatry*. 2014;51(3):320-338. doi:10.1177/1363461513503380

# Indian Reservation Schools

- **Worse health outcomes** than First Nation Peoples whose families didn't attend the residential schools
- More likely to contract **Hepatitis C**
- **More likely to have Learning Disabilities, difficulties at school (49% vs 40%) and repeated grades (47% vs 35%)**
- Children aged 6-14, living off reservation, had **lower levels of school success** if one parent had gone to IRS
- **Higher rates of reported depression**, 31% of youth with one parent vs 20% with neither
- **Suicidality** across the ages of offspring with parent who attended IRS vs not
  - 37% of adults with at least one parent who attended vs 25% when neither parent attended
  - 20% of adults with one grandparent vs 13% without
  - 26% of youth with one parent, vs 18% without



# Black Americans vs White Americans

- Blacks and Whites have similar life expectancies , but the **quality of life is meaningfully poorer** for Blacks in America with **higher risks of diabetes , prostate cancer, hypertension, and premature death from heart disease** among Black Americans
- At a psychological level, Black Americans show significantly poorer outcomes in a large variety of life domains, such as **job attainment and nondiscrimination, financial security, life and relationship satisfaction, and acute life events**. They suffer higher general **depressive symptomology, poorer self rated health (both physical and mental)**, more **functional physical limitations, and greater chronic illness**. They have **more Major Depressive Episodes**, and their **chronic depression has more acute symptoms** than Whites. They **more frequently meet the criterion for PTSD** and their **PTSD symptoms persist for longer** periods of time.

Halloran, M. J. (2019). African American Health and Posttraumatic Slave Syndrome: A Terror Management Theory Account. *Journal of Black Studies*, 50(1), 45–65. <https://doi.org/10.1177/0021934718803737>

Grossi, É. (2020). New avenues in epigenetic research about race: Online activism around reparations for slavery in the United States. *Social Science Information*, 59(1), 93–116. <https://doi.org/10.1177/0539018419899336>

# Black Americans vs White Americans

- On the indices of social health, Black Americans have worse outcomes, including higher rates of **homicide, incarceration, and intimate partner violence**
- Researchers acknowledge that the explanation for these comparatively poor social, physical, and psychological health indicators is **complex and multifaceted**, however it is largely felt that **poverty, prejudice and intergenerational historical trauma are large aspects** in these continuing disparities between White and Black Americans
- Some researchers believe that the loss of culture and the impact of **Terror Management Theory** explain the effects of Historical and Generational Trauma on the Black community.

Halloran, M. J. (2019). African American Health and Posttraumatic Slave Syndrome: A Terror Management Theory Account. *Journal of Black Studies*, 50(1), 45–65. <https://doi.org/10.1177/0021934718803737>

Grossi, É. (2020). New avenues in epigenetic research about race: Online activism around reparations for slavery in the United States. *Social Science Information*, 59(1), 93–116. <https://doi.org/10.1177/0539018419899336>

# Post Traumatic Slave Syndrome and Terror Management Theory

- The theory of terror (TMT) management discusses the human condition of **awareness of the inevitability of death** and the fact that this knowledge has a deep impact on our thought, emotion, drive, and behaviors. The theory is that humans **defend against this inescapability of death by faith in the validity of their cultural worldviews and their self esteem in living up to the values encapsulated in their culture**
- The theory is that the cultural trauma that occurs with historical trauma and **generational trauma impacts the functioning of TMT as a buffer against basic anxiety and uncertainty** . It is posited that the impact of slavery was a significant trauma to African Americans and their successive generations providing an explanation for their current poor health, maladaptive behaviors, and anxiety/depression related conditions.

## Dutch “Hunger Winter” and Civil War POW’s

- Famine gripped the Netherlands in the closing months of World War Two. The **children of women who became pregnant during these food shortages died earlier than peers born just shortly before the famine, had higher rates of obesity, diabetes, and schizophrenia. These persisted into the next generation.** Other studies of around starvation showed that children of parents who had starved early in life, even prenatally, had greater incidence of heart disease.
- **Sons of civil war soldiers** who spent time as **prisoners of war** were likely to **die earlier** than sons of fellow veterans when socioeconomic status and maternal health were controlled for.

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**“Whisper a dangerous secret to someone you care about.  
Now they have the power to destroy you, but they won’t.  
This is what love is.” —Cecil Baldwin, *Welcome to Night Vale***

# Criticism on "Physiological" Transmission of Trauma

- A 2017 **meta-analysis of 20 studies** of children of cultural and war trauma survivors found eight studies showing negative psychiatric, psychosocial and/or behavioral effects on survivors' offspring, three showing mixed results and two showing no differences between offspring and controls. **Overall, meta-analytic studies on second and third generations show mixed results or results on in very select sample groups.**
- A study of children of mothers affected by Rwandan Genocide found that outcomes were **impacted by parental response** (silence vs discussion) and the children's interpretation and interactions.
- Many studies concluded that parental traumatic experiences can reach the second or third generation, but **parental reaction and processing is the key and that there is not a genetic or inherited component.**

Sangalang, C.C., Vang, C. Intergenerational Trauma in Refugee Families: A Systematic Review. *J Immigrant Minority Health* **19**, 745–754 (2017).  
<https://doi.org/10.1007/s10903-016-0499-7>

Berckmoes LH, Eichelsheim V, Rutayisire T, Richters A, Hola B. How Legacies of Genocide Are Transmitted in the Family Environment: A Qualitative Study of Two Generations in Rwanda. *Societies*. 2017; 7(3):24. <https://doi.org/10.3390/soc7030024>

Braga LL, Mello MF, Fiks JP. Transgenerational transmission of trauma and resilience: a qualitative study with Brazilian offspring of Holocaust survivors. *BMC Psychiatry*. 2012 Sep 3;12:134. doi: 10.1186/1471-244X-12-134. PMID: 22943578; PMCID: PMC3500267.

# Adaptive Styles

- In the early 1980s, Dr. Yael Danieli began documenting **adaptive styles** that she and others observed among adult children of Holocaust survivors. These were:
  - **“Victim”** -As an OHS they were described as **“stuck in the loss.”** Often overprotective, emotionally volatile and needing to control others
  - **“Numb”** –These adult children were described as **emotionally isolated and detached**, intolerant of weaknesses and invested in maintaining a **“conspiracy of silence”** within the family
  - **“Fighter”** These OHS **valued mastery and justice**, and were described as significantly invested in maintaining the Jewish group identity
- She called these **“reparative adaptational impacts”** indicating that the adult children were behaving in these ways, largely unconsciously, to **help their parents, grandparents, and themselves repair their worldview.**

# Phenomena Associated with Parental Trauma Transmission

- **Inability of survivors to get over** their own psychopathological or somatic symptoms from the trauma
- **Poor communication** from survivors to their offspring around the trauma that occurred
  - **Indirect communication** –Parents never directly recount their traumatic experiences, offspring hear about parents' trauma indirectly, often in **overhearing conversations** between parents and a third party
  - **Fragmented discourse** –Aggressive and fragmented discourse around the trauma that **does not put the trauma into context but makes it feel like a current and present danger**
  - **Silence, secrets, and the unsaid**—Parents don't want to talk about the trauma or be reminded of the trauma in any way. Shame around the trauma and **shame around remembering the trauma is pervasive**



# Phenomena Associated with Parental Trauma Transmission

- **Repercussions of trauma felt by offspring**
  - Fear of being identified by external indicators (morphology or behavior)
  - **Lack of rootedness** and a missing sense of belonging to a group or culture
  - Experiences of guilt, victimization, and submission
  - Actively reexperiencing of their parents' trauma as their own (i.e. dreams of running from Nazis, seeing people in enemy soldier uniforms in their dreams, dreams of being threatened by guns)
  - **Terrifying worldview** –the **need to anticipate disaster**, always being **ready to react to imminent catastrophes and potential threats**. The world has a **lack of security, stability, and predictability**. Can appear as the need to be **super successful and over prepared**, or as an **apathetic** lack of trying because disaster can't be avoided no matter what one does
- **Mitigating factors** were found to be **clear communication between parents and children**, positive **affirming relationships** between parents and children, the **use of art** as a way to process the trauma, and **processing the trauma as a family through stories** in a way that gave the trauma context and allowed for mastery

# The Rise of NCD, Idiopathic Disease, and MUCMI

- **Medically Unexplained Chronic Multi-symptom Illness (MUCMI)**, a diagnosed condition without a conclusive pathophysiology or etiology, **Idiopathic disease**, a known disease of unknown origin, and **non communicable diseases (NCD)** have all been on the rise since the 1970s, however until recently they largely affected high income countries and the elderly. This is because in developing countries, the poor and the young were more affected by communicable disease and resulted in significant global deaths.
- **NCDs were often the purview of developed countries and the affluent.** Often therapeutic nihilism was prevalent in treatment of NCDs on the basis that NCD treatment **relied on lifestyle changes and required prevention** efforts as opposed to outright medical treatment to effectively manage them.
- First UN high level meetings on NCDs took place in **2011 and 2014**. The only prior UN high level meeting was held in 2001 during the HIV/AIDS epidemic. These meetings focused on the **four main NCDs; cardiovascular diseases, cancer , diabetes, and chronic respiratory diseases** and **four main modifiable risks; tobacco and alcohol use, unhealthy diet, and physical inactivity**. In **2018 mental health and air pollution** were added to the main NCDs and the main modifiable risks, respectively.

# Kids with High ACEs Have Parents with High ACEs

- There was a **strong positive association between parental ACE and child adversity**. This association was strongest among parents with an ACE score of 4 or more, indicating a dose-response relationship.
- **Higher maternal ACEs scores** are also associated with indirect markers of future child developmental outcome including birth complications such as **low birth weight, perinatal maternal depression, and delayed infant growth**.

Smith, M. V., Gotman, N., & Yonkers, K. A. (2016). Early childhood adversity and pregnancy outcomes. *Maternal and child health journal, 20*, 790-798.

Cheng, E. R., Park, H., Wisk, L. E., Mandell, K. C., Wakeel, F., Litzelman, K., ... & Witt, W. P. (2016). Examining the link between women's exposure to stressful life events prior to conception and infant and toddler health: the role of birth weight. *J Epidemiol Community Health, 70*(3), 245-252.

Cooke, J. E., Racine, N., Plamondon, A., Tough, S., & Madigan, S. (2019). Maternal adverse childhood experiences, attachment style, and mental health: pathways of transmission to child behavior problems. *Child abuse & neglect, 93*, 27-37.

Smith, M. V., Gotman, N., & Yonkers, K. A. (2016). Early childhood adversity and pregnancy outcomes. *Maternal and child health journal, 20*, 790-798.

Letourneau, N., Dewey, D., Kaplan, B. J., Ntanda, H., Novick, J., Thomas, J. C., ... & APRON Study Team. (2019). Intergenerational transmission of adverse childhood experiences via maternal depression and anxiety and moderation by child sex. *Journal of developmental origins of health and disease, 10*(1), 88-99.

# Treating Children by Treating Parents

- Researchers now advocate approaching pediatrics as a generational practice with **routine assessments of parental ACE scores with the understanding that parents who have experienced their own trauma may have a challenging time providing safe, stable, and nurturing environments to their children.** By doing parental ACE assessments, doctors could better identify needed referrals for the parents of children they see in their practice, increasing the overall wellness of the household and thereby impacting the health of their patients. Researchers have pointed out that focusing exclusively on the needs of the child is a missed opportunity and may not actually address the needs as effectively.
- Recent studies linking ACES and Long Haul COVID have further exposed the disparities in healthcare/mental health and the increased risk of living with trauma or a traumatized parent, as well as the vulnerability to stress for children exposed to ACES themselves or through a parent.

Randell KA, O'Malley D, Dowd MD. Association of Parental Adverse Childhood Experiences and Current Child Adversity. *JAMA Pediatr.* 2015;169(8):786–787.

Schickedanz A, Halfon N, Sastry N, Chung PJ. Parents' Adverse Childhood Experiences and Their Children's Behavioral Health Problems. *Pediatrics.* 2018 Aug;142(2)

Miccoli A, Song J, Romanowicz M, Howie F, Simar S, Lynch BA. Impact of Parental Adverse Childhood Experiences on Offspring Development in Early Head Start: Parental Adversity and Offspring Development. *Journal of Primary Care & Community Health.* 2022;13.

Alradhi MA, Moore J, Patte KA, O'Leary DD, Wade TJ. Adverse Childhood Experiences and COVID-19 Stress on Changes in Mental Health among Young Adults. *Int J Environ Res Public Health.* 2022 Oct 8

Kolacz J, Dale L P., Nix E J., Roath O K., Lewis G F., Porges S W., Adversity History Predicts Self-Reported Autonomic Reactivity and Mental Health in US Residents During the COVID-19 Pandemic, *Frontiers in Psychiatry*, 2020

Choudhury, S, Yeh, P G, Markham, C M, Coping with Adverse Childhood Experiences During the COVID-19 pandemic: Perceptions of Mental Health Service Providers, *Front. Psychol.*, 08 September 2022, Sec. Psychology for Clinical Settings, Volume 13 – 2022

Physiological model

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**Epigenetics**

**Polyvagal Theory**

**Neurobiology of Empathy**

Physiological Model

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# Epigenetics

# Epigenetics-Historically

- Coined first by Dr. Conrad Waddington, a developmental biologist and geneticist, in 1942, however the idea was first hypothesized by Dr. Weston A. Price (1870-1948), a Cleveland dentist. Dr. Price became obsessed with understanding the causes of dental decay and physical degeneration that he witnessed in his dental practice as he traveled the world. He is largely known for his theories on the relationship between nutrition, dental health, and physical health.
- In 1903, Dr. Francis Marion Pottenger, Jr., a physician in Monrovia, California, did numerous experiments hoping to prove the theories of Dr. Price and show the effect of nutrition on health at a genetic level that could then be passed on to future generations. Pottenger's experiments on cats were largely discredited by the scientific community. However, in the minds of the early epigenetists, the **experiments showed the power of environmental factors, largely diet, on health and the health of future generations. It led them to feel that by controlling our environment, we control our health. They also focused mainly on preventive medicine, noting that degeneration of health occurred rather swiftly and that regeneration, while possible, took time.**
- Much of the reason that the epigeneticist were discredited was due to their absolute belief in the restorative powers of cod liver oil.

# Epigenetics-Current Mechanisms

- Today epigenetics is more succinctly defined as **temporary changes in how genes are expressed (turned on or off) due to our interface with our environment, and how those gene expressions affect our health and the health of future generations.** These interactions and changes occur **without any permanent changes to the DNA** sequence and are largely because of changes in MicroRNAs (miRNAs), a class of non-coding RNAs that play important roles in regulating gene expression, particularly small-scarn RNA (sncRNAs) that piggyback on messenger RNA and either interfere or amplify their functions.
- Another frequent mechanism for tracking epigenetics is DNA methylation which also affects gene expression without changes to the DNA, and changes in chemical cytokines (largely secreted by the immune system). However how the DNA methylation changes might be inherited is largely unknown at this point since in mammals, methylation is mostly erased at conception.



# Current Mechanisms of Epigenetics

- Epigenetic changes are typically measured in the **blood serum**, but can also be found in **germlines, saliva, uterine fluid, and breast milk**
- In the epigenetics of Generational Trauma, the effects are largely seen in the processing of **cortisol, the use of cholesterol in the body, and along inflammation pathways** of the body, but the study is still very nascent.
- Phenotypical changes can also occur as well as changes in mitochondrial functioning
- Researchers have found evidence that **trauma can affect sncRNA in sperm and that these effects can be transitioned to offspring. As well as, if the sncRNA is injected into unrelated early-stage embryos, the same effects will be seen as are seen in the male parents and their offspring.** The same effects have been found with some effects and blood transfusions (mouse models).
- It should be noted that most epigenetic studies are done on animal models.

# Epigenetics of Trauma in Mouse Models

- Mothers were separated from their pups at **unpredictable intervals** and while separated mothers were subjected to being **dropped in cold water or confined in tubes**, both of which are very stressful situations for mice. **When the mothers returned, they were often frantic and distracted, and ignored their pups' needs.**
- **The pups became more anxious, depressed, and had changes in glucose and cholesterol akin to an unhealthy diet despite being fed a normal diet. They showed signs of being unable to adapt to and process glucose effectively.**
- **As adults** they often displayed **altered behavior** that were impactful on their survival skills, and **this altered behavior was passed down to their offspring.**
- To rule out “**bad parenting**” the researchers **studied only the male line**, breeding traumatized male offspring with untraumatized females, **removing the males shortly after breeding and raising the offspring in mixed groups to ensure that the pups were not unduly influenced by the behavior of biological siblings**

Boscardin c, Manuella F, Mansuy I, Paternal Transmission of Behavioural and Metabolic Traits Induced by Postnatal Stress to the 5th generation in Mice, Environmental Epigenetics. 2022 8(1), 1-8, DOI:10.1093/eep/dvac024

# Epigenetics of Trauma in Mouse Models

- The researchers often bred out to **six generations** beyond the traumatized mice and **still saw the effects of trauma** on untraumatized offspring.
- Offspring of stressed fathers displayed **more risk-taking behavior** like exploring exposed areas of a platform suspended off the ground.
- When dropped in water they **gave up and stopped swimming sooner** than control mice which is a marker for depression in mice.
- They were **worse at navigating their environment, had fewer and worse social interactions, and fit poorly into the hierarchical systems of the mouse society**
- **Blood transfusions** between traumatized mice and untraumatized mice **were able to recapitulate the trauma behavior** and effects onto the untraumatized mice

Boscardin c, Manuella F, Mansuy I, Paternal Transmission of Behavioural and Metabolic Traits Induced by Postnatal Stress to the 5th generation in Mice, Environmental Epigenetics. 2022 8(1), 1-8, DOI:10.1093/eep/dvac024

# Epigenetics of Trauma in Human Models

- **Holocaust Survivors with PTSD have lower rates of methylation in a particular stress-related glucocorticoid receptor**, than children of survivors who did not have PTSD. As well Holocaust survivors and their children showed changes in the same location of the same gene—a stress-related gene linked to PTSD and depression—while controls did not.
- Children living in the SOS children's villages orphanages in Pakistan, most of whom had lost their fathers to trauma and then were forcibly given up by their mothers due to cultural expectations not only showed symptoms similar to PTSD but also **showed changes in metabolism and miRNA that reflected the changes seen in the metabolism via a high fat diet**

Lehrner, A., Bierer, L. M., Passarelli, V., [Pratchett, L. C.](#), Flory, J. D., Bader, H. N., Harris, I. R., Bedi, A., Daskalakis, N. P., Makotkine, I. & [Yehuda, R.](#), Maternal PTSD associates with greater glucocorticoid sensitivity in offspring of Holocaust survivors 2014, In: [Psychoneuroendocrinology](#). 40, 1, p. 213-220 8 p.

Bierer, L. M., Bader, H. N., Daskalakis, N. P., Lehrner, A., Provençal, N., Wiechmann, T., Klengel, T., Makotkine, I., Binder, E. B. & [Yehuda, R.](#), Intergenerational effects of maternal Holocaust exposure on FKBP5 methylation 1 Aug 2020, In: [American Journal of Psychiatry](#). 177, 8, p. 744-753 10 p.

# A Neuropsychological Predictive Model Approach

- In large level conflict, **children are most vulnerable**. However, childhood trauma doesn't stay in childhood, but gets transmitted through generations. Because of this **early intervention always better**
- Most dangerous times/best windows of opportunity for mitigation; **prenatal, early post-natal, ages 9-11, and 15-17, with sexual abuse being most traumatic and impactful epigenetically**
- Epigenetically (mouse models) the effects appear to **mitigated by diet** (the addition of cod liver oil has shown effectiveness), **enriched environments and play, nurturing relationships and maternal bonding, community support, and foster parents/combined parenting groups** (mixed results depending on the level and stage of trauma). In **human models, researchers are looking at VR to work on attachment, empathy, and enrichment for vulnerable war-torn populations.**
- In mouse models where mothers were **forcibly separated from their pups, but not otherwise traumatized**, they returned and exhibited **increased grooming and nurturing behaviors towards their pups** which mitigated stress effects in the pups and in the mothers

Champagne FA. Epigenetic mechanisms and the transgenerational effects of maternal care. *Front Neuroendocrinol.* 2008 Jun;29(3):386-97. doi: 10.1016/j.yfrne.2008.03.003. Epub 2008 Mar 28. PMID: 18462782; PMCID: PMC2682215.

University of Zurich. (2016, June 23). Not only trauma but also the reversal of trauma is inherited. *ScienceDaily*. [www.sciencedaily.com/releases/2016/06/160623120307.htm](http://www.sciencedaily.com/releases/2016/06/160623120307.htm)

Physiological Model

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# Polyvagal Theory

# Polyvagal Theory

- Polyvagal theory is a working model of the autonomic nervous system, explaining the interaction between the parasympathetic and the sympathetic with particular attention paid to the vagus nerve.
- There are a number of pieces of polyvagal theory that have been criticized, including some of the more fringe elements of the theory, and there are some new pieces of scientific understanding that require polyvagal theory to be updated to reflect these. These are things such as it has been determined that a myelinated ventral vagal branch is not uniquely mammalian, and that the hierarchy of the mammalian nervous system cannot be based on a phylogenic evolutionary premise.
- **Polyvagal theory provides a model for describing the autonomic nervous system and how it reacts to threats and safety.** It provides an understanding of the core features of the mammalian nervous system as it is needed to co-regulate and trust others. It provides insights into the consequences of the autonomic state for mental and physical health, and its main core features that have been most helpful for clinical understanding; **hierarchy, neuroception, and co-regulation are not overly impacted by these criticisms.** The newer **Neurovisceral Integration Model** also explains these in similar ways and with similar functions but largely avoids the phylogenic concerns. Both models help to understand the complexity of the ANS and will likely be integrated in the future.

# The CNS and The PNS

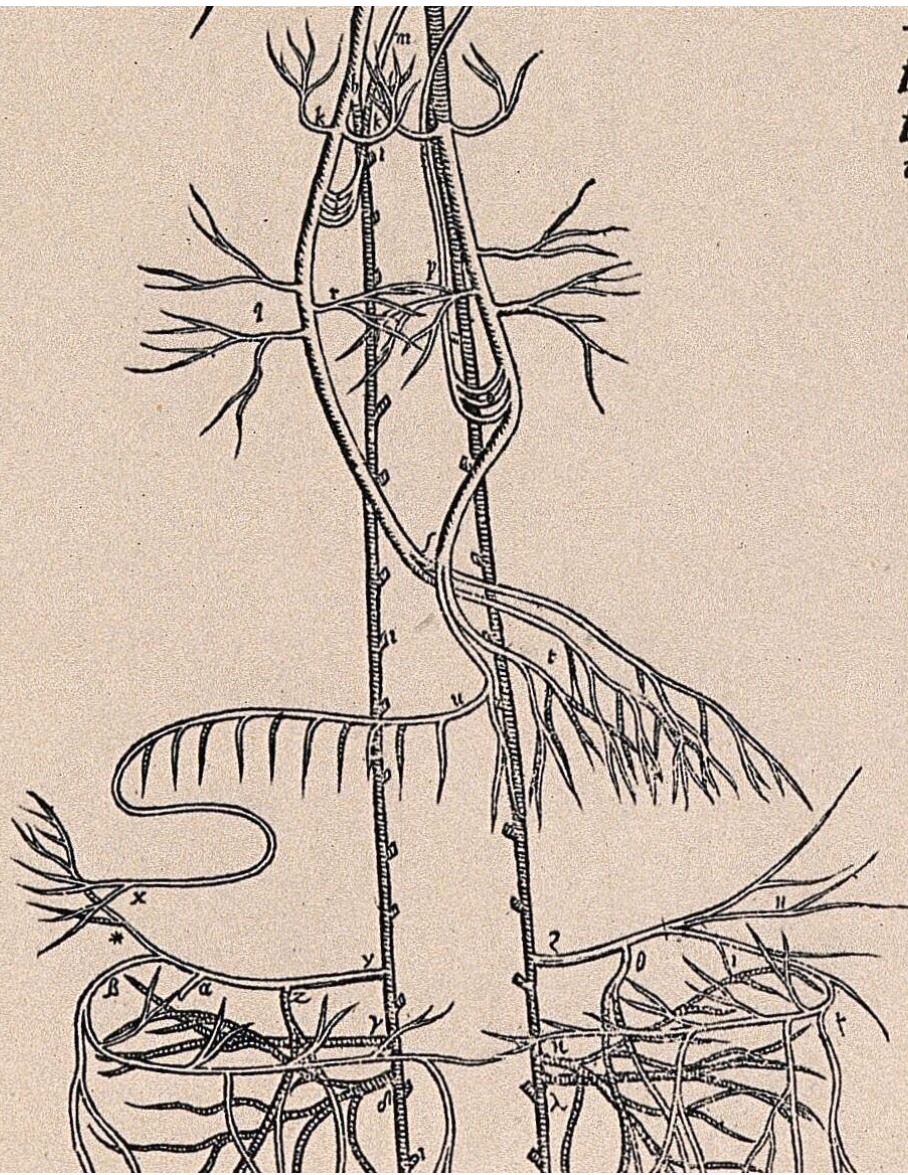
- Your nervous system includes two main subsystems, the **Central Nervous System (CNS)**, made-up of the brain, brainstem, optic nerve, and spinal column, and your **Peripheral Nervous System (PNS)** which includes all parts of the nervous system which are not your brain or spinal cord. A subset of this functioning system is the **Autonomic Nervous System (ANS)** which connects your brain to your internal organs. The ANS **manages all the body functions connected to survival that you don't have to actively manage such as heart rate, respiration, digestion, etc.**
- The ANS is further broken down into the **sympathetic nervous system, the parasympathetic nervous system, and the enteric nervous system.** The sympathetic nervous system is mainly associated with peripheral nervous system as it moves out from the spinal cord between the thoracic and lumbar segments. **The parasympathetic is mainly associated with the vagus nerve which leaves the brainstem at cranial nerve X.** The enteric nervous system is the lower section of the vagus nerve (although it can still operate with a severed vagus nerve). The autonomic nervous system is also directly involved with four of the cranial nerves, the third, 7th, 9th, and 10th. Further the 5<sup>th</sup> cranial nerve (the trigeminal nerve) is what gets activated with the diver's reflex and can help to reset the ANS when over stimulated.





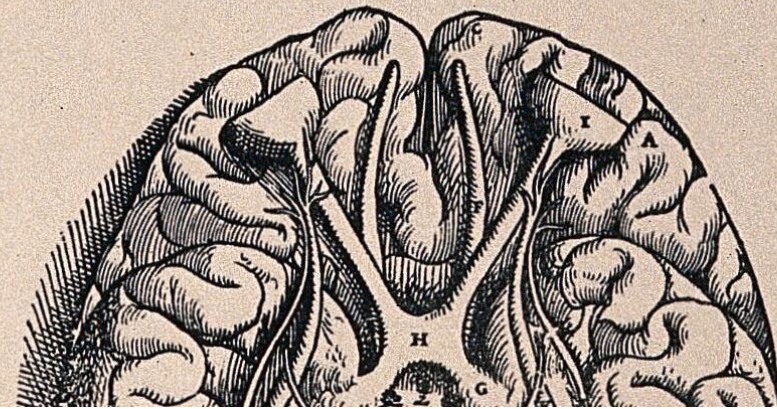
# The Autonomic Nervous System

- The autonomic nervous system impacts The ability of your eyes to focus and pupil dilation, the tear and mucus glands in the eyes nose and throat, the capillary response of your skin, the heart and circulatory system, your immune system, lungs, intestines and colon, liver, pancreas, urinary tract, and reproductive system.
- Your autonomic nervous system uses multiple forms of communication including **chemical compounds , neurotransmitters, as well as electrical energy in the neurons themselves.** The system switches back and forth between electrical and chemical communication as needed.
- The **enteric nervous system is an extensive, web like structure** that is capable are **functioning independently** from the remainder of the nervous system and contains **more neural connections than the sum of all other peripheral ganglia.** Because of the complexity of the enteric nervous system, it is sometimes called the second brain. **It uses over 30 neurotransmitters, most of which are very similar to the neurotransmitters used by the central nervous system.**



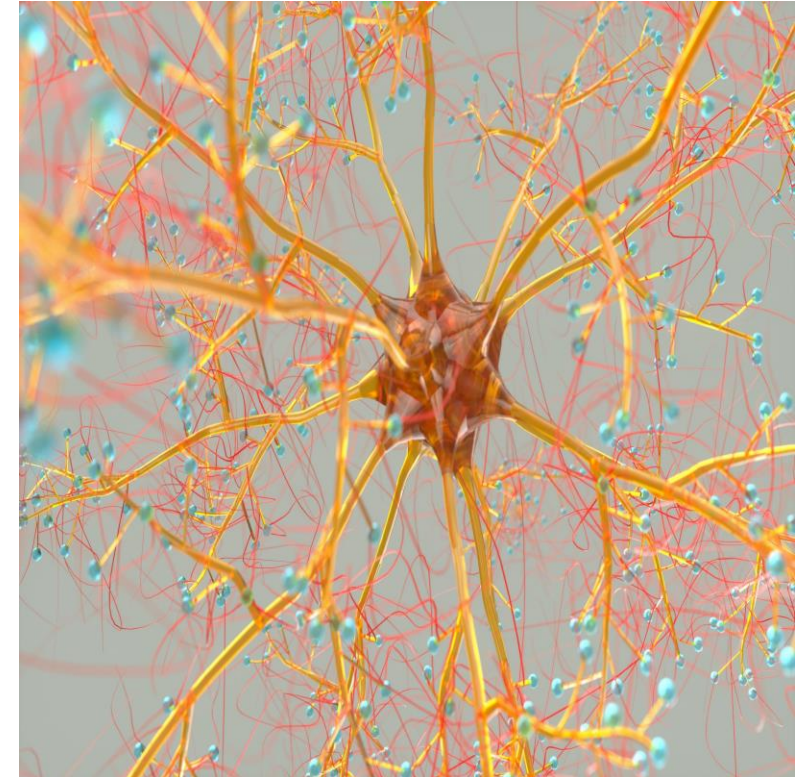
*Figurae huius proportio in ea depicta est magnitudine, in qua corpus circumscriberes, cuius vesica in infima praesentis figurae sede consisteret, & cuius thorax & abdomen ex anteriori parte conspicerentur, facies uero uersus sinistrum humerum conuersa prorsus ex dextro latere spectaretur.*

CHARA.



# Vagus Nerve

- The vagus nerve is made-up of 80% afferent fibers and 20% efferent fibers, **meaning that the vagus nerve is sending more information to the brain than the brain is sending to it.**
- **Vagal tone is correlated with the capacity to regulate stress,** and treatments that target vagal nerve activity **increase vagal tone as well as inhibit cytokine production,** both of which are important for resiliency of the system in handling stress
- The vagus nerve is also related to the function of the **respiratory sinus arrhythmia (RSA) and the heart rate variability (HRV)**



Breit S, Kupferberg A, Rogler G, Hasler G. Vagus Nerve as Modulator of the Brain-Gut Axis in Psychiatric and Inflammatory Disorders. *Front Psychiatry*. 2018 Mar 13;9:44. doi: 10.3389/fpsy.2018.00044. PMID: 29593576; PMCID: PMC5859128.

Kim HG, Cheon EJ, Bai DS, Lee YH, Koo BH. Stress and Heart Rate Variability: A Meta-Analysis and Review of the Literature. *Psychiatry Investig*. 2018 Mar;15(3):235-245. doi: 10.30773/pi.2017.08.17. Epub 2018 Feb 28. PMID: 29486547; PMCID: PMC5900369.

Thayer J, Åhs F, Fredrikson M, Sollers J, Wager T, A meta-analysis of heart rate variability and neuroimaging studies: Implications for heart rate variability as a marker of stress and health, *Neuroscience & Biobehavioral Reviews*, 2012, Volume 36, Issue 2, 747-756, ISSN 0149-7634, <https://doi.org/10.1016/j.neubiorev.2011.11.009>.

# Categories of Stress

## Good/Routine Stress

- Normal Part of Life
- Examples - exams, competitive sports, performing in front of others
- Most return to homeostasis after the “stressful situation” is over

## Tolerable Stress

- More significant stressors like divorce, death of a loved one, natural disaster
- Ability for the person to return to homeostasis

## Toxic Stress/ Traumatic Stress

- Significant physiological and psychological impact
- Increased risk for stress related disease\*
- The person is not able to return to homeostasis

Jamieson, J. P., Nock, M. K., & Mendes, W. B. (2012). Mind over matter: Reappraising arousal improves cardiovascular and cognitive responses to stress. *Journal of Experimental Psychology: General*, 141(3), 417–422. <https://doi.org/10.1037/a0025719>

# Hierarchy and Neuroception

- **Hierarchy refers to the order in which our bodies activate the three neural circuits of the autonomic nervous system** named in polyvagal theory as the ventral vagal complex (Social Engagement), the sympathetic adrenal system (fight or flight), and the “dorsal vagal nerve complex” (freeze)
- The idea is that these systems **engage differently depending on whether we feel we are safe** or whether we feel we are threatened which our system determines through neuroception. This is largely instinctual and automatic hardwired into our system for survival. The **mechanisms of neuroception incorporate numerous pieces of data such as prosody of voice or other auditory cues, facial expressions, as well as pain, discomfort, and the contextual behavior of others**

Stephen W. Porges Polyvagal Theory: A biobehavioral journey to sociality, Comprehensive Psychoneuroendocrinology, Volume 7, 2021, 100069, ISSN 2666-4976, <https://doi.org/10.1016/j.cpnec.2021.100069>.

Poli A, Gemignani A, Soldani F, Miccoli M. A Systematic Review of a Polyvagal Perspective on Embodied Contemplative Practices as Promoters of Cardiorespiratory Coupling and Traumatic Stress Recovery for PTSD and OCD: Research Methodologies and State of the Art. Int J Environ Res Public Health. 2021 Nov 10;18(22):11778. doi: 10.3390/ijerph182211778. PMID: 34831534; PMCID: PMC8619958.

# Hierarchy and Neuroception

- **When we are in a state of safety all three systems work to allow for healthy functioning with the social engagement allowing us to play , attach, interact, and connect, while the sympathetic allows for healthy mobilization such as dancing, or sports, and the enteric NS allowing us to rest and digest. Complex healthy functioning such as bonding or mating often requires all three systems to be working well together.**
- **In a state of threat, in a healthy functioning system, humans will try the social engagement system first, working to negotiate or appease. If we cannot resolve the threat through the social engagement system, the sympathetic nervous system or fight or flight, will be engaged with the expectation that those mechanisms will be needed for survival. If neither of those systems can neutralize the threat the polyvagal theory postulates that the dorsal vagal response will be activated and the system will freeze, shut down, or play dead to neutralize the threat.**

# Heart Rate Variability and The Window of Tolerance

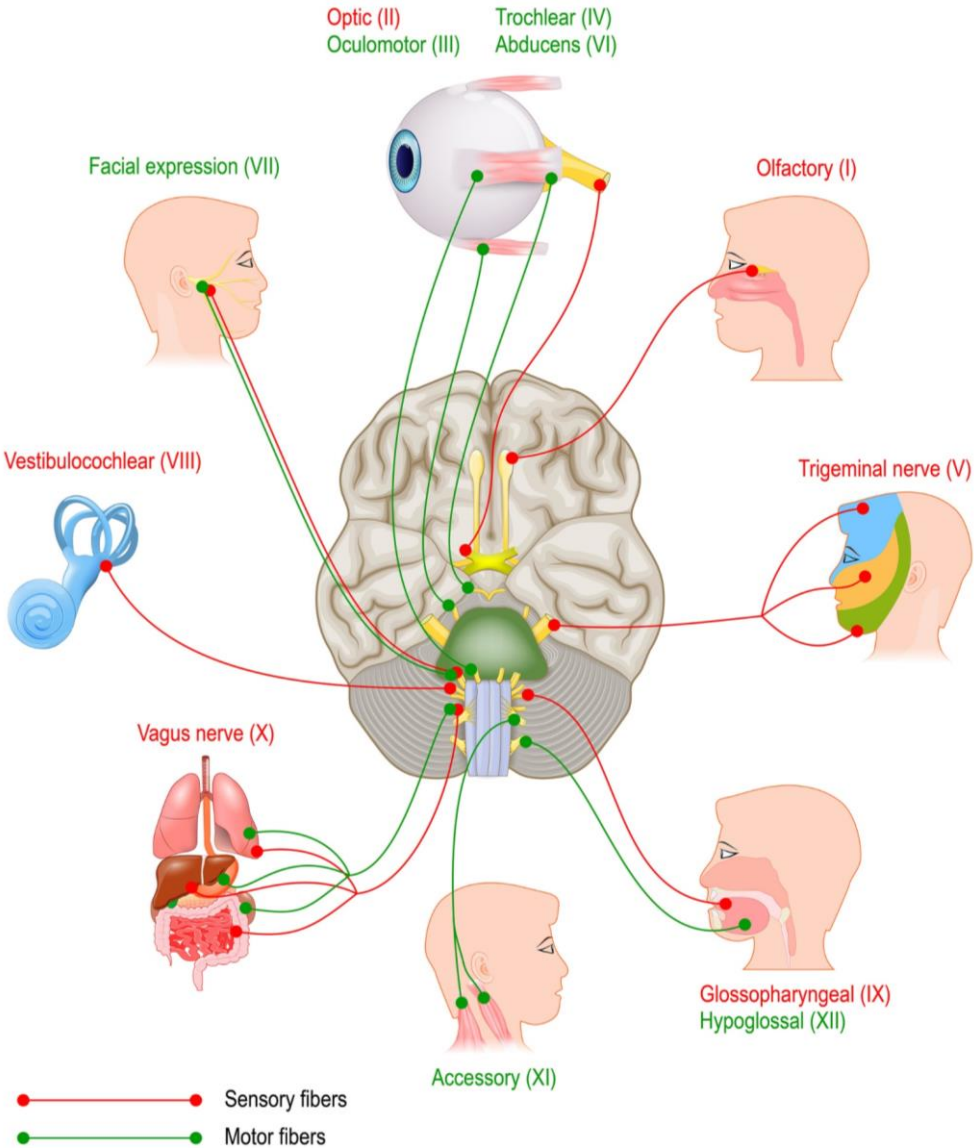
- **Heart rate variability is tied to the respiratory sinus arrhythmia and vagal tone** and relates to the amount of resource and specific threshold that we have for dealing with stress and trauma. In polyvagal theory this is largely discussed as the window of tolerance. The neurovisceral integration model proposes similarly that an organism's ability to flexibly adapt to its environment is related to biological flexibility within the central autonomic network (CAN) and that both cognitive and emotional functions are regulated by brain systems and in the regulation of autonomic function (top-down and bottom-up)
- **Stressful responses that occur within our window of tolerance still cause discomfort, however the ability to regulate and respond is not compromised by the stress, and we can use resources to manage the stress and reset our system**
- **When we are outside of our window of tolerance**, and the stressful situation has used all of our resources we have a significantly harder time regulating, relating, and reasoning and we can easily slip into a state of **hypo or hyperarousal**. If we have trusted individuals to help us **co-regulate, we can, in some sense, use their resources** to allow us to get back within our own window of tolerance to manage the stress. If we do not have trusted individuals to help us coregulate then stress felt outside of this window of tolerance will activate a threat response via the sympathetic fight or flight, or the dorsal vagal freeze.
- **While each of us have a specific threshold for stress and trauma, this “window of tolerance” is not a fixed property.** Persistent, long term and chronic stress has been shown to shrink resources to handle stress, whereas safe connection, and activities that increase vagal tone have been shown to widen the window of tolerance.

Friedman BH. An autonomic flexibility-neurovisceral integration model of anxiety and cardiac vagal tone. *Biol Psychol.* 2007 Feb;74(2):185-99. doi: 10.1016/j.biopsycho.2005.08.009. Epub 2006 Oct 27. PMID: 17069959.

Park G, Van Bavel JJ, Vasey MW, Thayer JF. Cardiac vagal tone predicts attentional engagement to and disengagement from fearful faces. *Emotion.* 2013 Aug;13(4):645-56. doi: 10.1037/a0032971. PMID: 23914769.

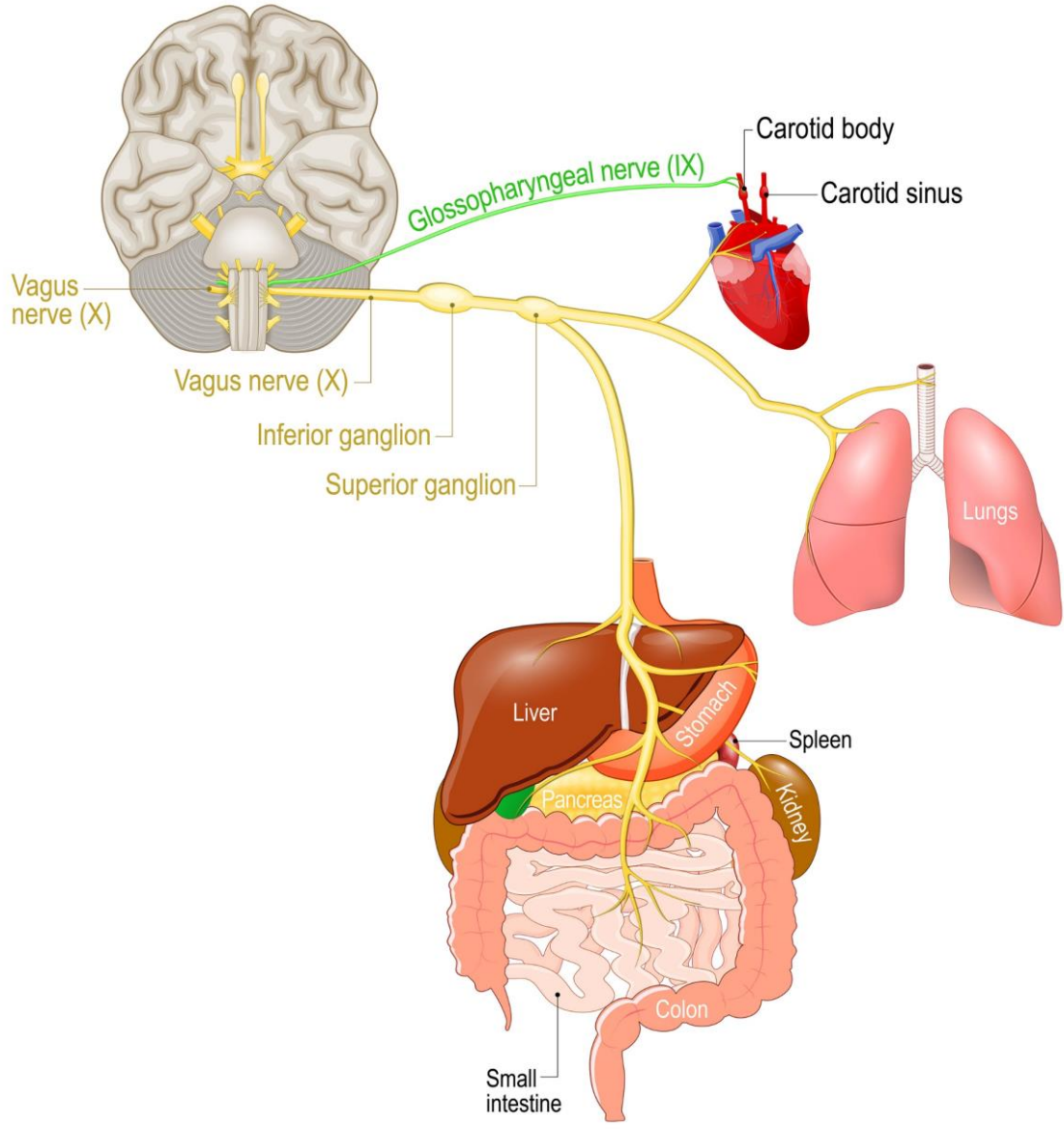
Thayer, J. F., Hansen, A. L., Saus-Rose, E., and Johnsen, B. H. (2009). Heart rate variability, prefrontal neural function, and cognitive performance: the neurovisceral integration perspective on self-regulation, adaptation, and health. *Ann. Behav. Med.* 37, 141–153. doi: 10.1007/s12160-009-9101-z

# Cranial nerves





# The vagus nerve



# Coregulation

- **From within safe relationships, we learned to co-regulate with another nervous system.** The most obvious co-regulating system, from an evolutionary stance, is between a mother and an infant during breastfeeding which is highly related to the respiratory sinus arrhythmia. Because **infants and young children do not have fully developed nervous systems**, the idea that they will need others to help them to regulate falls within this neural platform understanding of behavior. This idea works very well with the mammalian nurturing behavior seen in grooming and feeding.
- **Difficulty comes when the threat is not from an outside source but is from within our own group or where being outcast can be precarious.** When this occurs, the system needs to try to resolve the threat from within the social engagement network. These behaviors are often described as **appeasement when they are largely based in the social engagement system and fawning when they have moved outside of the social engagement system into the sympathetic and dorsal vagal.** This is the kind of behavior that is seen between animals when one shows submission to the other.
- It is felt that as humans **we turn to appeasement when the nature of our relationship makes escape difficult, or a self-protective attack unwise. We appease in situations where there is an unequal and usually inescapable power dynamic.**

# Disruptions in Attachment Last Into Adulthood

- Facial expressions are part of the social engagement system which leads to a somatic feedback system.
  - What I feel inside is congruent/incongruent-Insight into our own interior
  - When we don't know what we are feeling we get dysregulated
  - Infants lack integrity in the mind body relationship
- True self and the false self
  - When you are allowed to just be who you are instead of needing to be compliant to be loved and cared for
  - Showing the world what we feel, and finding it echoed back by a loving relationship, reflected in the face of another
- Interference in the formation of a coherent identity
  - Infants are very vulnerable to these interactions, retain implicit memories, these interactions become “the water you are swimming in”
  - Condition NS to react to constant dysregulation

# Tend and Befriend and Empathy

- As humans we **largely heal and manage stress through healthy relationships** (i.e., healthy attachment). The concept of **tend and befriend as a response to joining others in stress, allows us to use socialization and connection to face a threat together and use relationships to help recover from the threat.** However, from within the hierarchy of the polyvagal system, **unhealthy relationships, and relationships that cannot use the social engagement system lose the ability to be healing.**
- All these pieces of NS functioning that **happen outside of conscious choice** align to keep generational trauma from being able to be processed by the nervous system thereby keeping the system from being able to heal and move past the traumatic events.

Physiological Model

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# Neurobiology of Empathy

# The Role of Bottom-Up Processing

- From a **biomedical standpoint empathy is largely defined as the adoption of a sensory or emotional state that is more appropriate to another's situation as opposed to one's own.**
- **Mirroring Systems or the Mirror Neuron System (MNS)**
  - “Monkey See, Monkey Do”
  - Originally found in the central promoter area and parietal cortex area of monkey brains, these cells fire during goal-directed actions by the monkeys (holding, grasping, or manipulating objects), and when a monkey observes the same actions performed by others, either monkeys or humans.
  - The MNS operates on a standard of “a mirror” to bring about understanding; if you smile at me, I understand this action by processing it through the same network I would use if I were smiling myself, and this is true whether I smile back or not. This mirroring process is automatic.
  - The MNS is activated even when we imagine an action taking place.

Rizzolatti, G., Fadiga, L., Gallese, V., & Fogassi, L. (1996). Premotor cortex and the recognition of motor actions. *Cognitive brain research*, 3(2), 131-141.

Rizzolatti, G., & Craighero, L. (2004). The mirror-neuron system. *Annu. Rev. Neurosci.*, 27, 169-192.

# Emotional Awareness in Mammals

- **Emotion is thought of as a multi-construct conceptual model** with a physiological-biological component, an experiential-psychological component, and an expressive-social component allowing us to **react quickly and automatically for survival and safety, but also interpret and adjust on a relational and reasoning level.**
- Because of this numerous regions of the brain and central nervous system are involved in processing empathy including the anterior cingulate cortex, middle and superior temporal gyri, somatosensory cortices, dorsal frontoparietal regions, medial prefrontal cortex, lateral prefrontal cortex, middle occipital gyrus, inferior parietal lobule, cerebellum, amygdala, thalamus, and midbrain structures, and the anterior insular cortex (AIC).
- Out of these however, the human anterior insular cortex (AIC) seems to be the most closely associated with a **bottom up interoceptive signal and a top-down predictive model** to generate a current state of awareness and information for visceral systems as a point of reference for autonomic reflexes. The similar structures in mammals with complex social societies appears to be most closely related to the **glossopharyngeal and vagal nerve mechanisms.**

# Empathy For Others in Pain

- **We process others pain and emotion in the same areas where we process our own.** This means that others in pain cause us to feel pain. This **connection to others pain is modulated by our feelings towards them and how similar we feel to them.** It also appears that for empathy there are 2 levels of activation, a lower-level automatic response and a higher-level cognitive response
- The research largely points to this as an evolutionary mechanism that is **hardwired in as a survival mechanism** to ensure we learn from other's experience and pain.
- It should be noted though that just because the same areas are activated (as seen through fMRIs), it does not mean the pathways are exactly the same or that the exact same neurons are engaged.

Keysers C, Knapska E, Moita MA, Gazzola V. Emotional contagion and prosocial behavior in rodents. Trends Cogn Sci. 2022 Aug;26(8):688-706. doi: 10.1016/j.tics.2022.05.005. Epub 2022 Jun 3. PMID: 35667978.

Singer, Tania & Lamm, Claus. (2009). The Social Neuroscience of Empathy. Annals of the New York Academy of Sciences. 1156. 10.5167/uzh-25655.



# Empathy vs Compassion

- Empathy is an **instinctual process with a protective biological function** that motivates prosocial behaviors and connection to others as well as increasing altruism and better relationships with strangers. It can be an important protective factor mitigating stress and health problems.
- Empathy is part of the mirror neuron pathways that allow us to learn from the experiences of others. **We process the suffering of others in the same centers of the brain where we process our own suffering.** From a biologic standpoint it is protective in bonding us to others as well as giving us knowledge about the dangers of the world.
- Empathy releases **cortisol (stress and attention) and oxytocin (bonding and connection).** However, the mechanisms of empathy can also **promote favoritism of an in-group at the expense of an out-group.** Other people's emotions can affect us, sway our thought processes and lead us to be biased, tribal, and cruel in the right circumstances.

Riess H. The Science of Empathy. J Patient Exp. 2017 Jun;4(2):74-77. doi: 10.1177/2374373517699267. Epub 2017 May 9. PMID: 28725865; PMCID: PMC5513638.

Dowling T. Compassion does not fatigue! Can Vet J. 2018 Jul;59(7):749-750. PMID: 30026620; PMCID: PMC6005077.

Buffone, A. E. K., & Poulin, M. J. (2014). Empathy, Target Distress, and Neurohormone Genes Interact to Predict Aggression for Others—Even Without Provocation. Personality and Social Psychology Bulletin, 40(11), 1406–1422. <https://doi.org/10.1177/0146167214549320>

# Empathy vs Compassion

- Empathy is an automatic and intuitive process whereas **compassion requires conscious choice**. Empathetic feelings, thoughts and decisions are often unconscious, and we can make choices without being aware that we have made a choice. Compassion involves the cognitive centers of the brain and requires reasoning and reflection.
- Although oxytocin is protective of the stress effects of cortisol on the body, the **extended use of cortisol is still draining on the body**. It can **deplete several neurotransmitters and hormones, which require the body to use sugar and cholesterol to replenish**. Because empathy taps into the mirror neuron system it is a **bottom-up process it can trigger more default network processing and rumination**. It can cause us to get stuck in the feeling experiences of others and not be able to disconnect. Recognizing that these are the feelings of another requires top-down processing. Those **top-down processes hook into dopaminergic reward and oxytocin processes instead and enhance positive emotions around the experience even if it is unpleasant**.

Riess H. The Science of Empathy. J Patient Exp. 2017 Jun;4(2):74-77. doi: 10.1177/2374373517699267. Epub 2017 May 9. PMID: 28725865; PMCID: PMC5513638.

Dowling T. Compassion does not fatigue! Can Vet J. 2018 Jul;59(7):749-750. PMID: 30026620; PMCID: PMC6005077.

Buffone, A. E. K., & Poulin, M. J. (2014). Empathy, Target Distress, and Neurohormone Genes Interact to Predict Aggression for Others—Even Without Provocation. Personality and Social Psychology Bulletin, 40(11), 1406–1422. <https://doi.org/10.1177/0146167214549320>

# Perceptions of Pain/Stress In Ourselves and Others

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Studies have found that we don't necessarily need to see the causal evidence of pain to feel another's pain but can also **understand another's pain simply by seeing facial expressions.**

Efe Soyman, Rune Bruls, Kalliopi Ioumpa, Laura Müller-Pinzler, Selene Gallo, Chaoyi Qin, Elisabeth CW van Straaten, Matthew W Self, Judith C Peters, Jessy K Possel, Yoshiyuki Onuki, Johannes C Baayen, Sander Idema, Christian Keysers, Valeria Gazzola (2022) Intracranial human recordings reveal association between neural activity and perceived intensity for the pain of others in the insula *eLife* 11:e75197 <https://doi.org/10.7554/eLife.75197>

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**Dampening our own experience of pain often results in a reduction in the ability to feel empathy for pain in others**

Rütgen, M., Seidel, E.-M., Riečanský, I., and Lamm, C. (2015a). Reduction of empathy for pain by placebo analgesia suggests functional equivalence of empathy and firsthand emotion experience. *Neuroscience* 35, 8938–8947. doi: 10.1523/JNEUROSCI.3936-14.2015

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**Touch and relationship modulate our own experience of pain.** Holding the hand of a loved one while experiencing pain makes us experience the pain as less of a threat, but the comfort of hand-holding is less when holding a stranger's hand.

Coan JA, Schaefer HS, Davidson RJ. Lending a hand: social regulation of the neural response to threat. *Psychol Sci.* 2006 Dec;17(12):1032-9. doi: 10.1111/j.1467-9280.2006.01832.x. PMID: 17201784.

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Just **viewing a picture of a loved one** reduced pain and triggered the reward centers of the brain as well.

Younger J, Aron A, Parke S, Chatterjee N, Mackey S. Viewing pictures of a romantic partner reduces experimental pain: involvement of neural reward systems. *PLoS One.* 2010 Oct 13;5(10):e13309. doi: 10.1371/journal.pone.0013309. PMID: 20967200; PMCID: PMC2954158.

# The Brain Loves Stories Because We Are Social Animals

- **As humans we use stories to aid in memory, to imagine the future, to hold attention, to empathize with others, and to find meaning.** From an evolutionary standpoint learning from our own and other's experiences are important for survival. Both so we don't have to put ourselves in dangerous situations (either again or for the first time) but also because our connection to our "tribe" gives us protection
- A story where we can relate to another allows us to not only learn from their experience, but it bonds us to them and helps us process any distressful parts of their stories via the oxytocin that is released. However, if, when we hear someone's "story," we can empathize with their experience, and release oxytocin in relation to them/what we learn, we are better able to heal from any stress injury related to them or the story. It also seems to make us more open to being generous and supportive, but that is not a given.
- **Generational Trauma impairs a family's ability to tell its story to future generations, especially around falling action, where the story is pulled from the climax towards the resolution, and denouement, where the narrative strands would be pulled together, conflicts would be resolved, the outstanding matters of the story would be explained, and the listener would get closure.**



# Learning Empathy and Compassion

- Studies have also shown that we can learn to become more empathetic and ultimately **change not just thought patterns, but brain structures.**
- Further **empathy motivates prosocial behaviors and connection** to others as well as increasing altruism and better relationships with strangers
- It can be an important **protective factor mitigating stress and health problems**
- However, the mechanisms of empathy can also promote favoritism of an in-group at the expense of an out-group
- Compassion can be further protective with the addition of dopamine



Riess H. The Science of Empathy. J Patient Exp. 2017 Jun;4(2):74-77. doi: 10.1177/2374373517699267. Epub 2017 May 9. PMID: 28725865; PMCID: PMC5513638.

Buffone, A. E. K., & Poulin, M. J. (2014). Empathy, Target Distress, and Neurohormone Genes Interact to Predict Aggression for Others—Even Without Provocation. Personality and Social Psychology Bulletin, 40(11), 1406–1422. <https://doi.org/10.1177/0146167214549320>

# Learning Empathy and Compassion

- There are several mechanisms that we can use to increase our empathy and compassion for others. These are:
  - Seeking out new perspectives and experiences through reading (fiction or nonfiction), through other mediums such as film and TV, through traveling, and through talking to others
  - Taking the chance to emotionally connect with others when talking
  - Acknowledging your biases and speaking out against stereotypes
  - Joining others in a shared cause
  - Having hard conversations and being open to changing your mind
  - Being present in the moment
  - Practicing meditations, such as loving kindness



Next Stages

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# What Are The Consequences of Generational Trauma on Our Clients and How Can We Address It in Treatment

# Transgenerational Trauma

- **While it is unclear what epigenetics are passed on** in traumatized humans, trauma can clearly lead parents to **convey fear-based “survival messages”** that they pass on to their children and grandchildren—either through **ideas like “Don’t ask for help—it’s dangerous”** that then just maintain untreated trauma, through **dysfunctional behavior patterns** (such as food hoarding for descendants of the Holodomor) within the family as culture and mores, that worked during the trauma, but are **no longer functional in a world outside of the traumatic events**, or possibly through **impacted biological systems that make poor stress responses more likely**.
- At the current time we know that **what largely gets transmitted** (through whatever mechanism) is **distrust of the world, impaired parental function, chronic sorrow, an inability to communicate feelings, an ever-present fear of danger, pressures for educational and occupational achievement, separation anxiety, lack of entitlement, unclear boundaries, and overprotectiveness within a narcissistic family system**.

Braga LL, Mello MF, Fiks JP. Transgenerational transmission of trauma and resilience: a qualitative study with Brazilian offspring of Holocaust survivors. BMC Psychiatry. 2012 Sep 3;12:134. doi: 10.1186/1471-244X-12-134. PMID: 22943578; PMCID: PMC3500267.

Brent Bezo, Stefania Maggi, Living in “survival mode:” Intergenerational transmission of trauma from the Holodomor genocide of 1932–1933 in Ukraine, Social Science & Medicine, Volume 134, 2015, 87-94, <https://doi.org/10.1016/j.socscimed.2015.04.009>.



# Unprocessed Trauma Impacts Our Ability to Form Relationships

- **Generational trauma often is unresolved for several reasons**
  - The parents experiencing the trauma have often been unable or unwilling to process the trauma that they themselves experienced. This **unprocessed trauma impacts their own ability to regulate and relate to others**. They show poor stress responses, avoidant behaviors, and dysfunctional reactions to activities needed to be successful in society
  - This then **influences their relationship with their own children** in the way they react to their own children's needs for co-regulation, emotional intimacy, and comfort.
  - Their **children begin to experience and exhibit their own disordered stress reactions**, emotional pressures, dysfunction which further stresses the parent and the family.
  - This not only affects the system's ability to heal, but it **affects the systems ability to honestly confront the source** of these dysfunctional patterns that have been passed down.

# Growing Up in the Generationally Traumatized Home

Historically adult children of traumatized parents and grandparents have described growing up in households marked by **dark moods and mood swings, silence, secrecy, depression, diffuse anxiety, and feelings of guilt without any tangible cause.**

Some adult children of traumatized parents and grandparents talk of **nightmares and dreams more related to their parent's or grandparent's lives** than their own and talk of suspicions that their symptoms are not related to their own lived experience.

Many of them suffer from **feelings of helplessness, hopelessness, shame, and deep insecurity** according to self reports.

**Parents with unaddressed trauma often over-react to situations that are out of proportion to their children's behaviors** or needs due to their own depression, anxiety, irritability, and lack of sense of safety. Mood swings can be brought on by intrusive thoughts and flashbacks. Feeling the world is not safe can cause parents to be hypervigilant, disengaged, and mistrustful. **Generational messages about invalidating children's emotions and needs, can become part of the cultural expectation.**

**When this is paired with limited comfort, children in these households learn not to depend on their parents to get their needs met** or learn that needs will only get met if they meet with the level of severity of the trauma. They must become the trauma to be noticed and worth attention. Survival threats are the only things that gets noticed.

In the long term what is learned is to **act out to get needs met, to not trust others to meet your needs willingly and that only severe needs are worth paying attention to.**  
Healthy secure attachment is never prioritized.

# Trauma Lenses Off, Trauma Lenses On



# Recent Positive Directions

- The focus on social and racial justice has opened venues to talk about historical and generational trauma, as well as a commitment to making the world a more inclusive place for all. **Generation Z are much more open to the idea of generational trauma, as well as more open to the need for mental health support to get over these traumas.**
- The level of information available through the internet and on multiple social media platforms means that the **younger generation has far more information on mental health than previous generations, and they appear to be more willing to take it** upon themselves to learn how to address their concerns head on. Many of the young “influencers” struggle with their own mental health and generational trauma and share this on platforms which then increases the visibility of generational trauma.
- Many young parents are connecting with **wanting to break the cycle of trauma** not just for themselves but for their children.



# Attitudes Typical of Growing up with Generational Trauma

- **Not expressing emotions/poor regulation (substance use to cope), difficulty expressing own needs**
- Using aggression to get needs met
- **One sided relationships**
- Poor boundaries
- **Poor sense of identity**
- Descriptions of the world as “unsafe”
- **Difficulty finding meaning in successes**
- Pretending to be fine

# Attitudes Typical of Growing up with Generational Trauma

- **Expectation of forgive and forget (with no expectation of change in behavior)**
- Move on as if nothing happened
- **Cover up problems for others/empathy towards harm done, making excuses**
- Be around harmful people or in harmful relationships (whether harm is acknowledged or not)
- **Uncomfortable with healthy relationships**
- Denying that a problem exists
- **Keeping secrets**

# Make Looking for Generational Trauma a Standard Practice

- **What to look for in a family history:**
  - **Denial or minimization** of known trauma “I don’t know” “It doesn’t matter”
  - **Lack of desire to the change situation** or explore the past, **choppy story telling**, discontented history, lots of secrets, **historical information contains a lot of gaps**
  - Transference of emotional and psychological **instability through the generations**
    - Grandma depressed, mom depressed, kid depressed, multiple unresolved psychiatric needs
    - **Unhealthy attitudes** towards substance use, self-medication, asking for help, usually with a distrust/bias towards therapy
    - **Historically stormy relationships** throughout the family and historical low self-efficacy in addressing issues that continue the status quo “none of the women in my family get along” “everyone gets pregnant young”

# Make Looking for Generational Trauma a Standard Practice

- **Identified trauma “symptoms” without clear trauma or out of proportion to life events**
- **“My family is cursed” “I’ve just always been depressed/anxious...” “Everybody in my family is depressed and anxious” “The women in my family are unlucky”**
- **Look for signs of trauma bonding in adult relationships**
  - Gaslighting, love bombing, devaluation, loss of self in a relationship, emotional addiction, submission to the needs of the other



# Assessing and Treating Generational Trauma

- As professionals we need to ask, “**what are these parents and caregivers holding on to that might be getting in the way of making a connection?**”
- **See if you can identify family themes and patterns:**
  - **Messages around food, finances, success, family secrets, asking for help.**
  - **How did the family handle illness?**
  - **Are there any stories that impart a sense of joy or pride about the family? How did the family show love to its members?**
- Create a space to **explore the relationships without blame**
  - **Normalize discomfort while focusing on strengths.** Gather and strengthen generational resources
  - **Talk about it all - the good and the bad** (grandma’s pound cake and grandma’s silence), to help to build a more complete family story that incorporates the trauma
  - **Honesty is not betrayal**

# What To Look For In a Personal History

- Increased somatic issues:
  - chronic illness and chronic pain
    - autoimmune, chronic fatigue, IBS, fibromyalgia, GERD, Medically Unexplained Symptoms/Syndromes, migraines, seizures
    - New association between childhood trauma and long haul COVID
    - NS dysregulation, more vulnerable systems overall
- Does hypervigilance feel necessary (high sensitivity to others), but draining emotionally and physically

# What To Look For In a Personal History

Role reversal with  
parents/idealized  
parents

Boundary issues

Scapegoating

Lack of coherent  
sense of self

Disturbance of  
time

- Use Genograms to Identify Overarching Themes

# Questions to Ask

- How did/does your family handle emotions?
- What models of self-care were/are present in your family?
- What aspects of your culture are important to you and your family?
- How do you identify your family culturally or socially, and have there been any traumatic experiences around your culture or social status?
- Are there family secrets that “we” just don’t talk about?
- Is there a black sheep of the family? Tell me about them.



# Questions to Ask

- How did/does your family overcome challenges?
- What do you notice in your body as you think about your family?
- (Overall) What are the stories about the world that your family told? What messages did you receive about the world from your family?
- Using the [Life Stressor Checklist-Revised \(LSC-R\) \(va.gov\)](https://www.ptsd.va.gov/professional/assessment/documents/LSC-R.pdf) can be helpful in identifying traumas that have occurred and can be adapted to be used as a structured interview around family trauma.



# Treating Generational Trauma

- Remember mitigating effects of **diet, enriched environments, improved nurturing and positive relationships.**
- Consider incorporating activities that **increase vagal tone and increase heart rate variability** such as meditation, yoga, mindfulness, and exercise to help with better stress regulation.
- A mix of Individual and Family therapy is often necessary. **Parent-Child Interaction Therapy (PCIT), Art Therapy, Play Therapy and Narrative Therapy** can be helpful.
- Consider using Attachment Theory Interventions given that **the roots of Generational Trauma live in deficient safety states, poor attachment, and the need for increased nurturing for which Attachment theory is uniquely suited.**



# Treating Generational Trauma

- However, recognizing that there is trauma is the most important part, so any treatment modality that addresses trauma as a core aspect of healing can be helpful in addressing Generational Trauma. Some of the most used with Generational Trauma are:
  - **Narrative Exposure Therapy (NET)** because the goal is the help reframe the traumatic experience in a manner that allows them to contextualize the experience(s) as well as integrating positives for a full story
  - **The Intergenerational Trauma Treatment Model (ITTM)** which is designed to help adults and caregivers address their unresolved trauma while also treating the caregiver child relationship treating two generations at once. This treatment model is heavily based on Attachment Theory principles.
  - **Trauma-Focused Cognitive Behavioral Therapy (TF-CBT)** because it moves the instinctual choices into a more higher-level conscious state and allows for greater conscious mastery of the trauma as well as increasing coping skills, developing relaxation techniques, and processing trauma narratives.
  - **Emotionally Focused Individual Therapy (EFIT) for Attachment Trauma** is designed to focus on the primary survival strategy of being wired for emotional connection with valued others. EFIT attempts to give a clear map of the client's deepest human longings, needs, and fears using them to lead the client through vulnerability to competence and confidence.
  - **Child-Parent Psychotherapy (CPP)** originated in infant–parent psychotherapy (IPP), a psychoanalytic treatment that used the metaphor of "ghosts in the nursery" to recognize and avert the generational transmission of negative relationship patterns during the first three years of life. Current focus of CPP is to strengthen the parent child relationship by acknowledging that as families go through traumatic experiences, young child learn unspoken lessons about the world that can impact their sense of safety. This is addressed in part through relationship building as well as recognizing and acknowledging the traumatic experiences of the family.

\*Providers are responsible for clinical decisions regarding care and the appropriate billing of services.

# What Can I Do With This Knowledge If I Am Not a Therapist?

- **Be trauma-informed and trauma-sensitive to whatever degree possible**
  - The purpose of increasing the knowledge around generational trauma to understand that you can see what looks like trauma responses without there necessarily being a known trauma in that person's life. Approaching everything with a trauma-informed or trauma sensitive attitude is always going to be a good first choice because you may not know the whole story of another's experience regardless of how much you know about them.
  - **Behavior is communication**
  - **Behavior has a function**
  - **When dealing with trauma triggers can be internal as well**
  - **Use Rational Detachment** to maintain control of your own behavior by not taking negative comments or actions personally



# Guidelines for Responding in the Moment to Disclosures

Guidelines	What Helps	What Doesn't Help
<b>1. Be present</b>	Keep eyes focused where you usually do	Looking away, changing the subject
<b>2. Show you're listening</b>	Reflect back about what you've heard	Interpretations, questions, sharing own experiences
<b>3. Stay calm and focused</b>	Find a centering, calm thought to focus on in your own mind	Over-reactions, even with empathy
<b>4. Bear witness</b>	Expressing appreciation for the participant's willingness to tell	Overly-praising
<b>5. Normalize</b>	Indicate that the person's reaction is normal and understandable	Trying to "make it better"
<b>6. Make a bridge to intervention</b>	Therapy is a form of talking, just like this	Rushing in to "therapize" if you aren't the therapist
<b>7. Don't overlook possibility of resilience</b>	Listen for and recognize evidence of good functioning despite trauma	Assuming that trauma exposure = PTSD or that "I don't care" = "I'm not affected"

# Signs You May See if Someone is Triggered

- The following are signs that a person has been triggered. Know and recognize these signs when they occur:
  - Reexperiencing, intrusions, flashbacks, dissociation
    - Staring off, not responding, strong reactions that don't fit what is going on in the moment
  - Avoidance – Sudden refusal to talk about something, cracking jokes at inappropriate times
  - Sudden shifts in cognitions or mood
  - Hyperarousal – Startle response, jittery legs, hypervigilance



## What to Do When Someone You Are With Is Triggered

- Check your own level of arousal first because you will be ineffective if you are also triggered
  - Always remember to put on your oxygen mask first
  - Use a calm voice
  - Put a label on what’s happening
- Invite the person to engage in a self-calming or grounding exercise with you that center thoughts and awareness in the current moment (Choose one that you like and have practiced yourself, so that you are well versed in it. This will help you to use it to co-regulate with them.)
  - Things like:
    - Deep “belly” breathing, noticing breath, slowing breath down
    - Grounding w/the 5 senses (5 things you see; 4 things you can feel; 3 things you can hear; 2 things you can smell; 1 thing you can taste)
    - “Safe place” imagery
    - Thoughtfully moving your body (walking in nature or mindful walking)
    - Offering a cold or warm beverage or a sour candy
    - Other mindfulness exercises you have tried



# What To Do If You get Triggered

- You might have your own Generational Trauma that you are aware or unaware of that can get triggered by someone else's story or reaction being shared. You can try to prepare for that by:
  - Having your own safety/self-care plan
  - Working on your own trauma/ACES
  - Having a list of things that are helpful for you and have calmed you in the past that you can easily access in the moment
    - Sensory box
    - Fidgets
    - Breathing
    - Mindful activities that ground you in the present moment

