



Developing an Understanding of Neuroscience and Trauma

Kaiāwhina Professional Learning, 2025

Ann, Nicky, and Nick





Karakia Timatanga

Hā ki roto
Hā ki waho
Kia tau te mauri e kokiri nei
I ngā piki me ngā heke
Ko te rangimarie tāku e rapu nei
Tihei mauri ora!

Breathe in

Breathe out

*Settle the mauri that stirs inside of
me, through the ups and downs*

It is peace that I seek





Kaupapa for Today:



te paeroa RTL B

Ko wai mātou



Whakawhanaungatanga

Choose one or two of the following of statements to discuss in groups of 3

Green - What would your ideal day/date look like?

Orange - What is your favourite time of the year?

Yellow - Favourite holiday

Red - Where were you born and raised?

Purple - Favourite movie or Netflix series



Welcome to my Brain



Establishing a Shared Understanding

Dictionary

Definitions from [Oxford Languages](#) · [Learn more](#)

 **neuro-**
/ˈnjʊərəʊ/

combining form

relating to nerves or the nervous system.
"neuroanatomy"



Dictionary

Definitions from [Oxford Languages](#) · [Learn more](#)

 **diversity**
/dɪˈvɜːsɪtɪ,dɪˈvɜːsɪti/

noun

1. the state of being diverse; variety.
"there was considerable diversity in the style of the reports"
2. the practice or quality of including or involving people from a range of different social and ethnic backgrounds and of different genders, sexual orientations, etc.
"equality and diversity should be supported for their own sake"

Dictionary

Definitions from [Oxford Languages](#) · [Learn more](#)

 **divergence**
/dɪˈvɜːdʒ(ə)ns,dɪˈvɜːdʒ(ə)ns/

noun

1. the process or state of diverging.
"the divergence between primates and other groups"

Similar:

separation

dividing

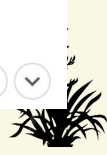
parting

forking

branching

fork

division





Terminology

Neurodiversity	The natural diversity of human brains
Neurodiverse	A group of people with different types of brains
Neurodivergent	A person whose brain functioning differs from what is considered “typical”
Neurotypical	A person whose brain functioning is considered “normal”



Knowing our brain type helps us figure out the things we need to feel HAPPY + SAFE.



(Neurowild, 2023).





Te reo Māori kupu

Kanorau ā-roro - Neurodiversity

Takiwātanga - Autism (in his or her time and space)

Aroreretini - ADHD (attention goes to many things)





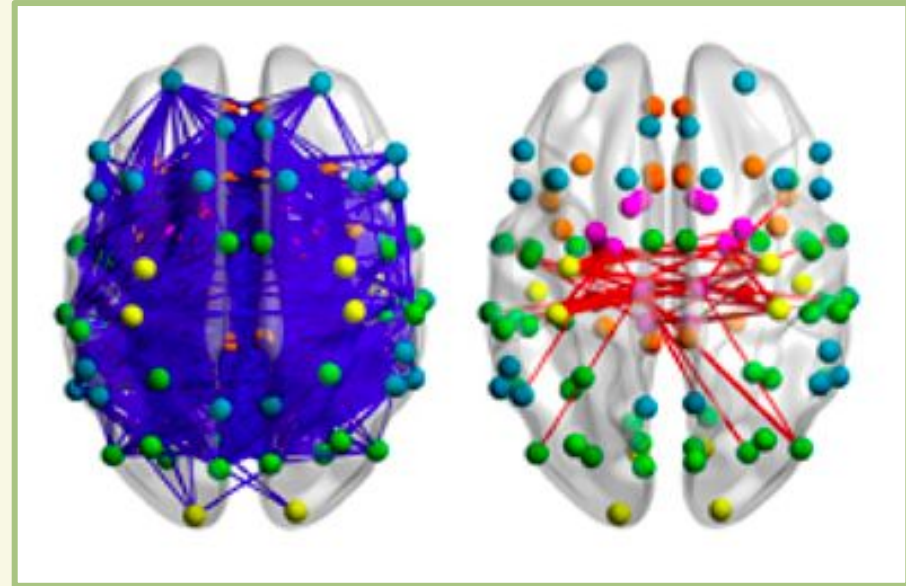
What comes to mind when you hear the word
neurodiversity/ neurodivergent?

Kōrero with the people at your table



Neurodivergence and brain wiring

(Larkey, n.d)



(Ross, 2013).



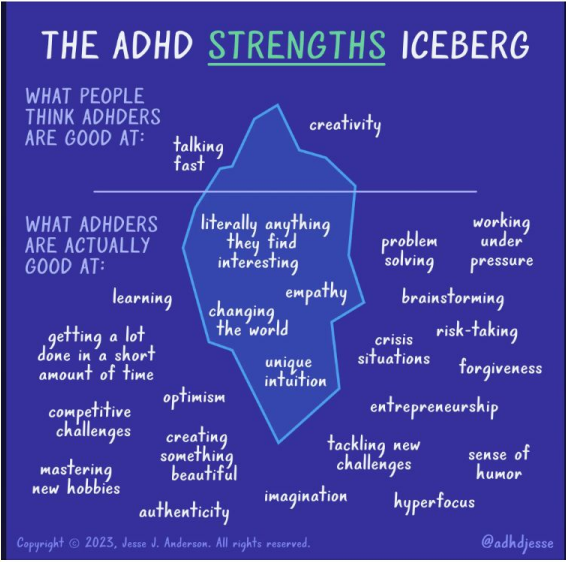


What do ākonga who are neurodivergent bring to the akomanga?



te paeroa RTLB

(Harrison, 2022)



(Anderson, 2023)



Rafi, 2021)

Strengths of Dyspraxia



(Renegadedyspraxic, 2021)

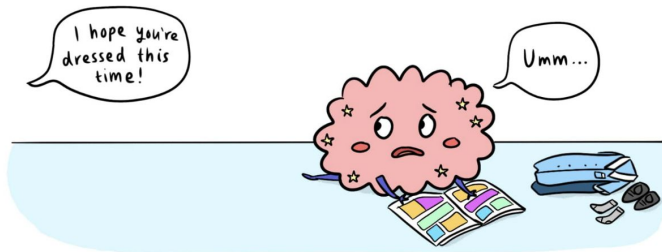




ADHD

Attention Deficit Hyperactivity Disorder.

This is not a good name as it makes it sound like we don't have enough attention. The truth is, we often have a LOT of attention but it can be tricky directing it to topics or tasks that we don't find interesting.



Our ADHD brain is great at searching for ideas & activities that are interesting or exciting (which can really distract us from focusing on boring things, like work or cleaning)

- Difficulty focusing or staying on task
- Problems keeping track of materials
- Trouble following through on complex projects
- Distractibility and forgetfulness
- Appearing not to listen when spoken to
- Increased need to be up and moving
- Fidgetiness
- Impulsivity
- Tendency to interrupt other people
- Excessive talking

70%-80% of children with ADHD have difficulty managing their emotions

(Neurowild, 2023).





ASD

Autism is a neurotype - not a defective neurotypical brain.

ALL Autistic people are 100% Autistic

But no two Autistic people are the same.

Every Autistic person has their own unique mix of traits, strengths, needs, sensory systems, interests, and personality.

And Autism is a dynamic disability, which means that a person's skills may fluctuate greatly depending on many factors.



- Difficulty in social communication
- Difficulty interpreting and using nonverbal communication
- Difficulty developing and maintaining relationships
- May have stereotyped repetitive motor movements
- May insist on sameness and be inflexible about changes to routines
- May have intense, narrowly focused interests
- May be hyper- or hypo-reactive to sensory input
- May have a particular talent or enhanced ability



Key considerations for ākonga with ASD and ADHD

Dysregulated behaviours are seen when ākonga do not feel safe



(Neurowild, 2022).

"This child's behaviour is so hard-
we don't know what to do."

Aggression
Self injuring
Running away
Won't listen

DYSREGULATION
BURN OUT
EXHAUSTION
MASKING
NEUROTYPICAL EXPECTATIONS
TRAUMA
SENSORY OVERLOAD
LACK OF ACCOMMODATIONS
EXECUTIVE FUNCTION CHALLENGES
OVERWHELMING EMOTIONS

Sort out the causes underneath.

te paeroa RTL B



You can't self regulate without interoception

Ākonga need to know the feeling of an emotional state before they can associate emotional language accurately.

YOU
FEEL
 HUNGRY
 BECAUSE OF
INTEROCEPTION



(Mahler, 2017)

What is INTEROCEPTION?

Interoception is a sense that allows us to notice internal body signals like a growling stomach, racing heart, tense muscles or full bladder. When we notice these body signals our brain uses them as clues to our emotions. Interoception helps us to feel many important emotions including:

Hunger	Pain	Sleepiness	Anxiety	Calm
Fullness	Illness	Need for Bathroom	Distraction	Boredom
Thirst	Body Temperature	Anger	Focus	Sadness

Differences in Interoception

are very common and can lead to challenges in identifying exactly how one feels. Common signs of interoception differences can include **difficulty** with one or more of the following:

- Recognizing when hungry, full or thirsty
- Toilet training (daytime and/or night time)
- Identifying when sleepy
- Overly sensitive or not sensitive enough to pain
- Pinpointing symptoms of illness
- Identifying emotions in self
- Identifying emotions in others
- Recognizing building signs of distress (before a full meltdown)
- Independently using coping strategies during times of distress

Can interoception be improved?

The good news is YES! Research shows that interoception can be improved. There are many easy strategies that can be incorporated into your daily routines that can improve your child's interoception.

Strategies

- 1) Use 'Interoception Talk': Label the way your various body parts feel during daily activities (e.g. "My hand feels warm when you hold it; My cheek feels wet when you kiss it; My breathing feels fast when I run with you").
- 2) Encourage your child's 'Interoception Attention': Encourage your child to notice how various body parts feel during daily activities (e.g. "How do your hands feel when you are holding a glass of ice water?; How do your eyes feel at bedtime?; Look at the goosebumps on your skin; Put your hand on your chest and feel your heart beating fast?").

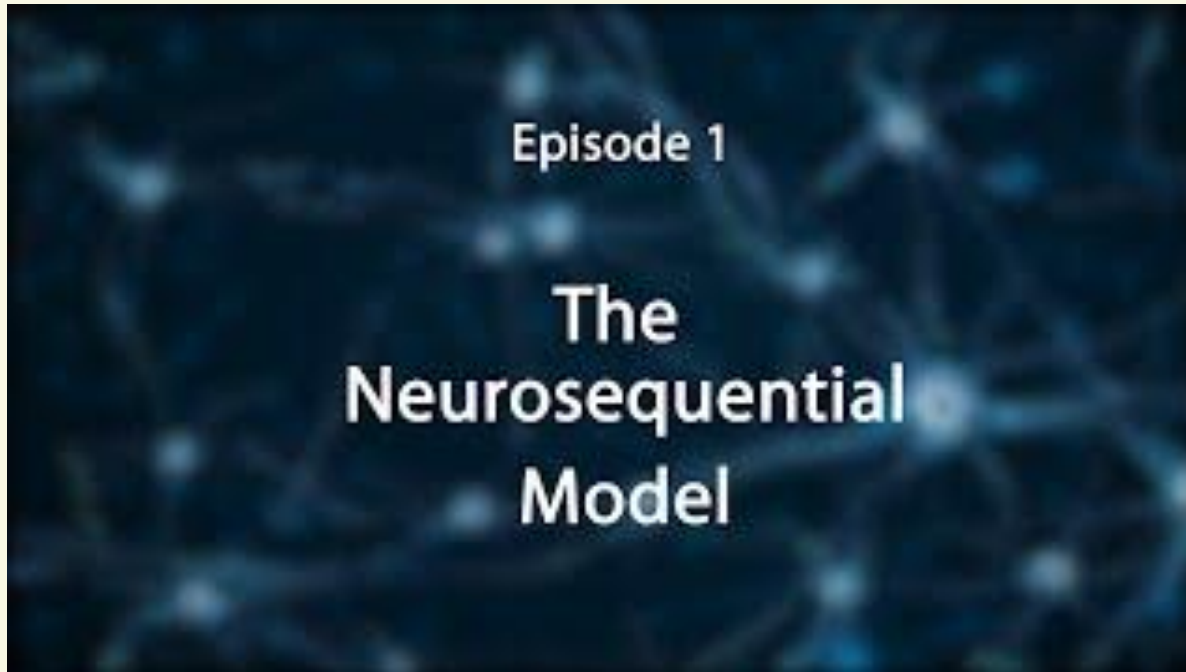
For more information and free resources visit www.kelly-mahler.com.

For even more free information join the Facebook Group **Interoception: The Eighth Sensory System**

(Mahler Autism Services, 2020)

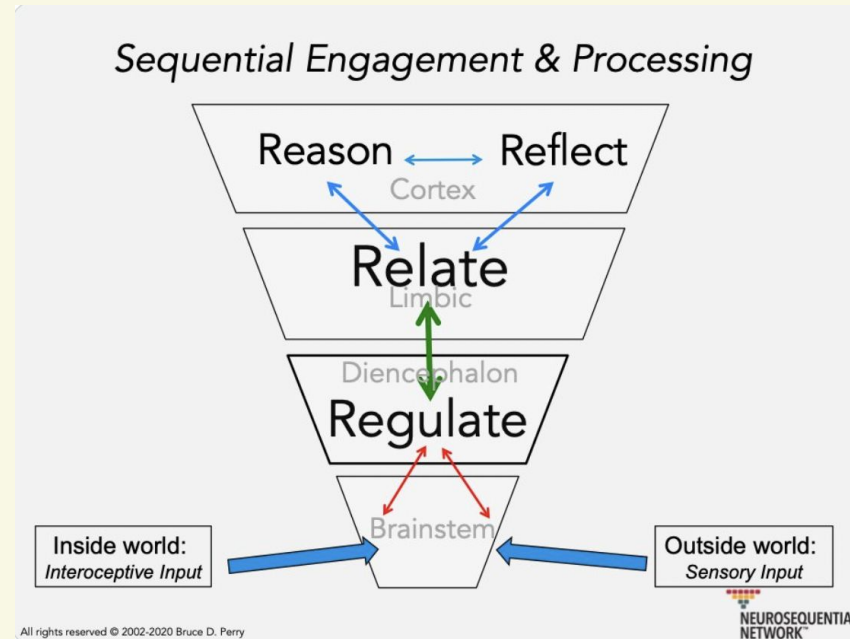


Dr. Bruce Perry and the Neurosequential Model:





How the Senses Impact on the Different Regions of the Brain:



The Window of Tolerance:

WINDOW OF TOLERANCE

The window of tolerance and different states that affect you



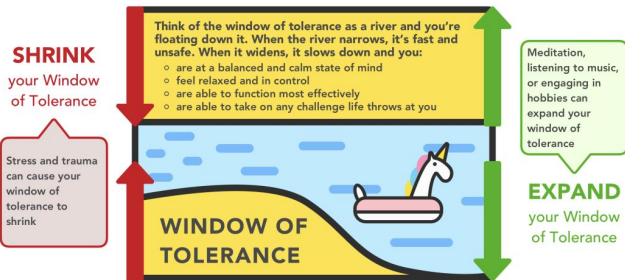
HYPERAROUSAL

- Abnormal state of increased responsiveness
- Feeling anxious, angry and out of control
- You may experience wanting to fight or run away



DYSREGULATION

- When you start to deviate outside your window of tolerance you start to feel agitated, anxious, or angry
- You do not feel comfortable but you are not out of control yet



DYSREGULATION

- You start to feel overwhelmed, your body might start shutting down and you could lose track of time
- You don't feel comfortable but you are not out of control yet



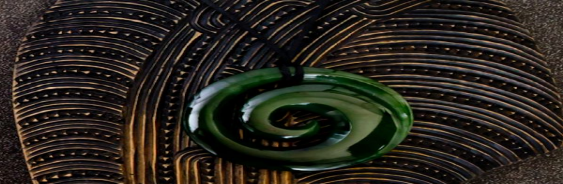
HYPOAROUSAL

- Abnormal state of decreased responsiveness
- Feeling emotional numbness, exhaustion, and depression
- You may experience your body shutting down or freeze



(Mind My Peelings, 2019).





Flipping the Lid - Fight, Flight, or Freeze:



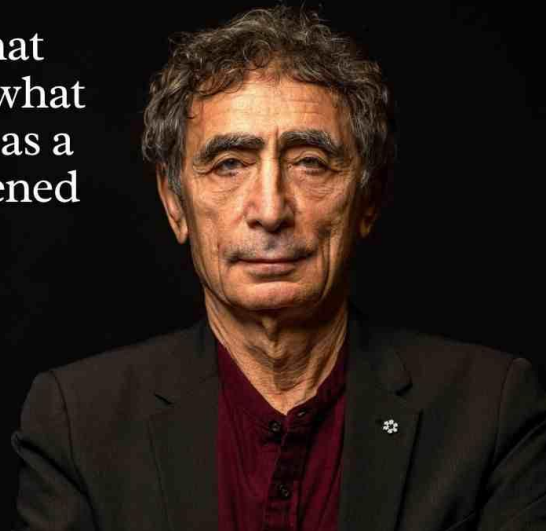


What is Trauma:

reference

“Trauma is not what happens to you, it’s what happens inside you as a result of what happened to you.”

— Gabor Mate





What is Trauma?

reference

Big 'T' vs Small 't' Trauma

Big 'T'

1. Physical or Sexual Abuse
2. Natural Disasters
3. Combat or War
4. Serious Accidents
5. Terrorist Attacks
6. Kidnapping or Hostage Situations
7. Severe Medical Events
8. Sudden Loss of a Loved One
9. Sexual Assault
10. Childhood Abuse or Neglect

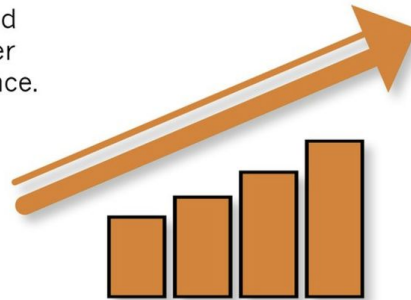
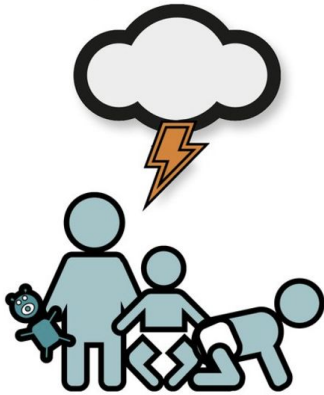
Small 't'

1. Chronic Emotional Neglect
2. Perfectionism
3. People-Pleasing
4. Microaggressions
5. Unhealthy Relationship Dynamics
6. Bullying or Teasing
7. Parental Pressure
8. Feeling Overwhelmed by Responsibilities
9. Legal Trouble
10. Infidelity

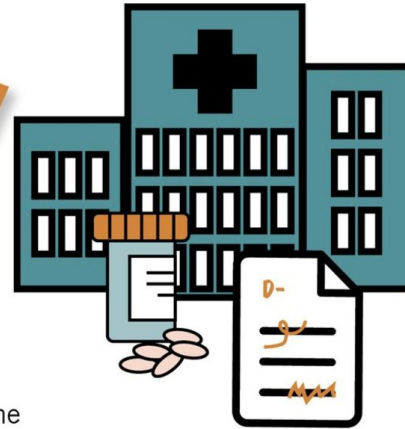


What Kinds of Experiences are Considered Adverse?

“ACEs” stands for “Adverse Childhood Experiences.” These experiences can include things like physical and emotional abuse, neglect, caregiver mental illness, and household violence.



The more ACEs a child experiences, the more likely he or she is to suffer from things like heart disease and diabetes, poor academic achievement, and substance abuse later in life.



Reference





The Growing Up In New Zealand Study:

Reference

53% of children had experienced at least one ACE before starting school – most commonly emotional and physical abuse

One in four children had been exposed to emotional abuse - their parent criticising their child's ideas, shouting at them, or exploding with anger "very often" - before reaching school-age.

One in five children were exposed to physical abuse - where their parent reported smacking their child "often or very often".

One in 10 parents or partners reported using illegal drugs during the first 4 years of their child's life.



Online Resources | Engage Training Ltd

(Berkett, 2021)



Neuroceptive scanning

Interoception can also be defined as Neuroception

- Scanning - someone who has grown up feeling safe will naturally scan and presume safety
- If you have grown up feeling unsafe then your scan will naturally presume danger or risk - the inner radar says do not trust

Highly vigilant people will have the following inner dialogue:

- Are you the same tribe as me?
- Do you look, talk, act like me?
- Do we trust or mistrust...are you a danger to me?
- If someone has experienced danger or lack of belonging they may be triggered by similar traits that they encounter

*Consider rewording “**attention seekers**” as “**connection seekers**”*

Neuroception

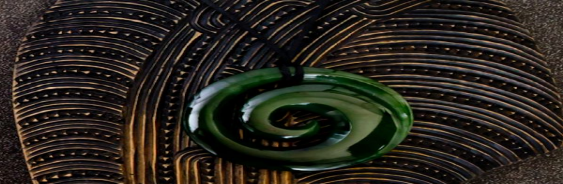
“AM I SAFE?”





Movement Break:





What do you think?





Karakia Kai:





Know Your Triggers:

A regulated, calm adult can regulate a dysregulated, anxious child but a dysregulated adult can never calm a dysregulated child.

- DR. BRUCE PERRY



@WILDPEACEFORPARENTS

The Natural Parent Magazine, 2022, April 27.





Know Your Triggers:





Dear Teacher...





After watching the video “Dear Teacher...” what are some key messages that resonate with you? Why?





References:

Anderson, J. (2023, July, 2023). The ADHD Strengths Iceberg. *adhdjesse*.

<https://www.google.com/url?sa=t&source=web&rct=j&opi=89978449&url=https://www.instagram.com/adhdjesse/p/CT2VuL6Jx7d/&ved=2ahUKewi-jrq5mLSIAxXNklyBHUA3Hz0QFnoECBUQAQ&usg=AOvVaw3Nw4NSmUuZEHMtGotoIYwb>

Berkett, K. (2021). *Red/Green Brain* [Video]. Retrieved from

<https://www.engagelearning.co.nz/online-resources?wix-vod-video-id=62d5beca7c3842779005b2124f7299c8&wix-vod-comp-id=comp-koclo5h1>

FtMyersFamPsych. (2012). *Dr Daniel Siegel presenting a Hand Model of the Brain* [Video]. YouTube.

https://youtu.be/gm9CIJ74Oxw?si=kGbiQcN_Xk-X1Dlz

Harrison, C. (2022, August 4). How To Support Dyslexic Students' Self-Confidence. *The Dyslexia Classroom*.

<https://www.thedyslexiaclassroom.com/blog/how-to-support-dyslexic-students-self-confidence>

Larkey, S. (n.d). Why I Love the Term 'Neurodiversity' and You Will Too! *Sue Larkey*. <https://suelarkey.com.au/neurodiversityblog/>

Mahler Autism Services. (2020, June 3). *What is Interoception*. Retrieved from Kelly-mahler.com website:

<https://www.kelly-mahler.com/printable-resources/>

Mahler, K. (2017). *Interoception: The New Topic in Autism* [Video]. YouTube. <https://youtu.be/A0zbCiakjaA>





Mind My Peelings. (2019). *Window of Tolerance Awareness worksheet* [Brochure].

<https://www.mindmypeelings.com/blog/window-of-tolerance>

Neurowild.(2022, December 11). *Edited to add: Autistic adults often experience the same challenges with unmet needs. A bit about behaviour today. If you.* [Post]. Facebook.

https://www.facebook.com/permalink.php/?story_fbid=117874367818255&id=100087870753308

Neurowild. (2023, May 30). *I did not mean for this to be 16 pages long, but here we are. Also, hectic hyperfocus was at.* [Post]. Facebook.

<https://www.facebook.com/share/U9UUm9M7a2zLXwra/?mibextid=oFDknk>

Rafi, A. (2021, November 2). Autism Strengths and Abilities. *Spectaco*. <https://spectacokids.com/autism-strengths-and-abilities/>

Renegadedyspraxic. (2021, June 2). Working To Your Dyspraxic Strengths. *Medium*.

<https://renegadedyspraxic.medium.com/working-to-your-dyspraxic-strengths-c6aa2f1229cc>

Ross, V. (2013). *Autism researchers launch scheme to share brain imaging data.*

<https://www.spectrumnews.org/news/autism-researchers-launch-scheme-to-share-brain-imaging-data/>

ThinkTVPBS. (n.d.). *Stress, Trauma, and the Brain: Insights for Educators* [Video].Youtube. https://youtu.be/_3is_3XHKKs

