NMI SUMMIT 2024

# An Energetic View: Mitochondrial Nutrition for Fatigue, the Brain, & Healthy Ageing

Saturday 12th October

NMI Summit, 11-12 October 2024

Featuring Dr. Joseph Pizzorno, Lorraine Nicolle, Claire Sehinson, Professor Robert Thomas, Dr. Deanna Minich

An event by: Nutritional Medicine Institute

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**An Energetic View:** Mitochondrial Nutrition for Fatigue, the Brain, and Healthy Ageing

## Claire Sehinson

Autism, Mental Health and Mitochondria: Supporting Clients from an Evidence-Informed and Neurodivergent-Affirming Practice

12:00-12:45pm

NMI Summit, 11-12 October 2024

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# AUSTISM, MENTAL HEALTH AND MITOCHONDRIA

BY CLAIRE-ELIZA SEHINSON

NMI Summit, 11-12 October 2024

www.claireelizasehinson.com

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NMI Summit, 11-12 October 2024

## ABOUT

I am a late diagnosed multiply-neurodivergent educator, researcher, practitioner and disability advocate.

## DISCLOSURES

Affiliations:

- The Optimum Health Clinic (Head of Research)
- Psychiatry Redefined (Faculty)
- The Creative Well (Practitioner)

Declarations of interest: None

All opinions expressed are mine and not necessarily representative of anyone I work for

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# AGENDA

**PART 1**

**What is Autism?**
- **History of Autism & the DSM**

**What else is Autism?**
- **Neurobiology and Neurodivergence**
- **Health disparities**

**PART 2**

**Autism, mental health and mitochondria**
- **Mental health issues**
- **Autistic burnout**
- **Mitochondria, stress and mental health**

**PART 3**

**Neurodivergent-affirming care**
**Case study**



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# GLOSSARY

**Ableism**: the prejudice, bias or discrimination in favour of 'able-bodied and minded' people. Or research/therapies where the 'typical ability' is the goal. I.e. "eye contact is a sign of sincerity"
**Internalised ableism**: where the disabled person absorbs the opinions, viewpoints and expectations of the ableist society. I.e. "you should eat 10 veg & fruit a day"
**Alexithymia**: difficulty in identifying, expressing or verbalising one's feelings or emotions, exists on a spectrum
**Aphantasia**: the inability to create mental pictures on demand, exists on a spectrum
**Allistic**: non-autistic people
**AuDHD**: the combination of an autism and ADHD diagnosis
**Camouflaging (masking)**: conscious/unconsciously hiding, suppressing or disguising parts of oneself in order to fit in or survive.
**Double empathy theory** by Dr Damian Milton states "when people with very different experiences of the world interact with one another, they will struggle to empathise with each other. This is likely to be exacerbated through differences in language use and comprehension".

**Diagnostic overshadowing** when a healthcare provider mistakenly attributes a patient's symptoms to an existing condition, often overlooking or misdiagnosing other potential health issues ie. mistaking autistic traits for OCD or anxiety.
**Hyperfocus / monotropism** intense fixation and funnelling of attention into a topic or activity of interest
**Interoception** the 8th sensory system allowing us to sense and understand the internal signals of your body
Inertia the difficulty initiating or stopping a task
**Neurodivergent (ND)** "someone who deviates from the neuronormative world to the extent that daily life is impacted by it, Jason Schwartz
**Neurodiversity** the concept that people have different types of brain (how we think, learn and process the world) and "different neurotypes" are necessary for a diverse, flourishing and sustainable environment.
**Neurominority** the group of people whose brains work different from the majority
**Neurotypical (ND)** describes people whose brains work in ways that are considered typical or expected by society
**Stimming** repetitive and often rhythmic behaviours, thoughts or movements that help to regulate the nervous system.



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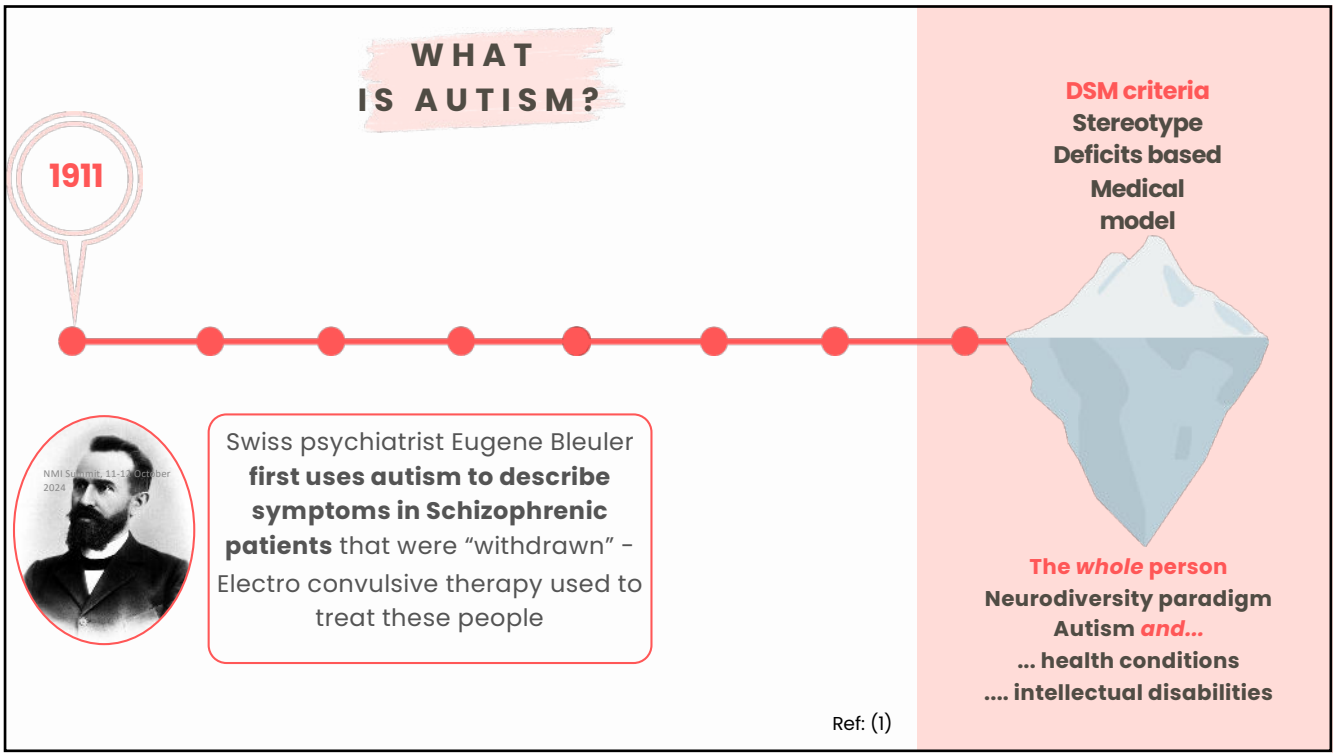
Has empathy
has friends
has a sense of humour
.... but every little girl is obsessed with Taylor Swift
Just shy
REASONS AUTISTIC PEOPLE WERE DENIED REFERRAL FOR DIAGNOSIS OR ACCESS TO SUPPORT BY HEALTHCARE PROVIDERS
makes eye contact
Looks fine to me
can hold a conversation
Just sensitive and picky. She'll grow out of it
You don't want that on your record
everyone's a little bit autistic

7


WHAT IS AUTISM?
1911
DSM criteria
Stereotype
Deficits based
Medical model
Swiss psychiatrist Eugene Bleuler **first uses autism to describe symptoms in Schizophrenic patients** that were "withdrawn" - Electro convulsive therapy used to treat these people
Ref: (1)
The *whole* person
Neurodiversity paradigm
Autism *and...*
... health conditions
.... intellectual disabilities

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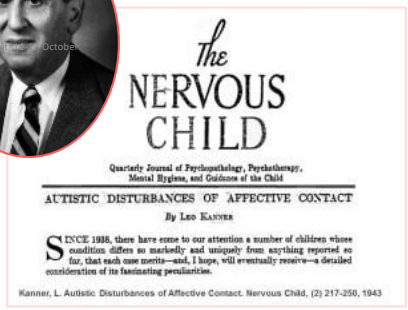
## WHAT IS AUTISM?

1943



The NERVOUS CHILD

Quarterly Journal of Psychopathology, Psychotherapy, Mental Hygiene, and Guidance of the Child

AUTISTIC DISTURBANCES OF AFFECTIVE CONTACT

By Leo Kanner

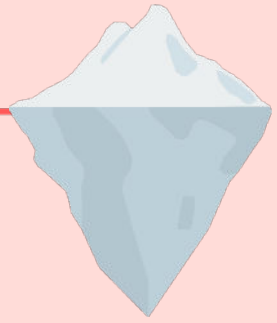
SINCE 1938, there have come to our attention a number of children whose condition differs so markedly and uniquely from anything reported so far, that each case merits—and, I hope, will eventually receive—a detailed consideration of its fascinating peculiarities.

Kanner, L. Autistic Disturbances of Affective Contact. Nervous Child, (2) 217-250, 1943

**Leo Kanner** described 11 children lacking social instinct, focussed on objects, **"obsessive insistence on sameness"** - coined term "early infantile autism".

He had hired **George Frankl** diagnostician from Germany...

**DSM criteria**
**Stereotype**
**Deficits based**
**Medical model**



**The *whole* person**
**Neurodiversity paradigm**
**Autism *and...***
**... health conditions**
**.... intellectual disabilities**

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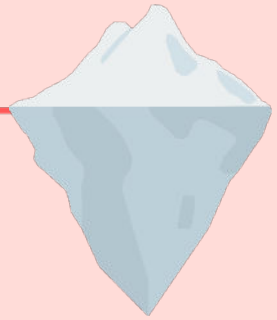
## WHAT IS AUTISM?

1944

Paediatrician **Hans Asperger**: first to coin the term Autism. He published work on boys with **high intelligence, trouble with social interactions but could talk endlessly about their special interest** calling them "Little Professors"

Descriptions of children being *worth educating or less worthwhile* lead to their **referral of some children to Nazi eugenics programmes to be euthanased.**

**DSM criteria**
**Stereotype**
**Deficits based**
**Medical model**



**The *whole* person**
**Neurodiversity paradigm**
**Autism *and...***
**... health conditions**
**.... intellectual disabilities**

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# WHAT IS AUTISM?

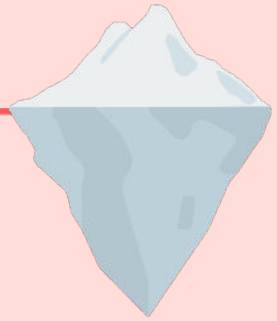
1950s

**Bruno Bettelheim** promoted his view along with **Leo Kanner** that autism was caused by **parental coldness**, maternal lack of warmth and mechanical attention to material needs only, "so the child withdraws to seek comfort in solitude"…

Coined the term: **"refridgerator mothers"** resulted in "**parentectomy**" and children being institutionalised.

***the parents just happened to defrost long enough to produce a child…***

**DSM criteria**
**Stereotype**
**Deficits based**
**Medical model**



**The *whole* person**
**Neurodiversity paradigm**
**Autism *and…***
**… health conditions**
**…. intellectual disabilities**

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# WHAT IS AUTISM?

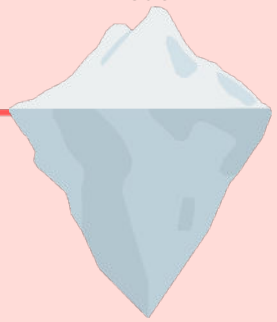

1960s



**US Autism society founded** use of antipsychotics and **Applied Behavioural Analysis (ABA)** developed by **Ivar Lovaas** UCLA researcher. Consisting of **punishment, rewards and electric shock therapy** to extinguish autistic behaviour and reinforce neuro-normative behaviour becomes mainstream therapy

Ref (2)

**DSM criteria**
**Stereotype**
**Deficits based**
**Medical model**



**The *whole* person**
**Neurodiversity paradigm**
**Autism *and…***
**… health conditions**
**…. intellectual disabilities**

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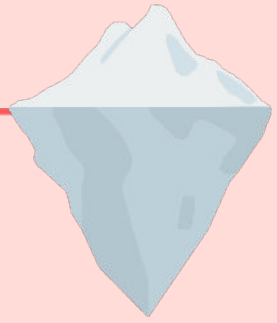
## WHAT IS AUTISM?

1980s

**1980s Autism enters the DSM-III:** "lack of social interest, severe communication impairments, bizarre response to the environment"

Studies on **autistic girls** emerged. Psychologist **Lorna Wing** found that people diagnosed "**high-functioning" autism - 15 x** more likely to be **male** whereas "**low-functioning"** autism the ratio of males to females was closer to **2:1**

**DSM criteria**
**Stereotype**
**Deficits based**
**Medical model**



**The *whole* person**
**Neurodiversity paradigm**
**Autism *and...***
**... health conditions**
**.... intellectual disabilities**

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## WHAT IS AUTISM?

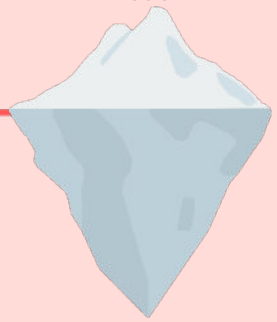
1990s

**1991: Lorna Wing** founded National Autistic Society. with **Judith Gould** described a **"triad of impairments"** (language, social interaction and stereotyped behaviour)

Conceptualised **Autism as a spectrum** due to the wide heterogeneity.

**1994: Asperger Syndrome** emerged as a differential diagnosis for **children and adults** without speech delay, average or above IQ and social-seeking behaviour.
....unintentionally **demarcates Asperger from Autism** and became **associated with high and low functioning labels**

**DSM criteria**
**Stereotype**
**Deficits based**
**Medical model**



**The *whole* person**
**Neurodiversity paradigm**
**Autism *and...***
**... health conditions**
**.... intellectual disabilities**

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## WHAT IS AUTISM?

**2013**

**DSM criteria**
**Stereotype**
**Deficits based**
**Medical model**

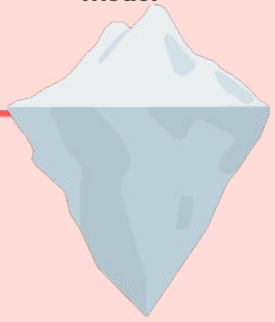
**Asperger Syndrome collapsed back into Autism spectrum diagnosis**

**Sensory issues** recognised as a core feature

Also **becomes possible to have a dual diagnosis of ADHD and Autism** – figures suggesting a **50-70% overlap**

First recognition of related conditions i.e. **ARFID**

Ref (3)(4)(5)



**The *whole* person**
**Neurodiversity paradigm**
**Autism *and...***
**... health conditions**
**.... intellectual disabilities**



## WHAT IS AUTISM?


A Study of Physician Knowledge and Experience with Autism in Adults in a Large Integrated Healthcare System


Barriers to Healthcare for Persons with Autism: A Systematic Review of the Literature and Development of A Taxonomy


BMJ Open Barriers to healthcare and self-reported adverse outcomes for autistic adults: a cross-sectional study

**70-79%** of Primary Care Doctors & Mental Health Professionals rate their ability to provide care to autistic patients as **poor to fair.**

**80%** of autistic patients reported **difficulties accessing** primary care

Researchers and health professionals **trained on stereotypes** leading to extensive barriers to healthcare

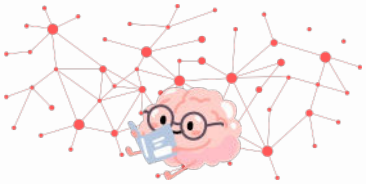
Ref (6)(7)(8)

**DSM criteria**
**Stereotype**
**Deficits based**
**Medical model**
**"Autistic person in distress"**


**The *whole* person**
**Neurodiversity paradigm**
**Autism *and...***
**... health conditions**
**.... intellectual disabilities**

## WHAT ELSE IS AUTISM?

Refs (9)(10)(11)(12)(13)(14)(3)



Different synaptic pruning = hyperconnected brain.
System thinkers & "bottom up" processing style

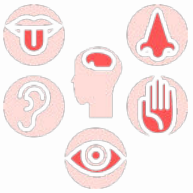
Intense world theory - Autistic brains generate 42% more information at rest

Double empathy
communication differences



Monotropism & inertia

Internal / External phenotypes
(traits missed due to gendered or cultural stereotypes)



Neurobiological differences:
Motor challenges (87%)
Executive functioning,
Interoception & Sensory processing

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## EXECUTIVE FUNCTIONING CHALLENGES

time management

working memory

decision making

planning & prioritising

organising skills


task initiation

impulse control

emotional regulation

focus & attention

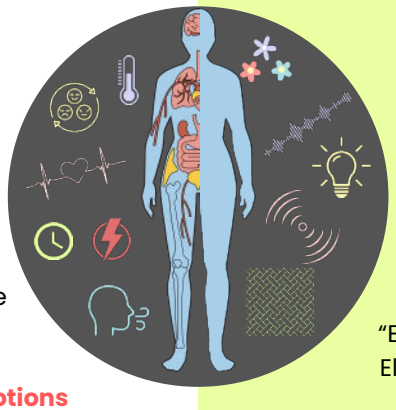
self reflection

## INTEROCEPTION & SENSORY PERCEPTION

**Awareness of internal state:**

**Homeostatic**
Discomfort
Hunger/Thirst
Fullness/Satiety
Breath
Sleepiness
Heartbeat
Toileting needs
Core temperature
Muscle tension

**Feelings and emotions**
Anger, **Safety,** Boredom,
Fear, Joy, Energy,
Disgust etc



**Awareness of impact of external stimuli on self:**

Noises
Air pressure
Smells
Textures
Visual
Touch
Pattern
Temperature
"Emotional tone"
Electromagnetic fields

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Biological Psychiatry: Cognitive Neuroscience and Neuroimaging
Volume 3, Issue 6, June 2018, Pages 501-513

Review

## Interoception and Mental Health: A Roadmap

Sahib S. Khalsa [a b], Ralph Adolphs [d], Oliver G. Cameron [h], Hugo D. Critchley [p], Paul W. Davenport [i], Justin S. Feinstein [a b], Jamie D. Feusner [e], Sarah N. Garfinkel [p], Richard D. Lane [k], Wolf E. Mehling [f], Alicia E. Meuret [l], Charles B. Nemeroff [j], Stephen Oppenheimer [m], Frederike H. Petzschner [q], Olga Pollatos [r], Jamie L. Rhudy [c], Lawrence P. Schramm [n o], W. Kyle Simmons [a b], Murray B. Stein [g], Klaas E. Stephan [q]... Nancy Zucker

## Sensory Subtypes and Anxiety in Older Children and Adolescents with Autism Spectrum Disorder

Mirko Uljarević,* Alison Lane,* Amanda Kelly, and Susan Leekam

This study aimed to identify sensory subtypes in older children and adolescents with Autism Spectrum Disorders (ASD) and examine the relationship of sensory subtypes with anxiety levels in this group. Mothers of 57 children and adolescents with ASD aged 11–17 years (Mean age = 14 years, 2.4 months, SD = 1.81) completed the short sensory profile and Spence anxiety scales. Model-based cluster analysis was applied to sensory profile scores to identify sensory subtypes. Three sensory subtypes, sensory adaptive (N = 19), sensory moderate (N = 29) and sensory severe (N = 9) were identified. The results indicated that the differences between the subtypes were well characterised by the severity of sensory symptoms and were not attributable to sensory modality or varying types of sensory-related behaviors. Children and adolescents from the adaptive subtype had significantly lower anxiety scores when compared with other two subtypes. There were no differences between subtypes based on chronological age, expressive language, or severity of autism diagnostic features as measured by the social communication questionnaire (SCQ total score). This is the first study to identify the existence of sensory subtypes among older children and adolescents with ASD and explore their association with anxiety levels. *Autism Res* 2016, 9: 1073–1078. © 2016 International Society for Autism Research, Wiley Periodicals, Inc.

**Statistically higher rates of:**

- Anxiety & depression
- Eating disorders
- OCD, Tourettes & Tic-disorders
- Self harm
- Substance addictions
- PTSD
- Chronic pain & Fibromyalgia

**People with low interoception can find it hard to self-regulate and attend to the one's physical and emotional needs**

**People with heightened sensory reactivity can respond negatively to innocuous stimuli and this this is a specific source of anxiety**

Ref

19

**Autistic adult life expectancy 54 yrs** (general pop 70) (with co-occurring intellectual disabilities: **36 yrs**)(17)

Leading causes of death:

**Epilepsy, Heart disease** & **Suicide (4-9 x higher rates)**

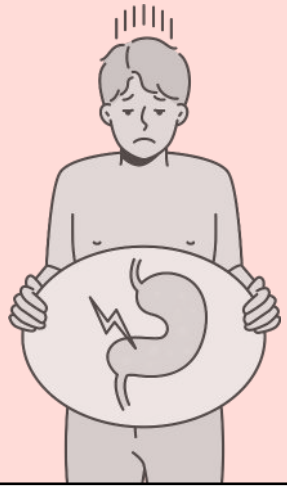
- ↑**risk** in those with lower support needs… aka "**high functioning autism**"
- **AUtistic children 28 x more likely** to consider or complete suicide

**Premature mortality & Disease prevalence**

**Suicide 9-fold** (male 6x, female 13x)
Cancer 2x, Digestive 3.3x, Endocrine 3.5x, Nervous system 7.5x higher in autistic people(8)

Autistic Doctors International survey: **those who considered Autism as a *disorder* associated w/ higher suicide attempts**(18)

**HEALTH DISPARITIES**



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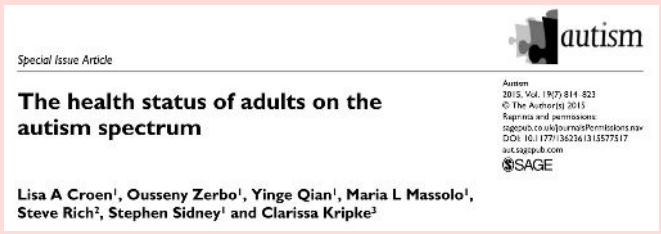

Special Issue Article

autism

The health status of adults on the autism spectrum

Lisa A Croen[1], Ousseny Zerbo[1], Yinge Qian[1], Maria L Massolo[1], Steve Rich[2], Stephen Sidney[1] and Clarissa Kripke[3]

SAGE

1507 autistic compared to 15070 non-autistic adults **Autistic people had a higher incidence of health problems *across every body system* studied**


Kassee et al. Molecular Autism (2020) 11:84
https://doi.org/10.1186/s13229-020-00380-z

Molecular Autism

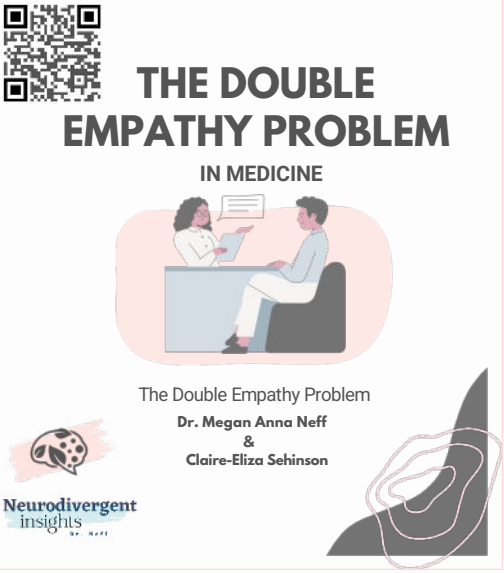
REVIEW Open Access

Physical health of autistic girls and women: a scoping review

Caroline Kassee[1,2†], Stephanie Babinski[2,3†], Ami Tint[1,4], Yona Lunsky[4,5], Hilary K. Brown[2,6]

**Autistic girls/women have heightened rates of physical health challenges** compared to non-autistic females and to autistic males Ref (19)(20)

HEALTH DISPARITIES


THE DOUBLE EMPATHY PROBLEM

IN MEDICINE

The Double Empathy Problem

Dr. Megan Anna Neff

&

Claire-Eliza Sehinson

Neurodivergent insights

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MASKING

CAMOUFLAGING

CODE-SWITCHING

"unconscious or conscious effort to hide and cover one's own self from the world, as an attempt to accommodate others and coexist"

*Jenara Nerenberg, Divergent Mind*

Increases rates of anxiety, depression, burnout and suicidality (21)

Leads to missed diagnosis or mis-diagnosis, especially in females (22)

- **People pleasing "fawning"**
- **Memorising scripts, rehearsed answers**
- **Mimicking allistic body language whilst suppressing autistic ones** incl. symptoms and pain
- **Pretending to have the same preferences or interests as allistic/NT**
- **Internalised ableism** (esp late diagnosed)
- **Fixating on social cues and appropriateness >** mental exhaustion & shame
- **Suppressing stimming**
- **Hiding sensory discomfort or pain** - linked to disassociation or use of substances to cope

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# THE MASKING ICEBERG

well behaved
compliant
people pleaser
helper

"high functioning"
"productive"

fun
independent
easygoing

"good girl/boy"
model minority

eye contact
body language
able to speak

feeling too much or too little
feeling misunderstood
internalised ableism

anxiety related disorders
depression
imposter syndrome
mental health crisis
suicidal ideation

restless or fidgety,
symptoms are
internalised

meltdowns
shutdowns
catatonia
self harm
use of substances & alcohol
to cope

sensory and emotional
overload or
dysregulation

TRAUMA & PTSD

restricted or binge eating.
aversions or sensitivities
to food (incl ARFID)

chronic illness exacerbated
by stress (HPA axis activation)

chronic pain & discomfort

exhaustion, fatigue, burnout

mimicking, rehearsing,
memorising scripts, code
switching, studying behaviour,
supressing traits

lack of belonging / alienation
loss of true identity
severed relationship with self

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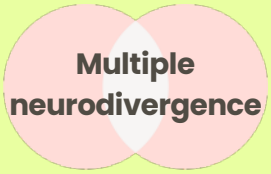
# CO-OCCURING MENTAL HEALTH ISSUES




**50-70%** of Autistic people also diagnosed **ADHD** (5)

**OCD: 27.8% meet criteria for Autism + 47%** score above clinical threshold (23)

up to **35%**
girls with *Anorexia nervosa* fit the criteria for autism diagnosis (24)

up to **54.8%**
of children diagnosed with ARFID are autistic (25)

**50-65%**
of autistic adults self-harm (26)

**15%**
autistic youths self harm (27)

Large population based study found Autistic people have an **increased risk of substance-use related problems** (28)

**90%** Autistic adults suffer from a mental health issue

**94%** Report anxiety of which **50% fall into severe** category (GAD-7)

**83%** Report Depression. **3 out of 10 fall into severe** category (PHQ-9)

**70%** Autistic **children** have a mental health issue (29)

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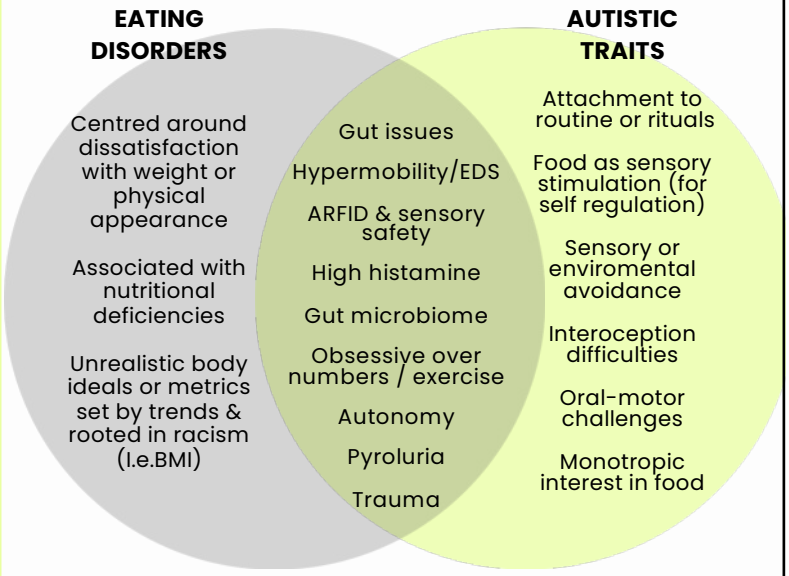
# DIAGNOSTIC OVERSHADOWING

Most common misdiagnoses:

- Borderline personality *disorder*
- Oppositional defiance *disorder* -in BIPOC autistic folx
- CFS overlaps clinically and can diagnostically overshadow Autism, especially in females.
- Pracs admit feeling unequipped to tease apart ND health consequences and symptoms of complex illness



**Context is *everything* for an accurate diagnosis. Accurate diagnosis is *everything* to get the appropriate support.**




Refs (20)(48)

Article by Claire Sehinson and Dr Megan-Anna Neff https://neurodivergentinsights.com/blog/autism-and-health-issues

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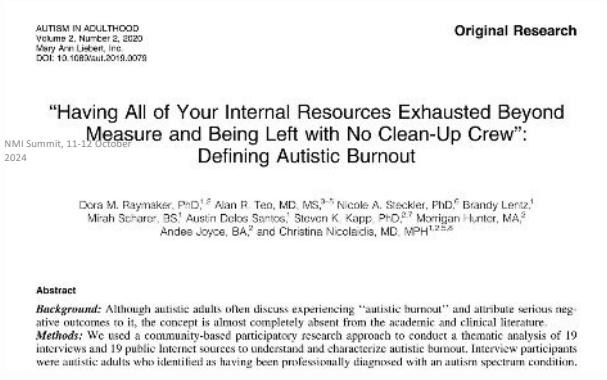
# AUTISTIC BURNOUT

**Characterised by**

1. **Chronic pervasive exhaustion**
2. **Reduced tolerance to stimulus or stress**
3. **Loss of skills**



AUTISM IN ADULTHOOD
Volume 2, Number 2, 2020
Mary Ann Liebert, Inc.
DOI: 10.1089/aut.2019.0078

Original Research

"Having All of Your Internal Resources Exhausted Beyond Measure and Being Left with No Clean-Up Crew": Defining Autistic Burnout

Dora M. Raymaker, PhD,[1,2] Alan R. Teo, MD, MS,[3-5] Nicole A. Steckler, PhD,[6] Brandy Lentz,[1] Mirah Scharer, BS,[1] Austin Delos Santos,[1] Steven K. Kapp, PhD,[2,7] Morrigan Hunter, MA,[2] Andee Joyce, BA,[2] and Christina Nicolaidis, MD, MPH[1,2,5,6]

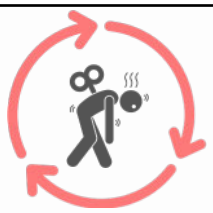
Abstract

*Background:* Although autistic adults often discuss experiencing "autistic burnout" and attribute serious negative outcomes to it, the concept is almost completely absent from the academic and clinical literature. *Methods:* We used a community-based participatory research approach to conduct a thematic analysis of 19 interviews and 19 public Internet sources to understand and characterize autistic burnout. Interview participants were autistic adults who identified as having been professionally diagnosed with an autism spectrum condition.

Ref (31)

**Often mistaken for:**

- Depression
- Bipolar disorder
- Chronic Fatigue Syndrome



**Common characteristics:**

- **Chronic fatigue / emotional exhaustion**
- **No joy in interests**
- **Depersonalisation or derealisation**
- **Loss of tolerance**
- **Loss of abilities (esp EF)**
- **↑shutdowns and meltdowns**
- **Worsening of mental health issues**
- **Changes to eating patterns or food selection**
- **Situational loss of speech "mutism"**
- **Self harm**
- **↑ suicidality**
- **Loss of ability to mask**



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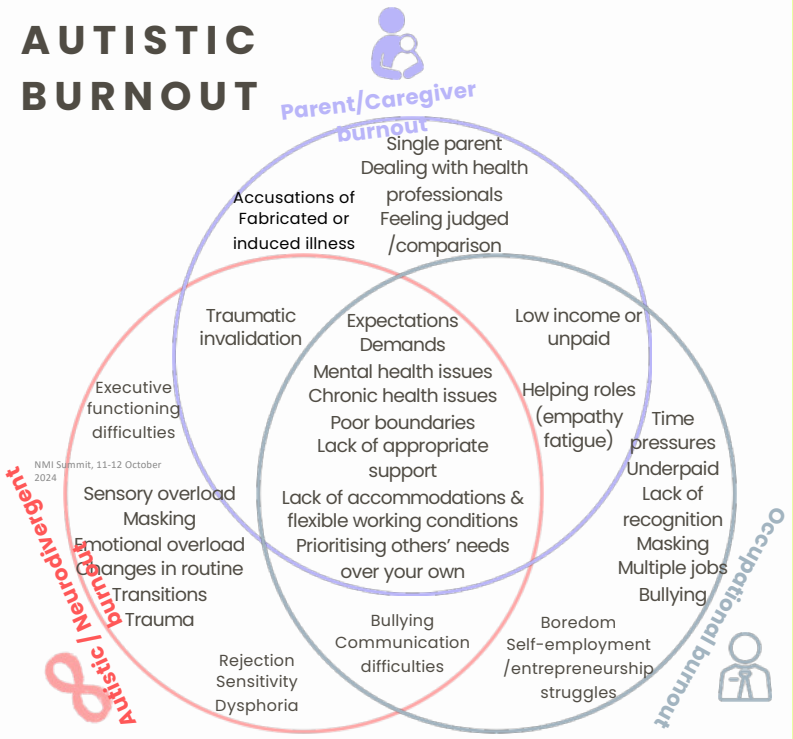
# AUTISTIC BURNOUT






## CAUSES of AUTISTIC BURNOUT

- Navigating an allistic world
- Executive functioning demands
- Sensory overstimulation
- Masking
- Life transitions / changes
- People pleasing
- Internalised Ableism & expectations
- Interoception difficulties
- Perfectionism
- AuDHD "paradoxical traits"
- Pervasive unresolved stress cycles

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# TRAUMA AND PTSD

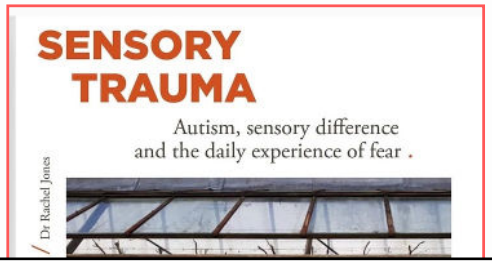
RESEARCH ARTICLE

Experience of Trauma and PTSD Symptoms in Autistic Adults: Risk of PTSD Development Following DSM-5 and Non-DSM-5 Traumatic Life Events

Freya Rumball, Francesca Happé, and Nick Grey

Research to date suggests that individuals with autistic spectrum disorder (ASD) may be at increased risk of developing post-traumatic stress disorder (PTSD) following exposure to traumatic life events. It has been posited that characteristics of ASD may affect perceptions of trauma, with a wider range of life events acting as possible catalysts for PTSD development. This study set out to explore the nature of "trauma" for adults with ASD and the rates of self-reported PTSD symptomatology following DSM-5 and non-DSM-5 traumas—the latter being defined as those that would not meet the standard DSM-5 PTSD trauma Criterion A. Fifty-nine adults with ASD who reported exposure to traumatic events took part in the study, which involved completing a series of online questionnaires. Thirty-three individuals reported experiencing a "DSM-5" traumatic event (i.e., an event meeting DSM-5 PTSD Criterion A) and 35 reported a "non-DSM-5" traumatic event. Trauma-exposed ASD adults were found to be at increased risk of PTSD development, compared to previous general population statistics, with PTSD symptom scores crossing thresholds suggestive of probable PTSD diagnosis for more than 40% of ASD individuals following DSM-5 or non-DSM-5 traumas. A broader range of life events appear to be experienced as traumatic and may act as a catalyst for PTSD development in adults with ASD. Assessment of trauma and PTSD symptomatology should consider possible non-DSM-5 traumas in this population, and PTSD diagnosis and treatment should not be withheld simply due to the atypicality of the experienced traumatic event. **Autism Res** *2020, 13: 2122–2132.* © 2020 The Authors. *Autism Research published by International Society for Autism Research* published by Wiley Periodicals LLC.

Ref (30)




Ref (35)

> Autistic adults experienced a wide range of life events as traumatic, with over 40% showing probable PTSD within the last month and over 60% reporting probable PTSD at some point in their lifetime. Many of the life events experienced as traumas would not be recognized in some current diagnostic systems, raising concerns that autistic people may not receive the help they need for likely PTSD



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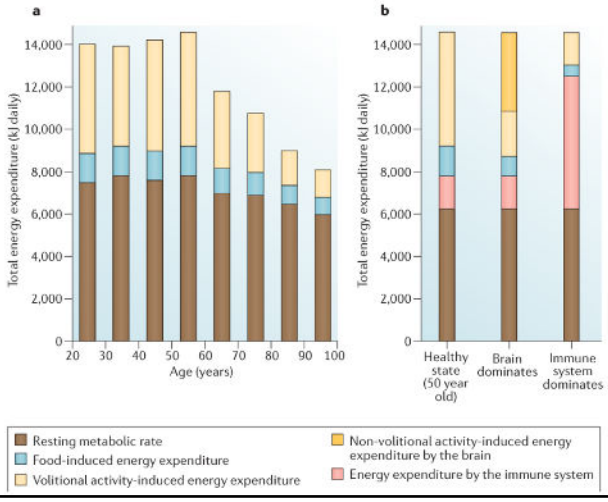
# ENERGY COSTS OF STRESS & THE IMMUNE SYSTEM

| involuntary activity | additional energy costs |
|---|---|
| Inflammation | 25 - 60% |
| Chronic low-grade infection | 10% |
| Acute pain | up to 60% |
| Chronic pain | 15% |
| Psychological stress | up to 30% |
| Sleep changes | up to 30% |
| Anxiety | up to 10% |
| Heavy smoking | up to 15% |

- Brain = 2% of body mass but consumes 25% of total oxygen uptake *at baseline* (34)
- ***Autistic brains generate 42% more information at rest*** (11)




Ref (33)

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# THE DIVERSE ROLES OF *MITOCHONDRIA* IN STRESS AND MENTAL HEALTH

**Bi-directional:** Stress alters mitochondrial dynamics and mitochondrial dynamics influences the stress response

**Altered morphology** depending on their role in the cell. Different forms in synapse, dendrites & axons

Play a critical role in **neurogenesis, differentiation** and **synaptic pruning** - through provision of ATP and modulated by ROS signalling

Ref (36)(37)(38)

**Regulates Calcium (Ca2+)**
- affects internal cell signalling
- releases neurotransmitter vesicles
- abnormal Ca2+ at synapses leads to hyperexcitability (underlies mania & cellular hypersensitivities)
- abnormal Ca2+ channels associated with other neurodevelopmental conditions

Mitochondria **synthesise all steroid hormones**: including pregnenolone/glucocorticoid

**Release immunogenic elements such as cell-free mtDNA** in response to stressors that can trigger sustained inflammation. Linked to depression and MCAS.

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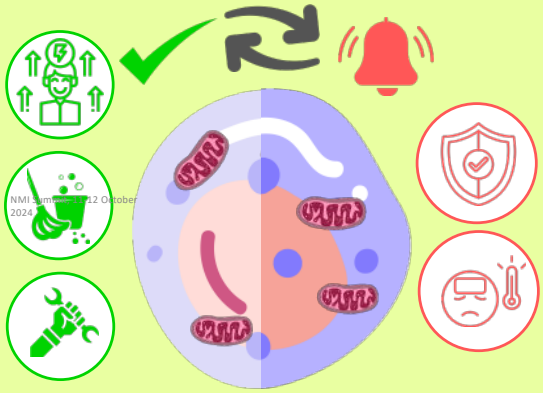
## THE CELL DANGER RESPONSE & SICKNESS BEHAVIOUR



- **Mitochondria are sensors of 'threat'**
- **Threats are diverse**
- **Metabolic changes, immune activation** and "**Sickness behaviour**" **occurs:**
  - social withdrawal
  - depression
  - fragmented sleep
  - increased sensory aversions
  - feeding/eating changes
  - myalgia, headaches & migraines,
  - fatigue
  - gastrointestinal issues etc.....
- CDR **cannot be switched off until** the cell perceives **safety**
- Continual **perception of danger** leads to **hypersensitisation**

Ref (39)(40)

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## DIFFERENCES IN SCREEN-USE IN

| NEUROTYPICAL | VS | AUTISTIC |
|---|---|---|
| Screen use associated with higher rates of stress, anxiety and depression and "internalising symptoms" | | Screen use not related to anxiety and depression. Associated with stress-reduction and happiness. |
| Electronic interactions viewed as less meaningful than in-person | | Electronic interactions less complicated and easier that in-person i.e. eye contact burden removed |
| Social media a source of stress due to comparison and pressure to conform | | Social media a source of connection to like-minded individuals, who share niche interests. |
| Screen time mostly spent on solitary activities i.e. watching TV and increases loneliness and isolation | | Screen use spent on 'special interests' and is not related to loneliness or isolation |
| Removes person from mood-enhancing activities i.e. social gatherings, time outdoors, sleep & exercise | | Screen media can provide predictability, autonomy and comfort. ref (44) |

## THE NEED FOR AUTISTIC-AFFIRMING CLINICAL TOOLS

### Atypical responses:

- **Medication** 78% of autistic people had unpleasant response to SSRIs
- **Behavioural interventions:** may be experienced as traumatic(45) may increase in rates of PTSD (46)
  - Tendency to increase masking

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## SHORTCOMINGS OF EVIDENCE-BASED PRACTICE IN AUTISM

Focussed on "fixing" and preventing, rather than Autistic wellbeing (47)

"normal" lab ranges not inclusive of all neurotypes

"Autistic" animal models based on the social behaviours of chemically or surgically brain-damaged rodents.



Autistic traits & intentions pathologised - "broken neurotypicals"

Autistic phenotypes stereotyped to cis-white boys. Lacks diversity (all groups) or cultural understanding of different ethnic groups.

Verbal, facial or physical expression of symptoms may not match the expectations of the provider.

Symptoms invalidated (unintentional gaslighting). Diagnostic overshadowing common.

Assessment questionnaires & laboratory tests not validated in autistic people.
(Allistic/NT becomes the goal - "normal")

Sensory/interoceptive differences can be pathologized

Communication and executive functioning difficulties not considered or accommodated during intake and when delivering protocols.

Paradoxical reactions to food, supplements, relaxation techniques, mindful eating, tech devices etc

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## CASE STUDY



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**Female: 41, Autistic & ADHD, late Dx.**
Single parent to 2 ND children, 16 & 18
Occ: Clinical psychologist, NHS. High masking and code-switching at work.
Previous practitioner count: **11!**

**Seeking help for: chronic fatigue, autistic burnout, ARFID:** v.limited food choices due to digestive pain & sensory issues, sleep difficulties
**Co-occurring:** Ehlers Danlos, trauma, IBS, Raynauds, POTS, chronic pain

**Previous testing/Fx diagnostics - done by prior practitioners:**
"mitochondrial dysfunction", mycotoxins present, gut dysbiosis and SIBO, low SIgA, low cortisol awakening, subclinical hypothyroid, multiple food intolerances (to foods *not* in her cultural diet…), low minerals (Mg, Zn, Fe, Cu), low omega-6, suboptimal Vit D, EBV +ve



**Mental health and sleep:**
Hypervigilant, mental exhaustion, sensitive to external environment
"revenge bedtime procrastination", brain "pinging", hyperfocuses on interests, TV shows
3-4 hrs to get to sleep, wakes easily in night (detects changes in noise levels)

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**Gut, Nutrition & Feeding:**
Digestive issues: difficulties describing/locating Sx, intense discomfort, feels "poisoned"
Exhaustion after eating. Chewing & swallowing tiring, uncoordinated, regurgitates.
"Bolts food" as feels full quickly (even w/ water- so doesn't drink enough)

Struggles with morning eating, no appetite, nausea, high EF load
Eats lunch at her computer, or on the sofa watching TV - needs screens to regulate
No appetite in work canteen or around strangers.
Forgets to eat or drink water
Evenings: uses food to stim - crunchy, salty, sweet. Uses alcohol to regulate.
V. restricted repetitive diet



**Sensory preferences:**
**Preferences:** vegetarian/pescatarian (dislikes meat texture), crunchy, spicy
**Aversions:** cold food/drinks, lumpy (i.e. oatmeal), fat/oily/slimy (i.e. avocado, mushrooms)
**Poor EF:** likes cooking, struggles with planning, prep, shopping, chopping & clean-up
Lost joy for cooking and eating

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## Previous Practitioners & Doctors had put her on: (client's comment)

- Low histamine diet overwhelming, not compatible w/ Carribean meals, caused more stress
- Low FODMAP diet no guidance, apps are not culturally inclusive, caused isolation
- Gluten, dairy free and blood sugar balancing disliked textures/tastes of alternatives
- Intermittent fasting refused
- Carnivore /Paleo almost stopped eating all together as couldn't handle texture of meat
- Juicing and elemental diets realised she struggles with cold
- "Eat 10 veg a day/30 plants a week" struggles with too many new textures on 1 plate
- Mindful eating - get off screens, focus on chewing etc - made her more dysregulated
- 'sprinkle green powder on your Jamaican meals' 'drizzle some flax oil' felt culturally insensitive
- Used CGM, Vagus nerve stimulators, Saunas, HRV (oura) etc



Supplement protocols: Mitochondrial, Microimmunotherapy, gut healing, MCAS, mould detox, adrenal, viral etc. Nothing has worked, felt "overloaded", becoming hypersensitive to everything.

Her experiences: feels more complexly ill than ever, "there is no hope", fantasises about suicide, recovery is exhausting, feels misunderstood, unsure if she has an eating disorder, feels like she's failing, blamed for being non-compliant, trying so hard and struggles with change/forming habits. Has spent tens of thousands £££, diet & chronic illnesses have isolated her from her community/friends/family.

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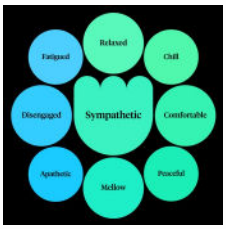
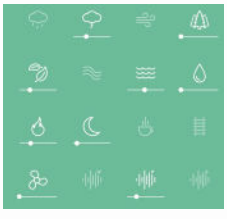
## OUR CONVERSATIONS: FOOD, EATING & SENSORY SAFETY

VS

- Challenged mindful eating > **externalising focus on screens helps** with sensory regulation, food-related trauma. **"meal pairing" w/ fave TV show**
- Challenged "Picky eating" > **sensory eating & safety in her routine and predictability.** Automation = less energy.
  - No pressure to introduce new foods outside her pace
  - Sensory food questionnaire.
- **Understood the role of interoception** and overwhelm ("information overload" from diet / supplements/body)
- **Reduced overwhelm:** no mixed textures, deconstruct foods. 3 ingredients max
- **De-stigmatised food stims**
- **Optimal eating environment for safety** > TV shows / Noislii* app/ Purrble / Loops etc
- **Depathologize/normalise** the use of convenience foods, cooking methods and relying on nutritional supplements
- **Oral-motor:** foods requiring less chewing w/EDS



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## OUR CONVERSATION: EXECUTIVE FUNCTION & COMMUNICATION

- Clarity of instructions - no ambiguity, allow additional processing time.
- Alternative communications and descriptors for symptoms, energy levels etc (**Autism Level Up**)
- **Outsourcing EF** where possible. Asking for help with some tasks and **using AI:**
  - Reducing overwhelm (no. of steps in self-care tasks & food prep)
  - Creating shopping lists, meal plans, routines, scripts
  - Interpretation of ambiguous communication
- Using visual and **external cueing**
- Looked at her **demands and expectations** *(stemming from societal expectations that become internalised pressures to conform)* and what she felt she could release: ***Shoulds, Wants, Needs exercise***
- Co-created **advocacy scripts** around food, boundaries, disability and identity
- **Connecting** to people through her special interests: parallel play



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## RESOURCES & FURTHER INFO

**Advocacy**

**The Double Empathy Problem in Medicine -** Claire-Eliza Sehinson and Dr Megan-Anna Neff.

**All Brains Belong** - Advocacy documents, layman explanations of complex health issues in ND

**AASPIRE** - Autistic lead, community based research, resources & publications (lived experiences)

**Further training for practitioners**

**RDs for Neurodiversity** ND-affirming training for nutrition & helping professions

**More Than Words -** Communication guidelines in healthcare for working with autistic people



**Information about neurodivergent health**

**My blog** for articles and advocacy on chronic illness, mental health and resources for ND-folk

**Autism and Health Issues Unpacked: Exploring the Intersection of Autism and Chronic Fatigue Syndrome** Claire-Eliza Sehinson and Dr Mega-Anna Neff - literature review.

**Identification, Assessment, Diagnosis:**

**Donna Henderson "Is This Autism"** accessible reading

**Embrace Autism** assessment questionnaires

**ND-adapted mental health/self-care resources**

**Neurodivergent Insights (website) & Self-Care for Autistic People (book)** by Dr Meghan Anna Neff

**The Neurodivergent-Friendly Workbook of DBT Skills** by Sonny Jane Wise

**Interoception Curriculum** by Kelly Mahler (includes sensory profiling)

**Understanding Autistic Burnout Workbook & support sheets** by Dora Raymaker

**Autistic Masking** by Kieran Rose, Dr Amy Pearson

**PEACE Pathway Healthcare** Communication passport & other editable resources (i.e. sensory profiling)

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