

Sensory Overload and Unapparent Disabilities

Are Our Homes Sensory Friendly?

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About Joanie - Joanie wears multiple hats:

- Since 1983, she has been a music teacher and a performing musician
- Since 1995 (the birth of her second child who has autism), she has been an inclusion awareness activist
- **As a mother of an individual with autism:** Joanie immersed herself in studying, researching, writing and speaking about Sensory Processing Disorder.
- **As a teacher:** Joanie has always had students with a variety of learning styles and sensory challenges.
- **As an inclusion awareness activist:** Joanie leads professional development about what true inclusion can look and feel like in home, classroom and community settings where individuals with sensory issues often go into overload or shut-down behavior.

Why are they doing that?!



Behavior Is Communication

And we are detectives...

Could something in our home be affecting our sensory systems?

Unapparent Disabilities: What are they?

Invisible/ Unapparent Disabilities

- Sensory Processing disorder (SPD)
- Adverse Childhood experiences (ACES/Trauma)
- Mental Health challenges: Anxiety/Depression/Fear
- Developmental Disability (DD)
- Autism spectrum disorder (ASD)
- Complex Post Traumatic Stress Disorder (C-PTSD)

Unapparent Disabilities Create Barriers in Public Spaces

- 1 in 5 adults (21%) in the US struggle with mental health issues, = over 50 million Americans
- 1 in 6 children and adults (16%) have SPD (Sensory Processing Disorder/Difference)
- 1 in 6 adults (16%) in the US have experienced 4 or more ACES (Adverse Childhood Experiences/Trauma)
- 1 in 20 (5.3%) of adults in the US have a cognitive disability.
- 1 in 45 adults (2.2%) and 1 in 31 children (3.2%) have ASD (Autism Spectrum Disorder) (Adults: 2% in LA, 2.42% in MA) (Children: 1 in 103 in TX, 1 in 19 in CA) (CDC updated 4/17/25)
- 1 in 20 adults (5%) have PTSD (Post Traumatic Stress Disorder)
- No numbers yet for C-PTSD! (Believed to affect between 1-8% of the population.

Sensory Processing Disorder

Sensory processing disorder, or SPD, (formally known as sensory integration dysfunction), is a result of neurological wiring that causes the uneven processing of our sensory input.

SPD can have a huge impact on a person's sense of self, social skills, general ability to attend, learning and behavior, both in school and in other public environments.

There is no definitive research as to the causes of SPD, but research is being done on the connection between SPD and elevated levels of lead. "Exposure to lead is associated with adverse effects on neurodevelopment....All subscale scores and the total SPM-HKC scores for children with high blood lead levels (blood lead > 5 µg/dL) were higher than those in the low blood lead level group (blood lead < 5 µg/dL), especially for hearing, touch, body awareness, balance and motion, and total sensory systems."

ACES

Adverse Childhood Experiences

Adverse childhood experiences are exactly what those words mean: the experience of something bad happening that causes trauma.

Everyone experiences some type of adverse childhood experience!

But FOUR OR MORE unsupported, unresolved ACES can cause neurological changes in developing brains.

Autism Spectrum Disorder ASD

Autism, or autism spectrum disorder (ASD), refers to a broad range of conditions characterized by **challenges with**:

- social skills and interactions,
- handling change,
- handling unexpected activities,
- repetitive behaviors,
- producing and understanding speech **and**
- understanding nonverbal communication.

According to the Centers for Disease Control (2023), autism affects an estimated 1 in 45 adults and 1 in 36 children in the United States today.

C-PTSD vs. PTSD

- C-PTSD stands for Complex Post Traumatic Stress Disorder, where certain triggers cause sensory overload or shutdown.
- PTSD is associated with trauma that is a result of a one-time (or one kind of) traumatic event
- C-PTSD develops as the result of ongoing traumatic events, often related to abuse that leads to betrayed trust in relationships
- C-PTSD can also be the result of 4 or more ACES
- C-PTSD can also be the results of negotiating the world with SPD

Sensory Processing Disorder: SPD

Areas of Sensory Processing

As we all know, we have:

- 1) The sense of hearing (auditory),
- 2) The sense of touch (tactile),
- 3) The sense of smell (olfactory),
- 4) The sense of taste (gustatory), and
- 5) The sense of seeing (visual).

Three less known sensory areas are the:

- 6) The proprioceptive system,
- 7) the vestibular system, and the
- 8) interoceptive system

Household Sensory Irritants

- Are the noises in our home overwhelming?
- Are there textures in our home that create stress?
- Are there smells from neighboring apartments that are distressing?
- Are the lights and light fixtures in the home or surrounds causing headaches?
- Is the layout of the home such that someone struggles to find their footing?
- Does our home have lead? Other toxic heavy metals? Radon? Mold? Asbestos? Invisible toxins? All of these elements have been researched and connections to changes in the sensory systems have been identified.

Proprioceptive System



The proprioceptive system is located both in the cerebellum and in our joints and ligaments and helps us understand how the parts of our body are working together, where our limbs are, where our body is relative to the space we are in and where we are in relation to other people in that space.

Vestibular System



The vestibular system is located in the inner ear, and helps control one's sense of balance, as well as our orientation in space. This system helps with eye-hand and eye-head coordination, and therefore affects reading and language comprehension. It also significantly impacts emotional regulation.

Interoceptive System



The interoceptive system detects responses to internal senses, such as body temperature, hunger, pain, fatigue, heart rate, breathing, and the need to go to the bathroom. We are constantly getting information from our internal organs, but if our interoceptive system is working efficiently, we only pay attention to this information when we need to.

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- Someone might be **hypo** in one area at one time of day, and **hyper** at a different time of day.
 - Someone might be **hypo** in one area and **hyper** in a different area.
 - Most people with autism also have SPD, **but many people have SPD and do not have autism.**
 - It is estimated that 1 out of 6 adults have **SPD**, but 1 out of 45 have **autism**.
 - **Trauma** affects the brain and the sensory systems and can present with responses identical to **SPD**.

You Have No Idea

By Joanie Calem

Sometimes I just can't calm down, My skin is on fire, my brain's
whirling around, Moving makes it better but I know that bothers
you, I need some help; I don't know what to do.

I know it seems odd that I stare at the floor, But when I look at your
eyes I can't hear anymore, In order to listen I've got to look away,
Not all the time, but it's really bad today.

You have no idea what it's like to be me,
No idea how hard it can be,
No idea how I long to be free,
You have no idea what it's like to be me.

I know you get embarrassed when we're out and about, the noise
and crowds scare me but I don't mean to shout, I know you spent a
lot on my nice new shirt, I can't put it on, it makes my body hurt.

You have no idea what it's like to be me,
No idea how hard it can be,
No idea how I long to be free,
You have no idea what it's like to be me.

I know you worked real hard to make this good food, the smell
hurts my head, I don't mean to be rude, I don't mean to
misbehave, I don't mean to get mad, I'm so sorry I don't want
you to be sad.

Teacher says I'm spoiled, Grampa says I just need rules, Gramma
says in her time, I wouldn't dare do what I do. But they don't
understand, what it's like inside of me, 'cause bad behavior is all
that they see....

They have no idea what it's like to be me,
No idea how hard it can be,
No idea how I long to be free,
You have no idea what it's like to be me.

The Eight Areas of Sensory Processing Disorder: SPD

Auditory Sensitivity



*Research has shown that exposure to lead negatively affects the auditory processing system.

Auditory Sensitivity

HYPER Sensitivity: (Over sensitive)

Sounds might startle, cause fear or irritation

- Normal house noise can be very distracting/disturbing
- May notice, be bothered or be distracted by outside noises: sirens, neighbors, motorcycles, a distant airplane, etc.
- Afraid of, or has unusual responses to, sudden noises like flushing toilets, tea kettles, rattling cutlery, barking dogs, doorbells, fire alarms, etc.
- May become agitated and/or confused in loud spaces
- May struggle to answer questions in loud spaces

TRY:

- Quiet music
- Headphones
- Earplugs
- Allow alternative seating
- Accept calming mindfulness activities, like candle breathing, counting, BrainGym activities, like neck rolls, belly breathing, etc



Auditory Sensitivity



HYPO Sensitivity: (Under sensitive) **Sounds become like soup**

- Cannot follow conversations in a loud room
- Might not hear when being spoken to if there is background noise
- Has trouble remembering/following verbal instructions
- Prefers to play music excessively loudly
- May hum, talk or sing to themselves
- Might prefer to keep headphones on
- Might go to phone for comfort and distraction from the confusion of surrounding sounds

TRY:

- Instructions should be written as well as verbally explained, preferably in a quiet place
- Reminders to hum/talk/sing to self under breath.

Tactile Sensitivity



***Research has shown that exposure to lead negatively affects the tactile processing system.**

Tactile Sensitivity

HYPER Sensitivity: (Over sensitive)

Afraid of touching or being touched

Unfamiliar tactile experiences may cause anxiety/fear

- May recoil and become agitated from certain textures (curtains, carpets, shutters, kitchen supplies)
- May recoil and become agitated from unexpected touch
- May avoid physical affection even with familiar people
- May recoil from getting hands dirty/wet
- May be afraid of new and unknown, uncontrollable natural phenomena (rain, leaves drifting, grass blowing against one's skin, insects, wind)
- May not want to dress "appropriately" for the weather because they may be sensitive to certain materials and textures, (weight of coat, tags on shirts, cuffs on pants, buttons on button down shirts, new blue jeans, zippers, etc.)
- Temperature fluctuations can cause overload

TRY:

- Check-in before touching



Tactile Sensitivity



HYPO Sensitivity: (Under sensitive) **Seeks out/tries to touch everything**

- Wants to touches various textures constantly
- May bump into and touch other people
- May want to hug others at unexpected/"inappropriate" times
- May not feel physical pain though clearly injured
- May roll materials around different parts of their bodies
- May crave certain kinds of materials
- May constantly be playing with household items because the touch helps them calm down (curtains, carpets, shutters, kitchen supplies)

TRY:

- Fidget box of sensory materials

Olfactory Sensitivity



Olfactory Sensitivity

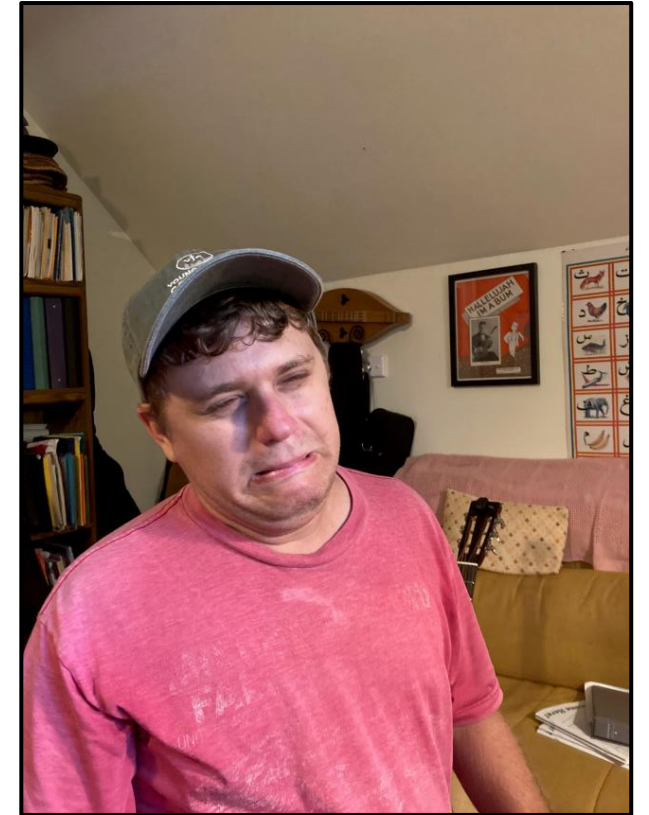
HYPER Sensitivity: (Over sensitive)

Unfamiliar smells may cause anxiety/nausea

- Overwhelmed by certain smells, causing dizziness, nausea, or headaches
- The range of smells that upset them is endless and unpredictable
- May affect what rooms/houses they are willing to go into
- May affect their ability to cook certain foods
- May affect whom they are willing to be with, if for instance, a person wears a certain kind of perfume.
- Sensitive to food smells, perfumes, deodorant, cleaning materials, animals, restrooms, air quality, car fumes, outdoor smells, etc
- Smells from neighboring apartments may cause distress
- Smells may be equated with whether or not someone is “likeable”

TRY:

- Let them choose potentially calming scents, eg. lavender or rose
- Let them use a sachet or unlit candle so that they can control the amount they smell
- Let them use a medical face mask or scarf to cover their nose
- Mindfulness exercises like “Flower Breath”



Olfactory Sensitivity



HYPO Sensitivity: (Under sensitive)

Does not notice smells at all

- Does not perceive smells,
- Is not aware of their own body smells, of dirty clothes, of something burning, etc.
- Will try to smell things in order to interact with them, (similar to children who mouth everything.)
- May not smell garbage or trash that should be taken out

TRY:

- Aromatherapy or Plug-ins near desk (be sure others nearby do not have hyper-sensitivities)
- Stronger/stimulating scents: eg. lemon, mint

Oral/Gustatory Sensitivity



Oral/Gustatory Sensitivity

HYPER Sensitivity: (Over sensitive)

Extremely sensitive to textures of food

- Cannot bear to have certain types of textures in their mouth
- Has a very strong gag reflex
- Picky eater
- Resists any unfamiliar food

TRY:

- Sucking on hard candy



Oral/Gustatory Sensitivity



HYPO Sensitivity: (Under sensitive)

Mouths everything

- Puts everything in their mouth, including peeling paint
- Chews on clothes
- Chews/sucks on hands, thumb or fingers
- Chews on pencils, crayons and pens, etc.
- Focuses better when mouth is engaged

TRY:

- Chewing gum/ice chips
- Sucking on hard candy

Visual Sensitivity



***Research has shown that exposure to lead negatively affects the visual processing system.**

Visual Sensitivity

HYPER Sensitivity: (Over sensitive)

Visual stimulation can be painful and overwhelming

- Has trouble following information on a crowded page
- Bothered by certain kinds of lights
- Gets confused in a busy room.
- Sunlight may be disturbing
- Sun/shadow play may be disturbing
- Sun on snow may be painful
- May get confused by too much visual stimulation.
- Has trouble looking into people's eyes.
(As Temple Grandin is quoted as saying, "I can listen to you or I can look at you, but I can't do both." The cultural expectation of looking someone in the eyes while listening or speaking is extremely disconcerting and difficult for children w/ SPD.)

TRY:

- Dim lights
- Sunglasses
- Worksheets organized with less information
- Acetate page filters
- Separate office space



Visual Sensitivity



HYPO Sensitivity: (Under sensitive)

May have difficulty focusing on visual input

- Is mesmerized by spinning objects
- Fixates on repetitive sights, like fans or blinking lights, floating leaves
- Fascinated/focuses on bright colors and lights
- Flaps hands in front of eyes
- May look straight at the sun and not be bothered
- May not be able to figure out how to read a written page
- May stare at people and objects but still seem not to see them
- May struggle with reading and school tasks

TRY:

- High-contrast papers
- Gestures and movements when speaking
- Multimedia content

Proprioceptive Sensitivity



***Research has shown that exposure to lead negatively affects the proprioceptive system.**

Proprioceptive Sensitivity

HYPER Sensitivity: (Over sensitive)

May feel anxious and out of control in new spaces

- Averse to crowds
- Has poor balance
- Fears the possibility of unexpected touches
- Has uneven gait
- Very sensitive to moving from room to room, or from inside to outside, and the changes in atmosphere
- Feels barometric pressure changes
- Doesn't like to have feet be off the ground
- Exposure to lead can lead to poor body awareness
- Exposure to lead can lead to negative impact on the cerebellum, where the proprioceptive system is located
- Exposure to lead can lead to impairment in fine motor skills, which are connected to the proprioceptive system

TRY:

- Give ample warning for transitions/changes in schedule
- Relaxation techniques; deep breathing; minimize movement unless rocking or swinging helps
- Find out what calms
- Heavy work (pushing weighted cart, lifting)



Proprioceptive Sensitivity



HYPO Sensitivity: (Under sensitive)

Feels better moving

- Intentionally bumps into things
- Erratic energy, goes quickly from high to low
- Falls often
- Accident prone
- Uses too much force when touching others
- Stands too close to people
- Has uneven gait
- Struggles to sit still
- Exposure to lead can lead to poor body awareness
- Exposure to lead can lead to negative impact on the cerebellum, where the proprioceptive system is located
- Exposure to lead can lead to impairment in fine motor skills, which are connected to the proprioceptive system

TRY:

- Alternative seating: Bean Bag chairs, swings, rockers, computer chairs, cushion seats OR work standing.
- Weighted vests, backpacks, blankets, “therabands” on chair/desk legs.
- Fidget box
- Allow movement throughout the work day

Vestibular Sensitivity



***Research has shown that exposure to lead negatively affects the vestibular system.**

Vestibular Sensitivity

HYPER Sensitivity: (Over sensitive)

Nervous about moving, seems not to sense where their body is in space

- Needs to control movement
- Dislikes sports
- Dislikes being outside because the ground may not be predictable
- Suffers from carsickness
- Gets dizzy very easily
- Very cautious about movement
- Lead, even at low levels, often targets the vestibular system and the brain stem
- Lead exposure can lead to serious balance dysfunction

TRY:

- Slow, continuous movement for calming (swing, rocking chair), Tai Chi, Yoga
- Sitting on exercise ball
- Standing on balance board



Vestibular Sensitivity



HYP0 Sensitivity: (Under sensitive)

Seeks high impact to feel grounded

- Needs to rock, swing, spin or jump etc.
- Eyes do not track well
- May fall out of chair often
- May struggle with language skills
- May struggle with reading
- Struggles to sit still
- Lead, even at low levels, often targets the vestibular system and the brain stem
- Lead exposure can lead to serious balance dysfunction

TRY:

- Allow for movement

Interoceptive Sensitivity



***Research has shown that exposure to lead negatively affects body awareness.**

Interoceptive Sensitivity

HYPER Sensitivity: (Over sensitive)

May be distracted by their own body signals

- Might not be able to tolerate hunger at all.
- Might feel full from too little food; may not eat enough.
- Might need to hydrate constantly.
- Might not be able to tolerate any fatigue
- Might go to the bathroom incessantly
- Might not be able to tolerate any tension
- Might be afraid of feeling emotions
- Temperature changes may be experienced as very bothersome

TRY:

- Maintain calm sensory surroundings
- Have lights low in rooms
- Play quiet, calming music
- Explain office expectations re emotions and physical sensations
- Heavy work activities



Interoceptive Sensitivity



HYPO Sensitivity: (Under sensitive)

May not sense temperature or outdoor changes

- Might not sense hunger.
- Might not sense being full from food.
- Might not sense thirst.
- Might not sense fatigue.
- Might not sense the need to go to the bathroom.
- Might not sense physical or emotional tension
- Might not sense emotions or anxiety
- Might not sense temperature

TRY:

- Observe for "HALT": hungry?angry?lonely?tired?
- Check in often if behavior is erratic
- Heavy work activities

ACES – Adverse Childhood Experiences

**ACEs stands for Adverse
Childhood Experiences**

***ACEs often
present as SPD.***

**ACES affect children's
developing brains.**

**ACEs can reshape how
people respond to stress,
and therefore directly affect
their life experiences and
sense of resilience.**

**ACEs also affect physical
health, by damaging one's
immune system and
impacting long term health.**

**ACEs are common. A 2019
CDC bulletin found that
nearly 1 in 6 adults
reported they had
experienced **FOUR** or more
types of ACEs.**

Examples of ACES

Personally experiencing or witnessing verbal or physical violence or abuse in the home or in the community

Personally experiencing bullying

Knowing someone in your community who has died as a result of violence

Having a family member attempt or die by suicide

Witnessing substance misuse or mental health struggles of a close family member

Experiencing acrimonious parental separation or divorce

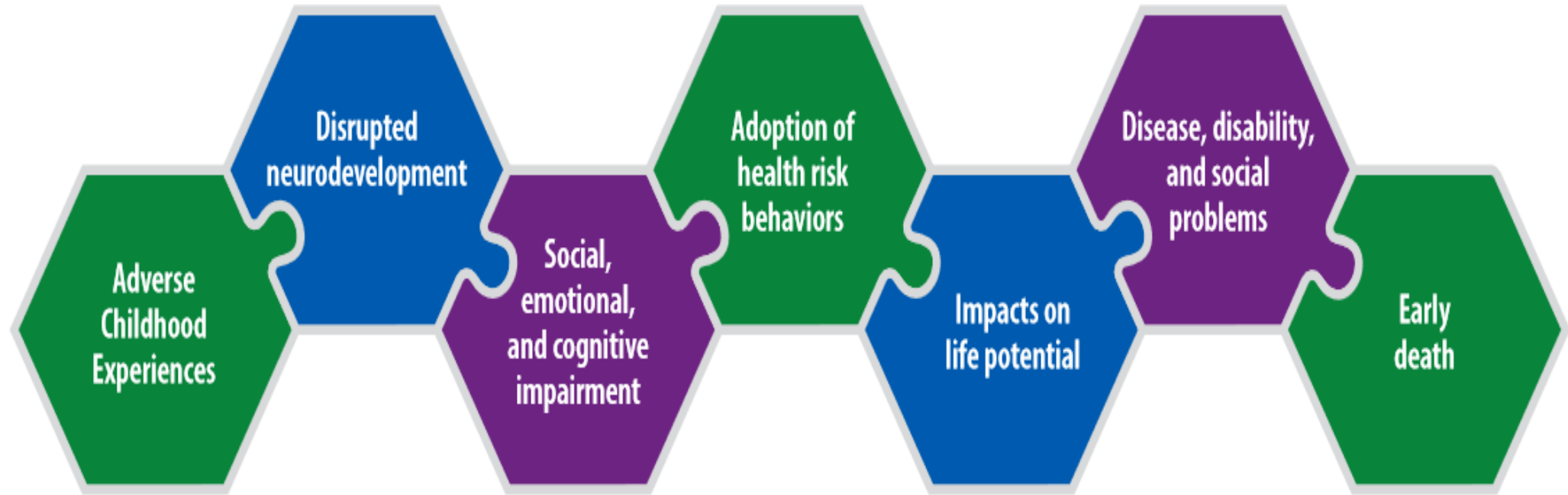
Family members being in jail or prison

Experiencing housing instability or homelessness

Experiencing food insecurity

Experiencing income insecurity

Having school and home life thoroughly disrupted by a worldwide pandemic



Note. CDC, 2019, n.p., <https://www.cdc.gov/violenceprevention/pdf/preventingACES-508.pdf>)



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Protective Childhood Experiences – First Area

Supportive relationships:

- unconditional love from a caregiver;
- having a best friend;
- volunteering in the community;
- being part of a group;
- having a mentor.
- positive parenting,
- social support,

Feeling like one has a place where they belong has been found to facilitate the development of children's empathy, self-regulation and social skills.

Protective Childhood Experiences – Second Area

An Enriching Environment:

- living in a safe home where needs are met;
- getting a quality education;
- having a hobby;
- being physically active;
- having rules and routines.

Research studies point to the importance of enriched environments for learning, managing stress, learning resilience, and avoiding risky behaviors.

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Stay In Touch!!

Contact me about more workshops!

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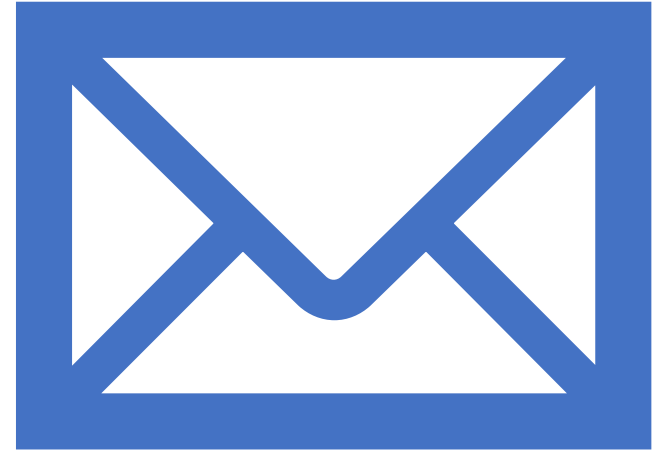
Music available from me:

joaniecalem@gmail.com; <https://joaniecalem.bandcamp.com/>

<https://open.spotify.com/artist/6CYd01iqC0IFpk0m0vKDpK>

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Thank you!

**And please remember,
behavior is communication.**