

CONSCIOUS CARE & SUPPORT

Developing

Emotionally Self-Regulated
and Kind Supporters

Facilitating

Comprehensive Biomedical Support
and Treatment

for

People with
Developmental Disabilities

What My Symptoms Are Saying

"Even though I don't control them, most of my behavioural symptoms are messages to you. My nervous system is asking you for certain kinds of support to have its specific needs met. Please listen to what it is doing. If you don't, I can't stop it from becoming anxious and frightened. And the main way that it has learned to calm its fears is to get irritated, angry and even aggressive. I hate when it does that but the calm that follows my aggression makes me feel normal again. Please help me to find a better way".



Conscious Care and Support (CCS) and 8 Essential Ways to Support People with Autism and other Developmental Disabilities to Live a Personally Satisfying and Socially Useful Life.

1. Supporter's Essential Qualities Needed to Offer Optimal Support

Supporters require three qualities to be successful. These qualities are:

- Knowing how to offer and advocate for evidence based best practices.
- Being authentically caring and emotionally self-regulated as services are offered.
- Delivering the services in ways that meet and exceed all professional standards.



2. Evidence Based Best Practices

Team members must be committed to **ALL** treatments as recommended in the evidence-based practices published by:

- The College of Family Physicians of Canada
- The Ontario Association of Behaviour Analysts
- A Consensus of International Research (reference CCS textbook)

Assessments and treatments of primary medical unmet needs and biomedical co-occurring conditions will need to be treated by a holistic integrated team of Naturopathic Doctors, Medical Doctors, Occupational Therapists, Behavioural Therapists, Registered Nutritionists (see *Tables 1, 2 and Appendix 1*).

Being treated by only a Primary Care Physician will almost for certain be incomplete (see *College of Family Physicians of Canada recommendations for a holistic integrated team**).

*Sullivan, W. F., Diepstra, H., Heng, J., Ally, S., Bradley, E., Casson, I., Hennen, B., Kelly, M., Korossy, M., McNeil, K., Abells, D., Amaria, K., Boyd, K., Gemmill, M., Grier, E., Kennie-Kaulbach, N., Ketchell, M., Ladouceur, J., Lepp, A., Lunskey, Y., ... Witherbee, S. (2018). Primary care of adults with intellectual and developmental disabilities: 2018 Canadian consensus guidelines. *Canadian family physician Medecin de famille canadien*, 64(4), 254–279.

Through the link below, watch the story of a young man and his team who followed the CCS holistic integrated process:
<https://drive.google.com/file/d/1VeR59K20TqEwXxzOlrKZbemXnLmxuMPz/view?usp=sharing>

3. Gastrointestinal (GI), bowel, digestive and immune systems' treatment, nutrition, pain management, dental and myofunctional disorders, illness prevention and treatment

Gastrointestinal (GI), bowel and digestive health is the foundation for a healthy mind.

Up to 90% of people with autism and other developmental disabilities have GI problems including leaky gut. (Moyer, 2014)

The majority of people supported have ongoing GI, bowel and digestive problems that are seriously compromising their:

- physical health,
- cognition
- emotional well-being,
- levels of agitation, anxiety and aggression
- potential to pursue and sustain community connections e.g., work and volunteer opportunities,
- overall quality of life, and
- pain management

(Reference research sources on next page)

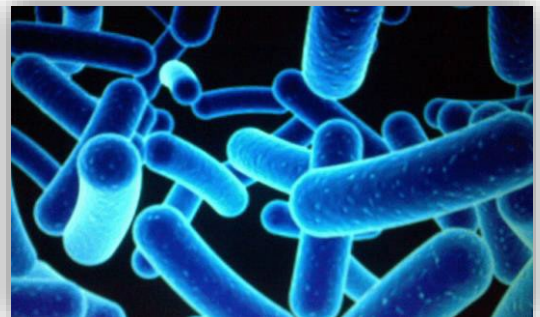
The following four steps summarize the recommended approach which the supporters should complete with the coordinated assistance of family, the primary care physician, a naturopathic doctor, a qualified nutritionist, and/or registered dietician.

CCS Steps to restore GI health:

1. testing and treatments for toxins, imbalances (e.g., vitamins, minerals and hormones) food intolerances and sensitivities;
2. reduction and removal of foods that are responsible for GI and bowel problems;
3. development and implementation of nutritious meal plans to promote GI and bowel health;
4. testing and treatment of specific problems (e.g., yeast and clostridia infections, constipation, bacteria overgrowth, mitochondria imbalance, GI permeability).

The Brain-Bowel Connection?

Research shows how changing gut microbes can change behaviours. Transferring gut microbes from children with Autism into mice produces rodents with symptoms of Autism (MacFabe, 2013*).



*Dr. Derrick MacFabe and his research examining gastrointestinal links in Autism has been listed among the 'top 50 scientific discoveries in Canada' by the Natural Sciences and Engineering Counsel of Canada. Dr. MacFabe consulted in the development of parts of the CCS model.

RESEARCH SOURCES

Gastrointestinal Disorders and Treatment for Those with Autism and Other Intellectual/Developmental Disabilities

- Al-Beltagi M. (2021). Autism medical comorbidities. *World journal of clinical pediatrics*, 10(3), 15–28. <https://doi.org/10.5409/wjcp.v10.i3.15>
- Babinská, K., Pivovarciova, A., Filcikova, D., Tomova, A., & Ostatníková, D. (2016). Association of conduct problems and gastrointestinal symptoms in individuals with autism spectrum disorders. *Activitas Nervosa Superior Rediviva*, 58, 69-72. <http://www.rediviva.sav.sk/58i3/69.pdf>
- Buie, T., Campbell, D. B., Fuchs, G. J., 3rd, Furuta, G. T., Levy, J., Vandewater, J., Whitaker, A. H., Atkins, D., Bauman, M. L., Beaudet, A. L., Carr, E. G., Gershon, M. D., Hyman, S. L., Jirapinyo, P., Jyonouchi, H., Kooros, K., Kushak, R., Levitt, P., Levy, S. E., Lewis, J. D., ... Winter, H. (2010). Evaluation, diagnosis, and treatment of gastrointestinal disorders in individuals with ASDs: a consensus report. *Pediatrics*, 125 Suppl 1, S1–S18. <https://doi.org/10.1542/peds.2009-1878C>
- Chaidez, V., Hansen, R. L., & Hertz-Picciotto, I. (2014). Gastrointestinal problems in children with autism, developmental delays or typical development. *Journal of autism and developmental disorders*, 44(5), 1117–1127. <https://doi.org/10.1007/s10803-013-1973-x>
- Foster, J. A., & McVey Neufeld, K. A. (2013). Gut-brain axis: how the microbiome influences anxiety and depression. *Trends in neurosciences*, 36(5), 305–312. <https://doi.org/10.1016/j.tins.2013.01.005>
- Fowlie, G., Cohen, N., & Ming, X. (2018). The perturbation of microbiome and gut-brain axis in autism spectrum disorders. *International Journal of Molecular Sciences*, 19(8), 2251. <https://doi.org/10.3390/ijms19082251>
- Javaid, A., Rushforth, E., Sajja, S., & Michael, D. (2021). Functional gastrointestinal disorders in patients with intellectual disability. *Progress in Neurology and Psychiatry*, 25(2), 15-20. <https://doi.org/10.1002/pnp.705>
- Lefter, R., Ciobica, A., Timofte, D., Stanciu, C., & Trifan, A. (2019). A descriptive review on the prevalence of gastrointestinal disturbances and their multiple associations in autism spectrum disorder. *Medicina*, 56(1), 11. MDPI AG. <http://dx.doi.org/10.3390/medicina56010011>
- MacFabe D. (2013). Autism: metabolism, mitochondria, and the microbiome. *Global advances in health and medicine*, 2(6), 52–66. <https://doi.org/10.7453/gahmj.2013.089>
- Moyer, M.W. (2014, September 14). Gut bacteria may play a role in Autism. *Scientific American*. <https://www.scientificamerican.com/article/gut-bacteria-mayplay-a-role-in-autism/>
- Stilling, R. M., Dinan, T. G., & Cryan, J. F. (2014). Microbial genes, brain & behaviour - epigenetic regulation of the gut-brain axis. *Genes, brain, and behavior*, 13(1), 69–86. <https://doi.org/10.1111/gbb.12109>
- Verma, H., Phian, S., Lakra, P., Kaur, J., Subudhi, S., Lal, R., & Rawat, C. D. (2020). Human gut microbiota and mental health: advancements and challenges in microbe-based therapeutic interventions. *Indian Journal of Microbiology*, 60, 405-419. <https://doi.org/10.1007/s12088-020-00898-z>

Table 1- The CCS Hierarchy of Unmet Needs

CCS Hierarchy of Service Needs

Toward A More Complete Understanding
of the hierarchy of special needs to meet in order to facilitate optimal
well-being and to prevent and mindfully manage anxiety
anger and aggression

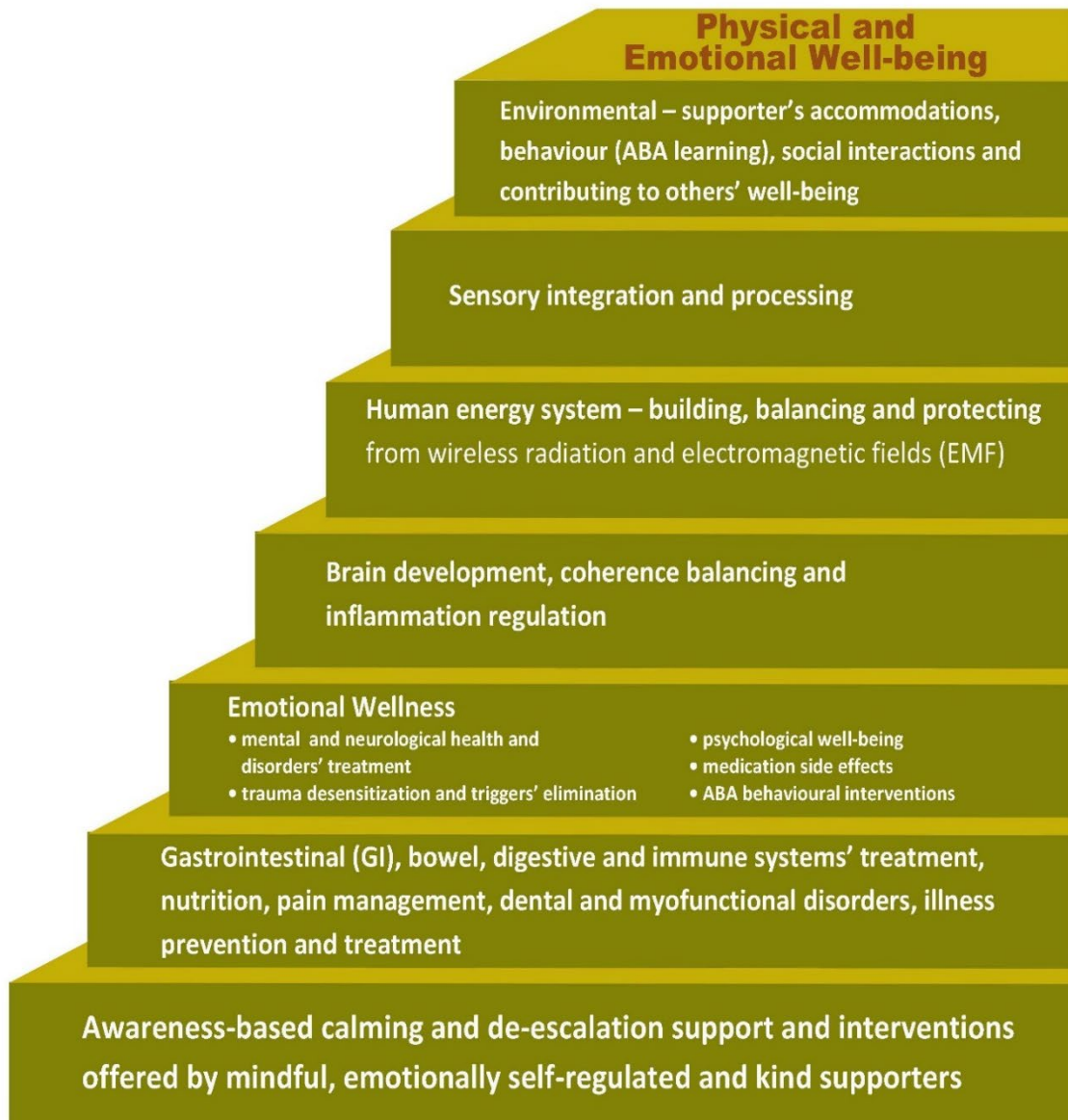
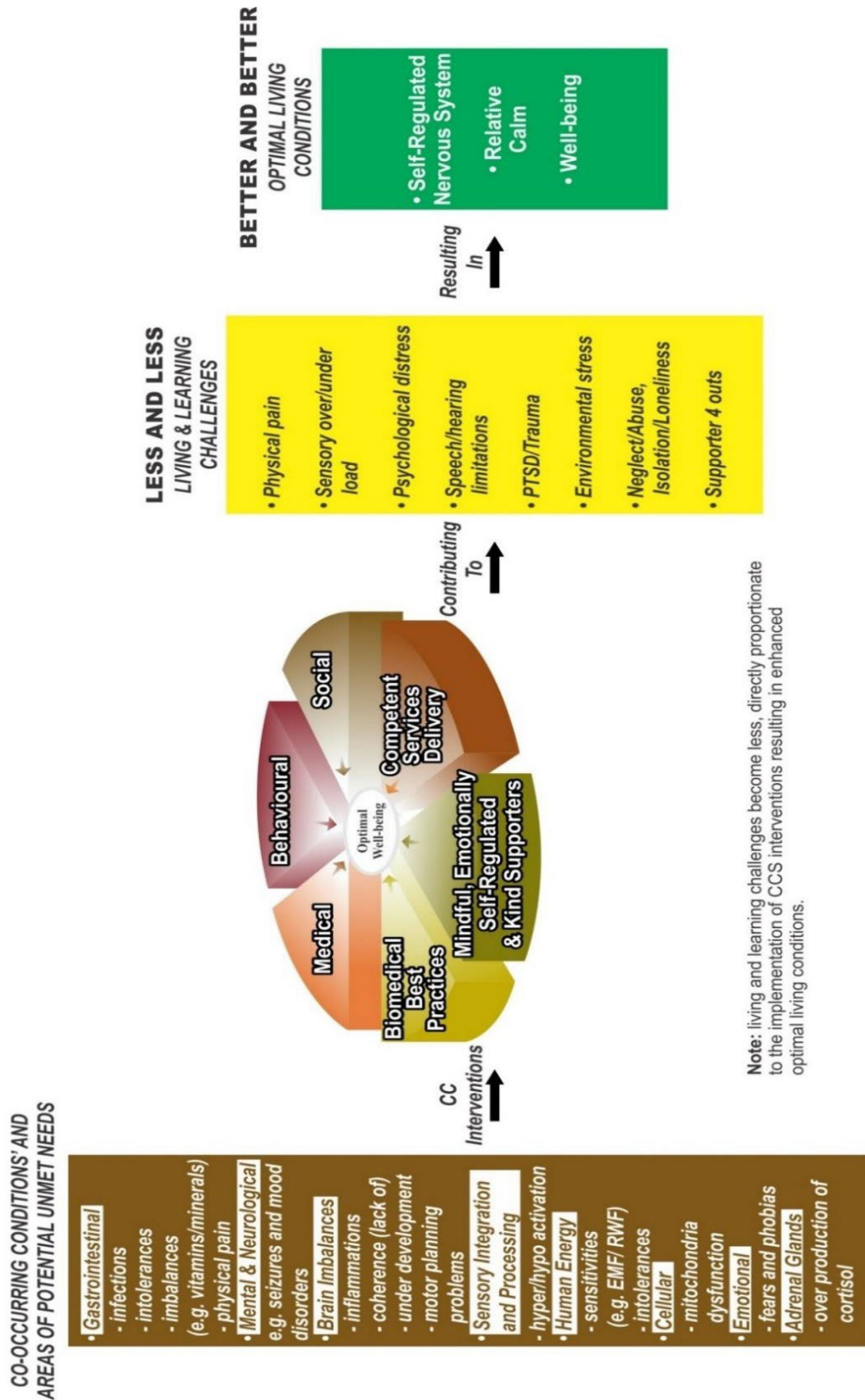
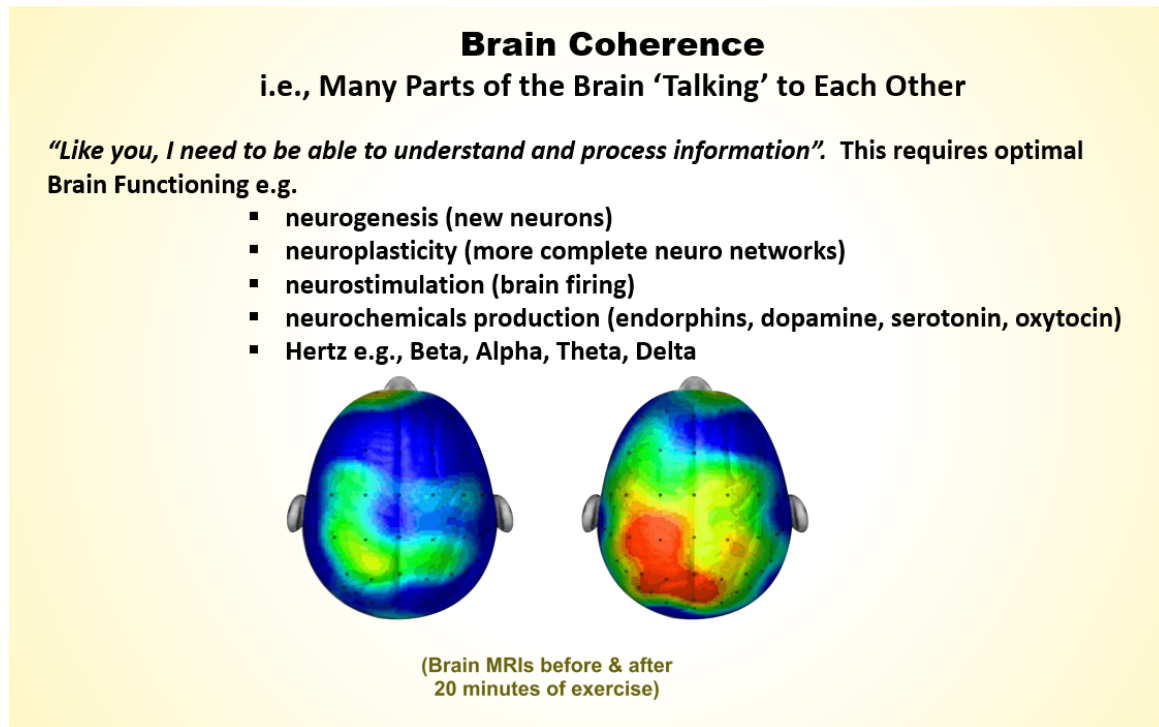


Table 2 – CCS Multidisciplinary Evidence Based Support Practices



4. Brain Coherence – Brain Facts to Enhance Brain Coherence and Functioning and Reduce Challenging Behaviours

The image below is a functional MRI of the brain. The left side shows the brain when it is not at an optimal cognitive processing level, and the right shows the radical difference in brain activity after only twenty minutes of moderate exercise. This level of brain activity is essential for optimal cognition; therefore, individuals with autism or intellectual/developmental disabilities require physical exercise (especially bouncing and balancing) to achieve this outcome.



(Ratey, J., 2008)

Sadly, the proven potential for brain development and enhanced functioning is possibly the least appreciated and understood fact regarding the unmet needs of a person to assist them to live a fulfilling life. Through proven training and maintenance of a healthy brain (e.g., inflammation prevention) enhanced brain functioning is possible because of development in the following area:

- neurochemical production: e.g., hormones like endorphins (relieves pain and reduces stress) and oxytocin (reduces stress and increases relaxation), and neurotransmitters like dopamine (increases pleasure and motivation), serotonin (enhances mood, digestion, and sleep), and GABA (reduces stress and increases an overall calming) (Ratey & Manning, 2014);
- neurogenesis—the promotion of the growth of new neuron cells (Ahlskog et al., 2011; Siegel, D., 2007);
- neuroplasticity—the reformation of neuron networks to take on new and extra tasks (Doidge, N., 2007, 2016);
- neurostimulation;
- promoting motor function by exercising the brain (Perrey, 2013).
- transcranial magnetic stimulation (Eagleman, 2017).

RESEARCH SOURCES

Brain Coherence, Balancing, and Inflammation Regulation

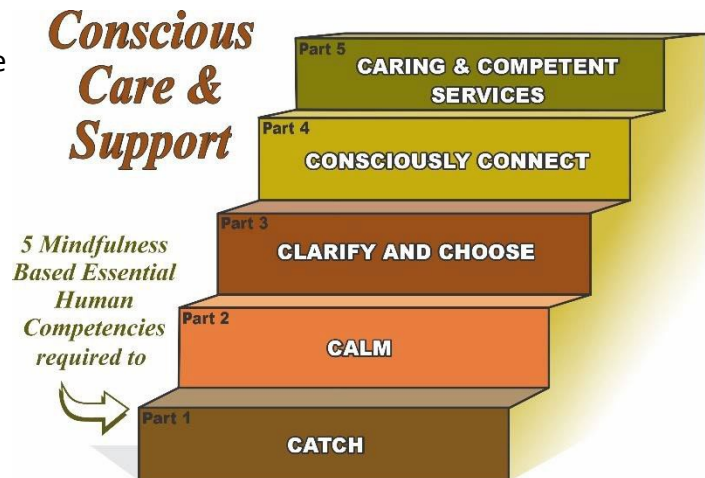
- Ahlskog, J. E., Geda, Y. E., Graff-Radford, N. R., & Petersen, R. C. (2011, September). Physical exercise as a preventive or disease-modifying treatment of dementia and brain aging. In *Mayo clinic proceedings* (Vol. 86, No. 9, pp. 876-884). Elsevier.
- Doidge, N. (2007). *The brain that changes itself: Stories of personal triumph from the frontiers of brain science*. Penguin Life.
- Doidge, N. (2016). *The brain's way of healing: Remarkable discoveries and recoveries from the frontiers of neuroplasticity*. Penguin Life.
- Eagleman, D. (2017). *The brain: The story of you*. (pp. 94-95). Vintage.
- Perrey, S. (2013). Promoting motor function by exercising the brain. *Brain sciences*, 3(1), 101–122.
<https://doi.org/10.3390/brainsci3010101>.
- Ratey, J. (2008). *SPARK: The revolutionary new science of exercise and the brain*. Little, Brown and Company.
- Ratey, J., & Manning, R. (2014). *Go wild: Free your body and mind from the afflictions of civilization*. Little, Brown and Company.
- Siegel, D. (2007). *The mindful brain: Reflection and attunement in the cultivation of well-being*. W.W. Norton and Company.

5. Supporters Emotional Self-Regulation

Because 50% of all incidences of people supported becoming agitated, angry or aggressive are the result of supporters' lack of emotional self-regulation in stressful situations, the team of moms, dads and other supporters must learn how to be **emotionally self-regulated** to remain calm and caring in stressful situations.

In stressful situations, supporters require a consistent response, similar to the EMS (Emergency Medical Services) Responders', i.e., Airway, Breathing, Circulation (ABC) process.

The CCS response to meet this requirement is the following mindful emotional self-regulation process:



CATCH

By **catching** I am referring to your awareness when you realize that you are **here** “in the present,” NOW and experiencing something in this moment. For example, you as a supporter are **aware that** you are helping someone and paying attention to what you are doing.

CALM

To be calm is to subjectively, internally experience body sensations, feelings and thoughts peacefully—regardless of their survival-based messages or any chaos or threat happening in our external world.

CLARIFY AND CHOOSE

To clarify and choose is to objectively clarify your emotional state, the emotional state of the individual who you are supporting and the needs of the situation. You then choose what actions to take.

CONSCIOUSLY CONNECT

To “consciously connect” is to be unconditionally present, peaceful, respectful, kind, caring and supportive. It is 20% action (what you say and what you do) and 80% mindful intentional energy, attitude and compassion, regardless of who is being connected with, what their needs are and how you are feeling at the time.

CARING AND COMPETENT SERVICES

Your services are useful, truthful, kind and timely.

6. Identification, reduction and elimination of environmental stress inducers

Please Hear What I am ‘Saying’

In the following chart we have gathered—from both research and direct experience—a comprehensive list of the variables (environmental and personal) most likely to increase anxiety experienced by people supported and therefore increase their risk of agitation, anger, and aggression. We have also included ideas to address and prevent agitation, anger and aggression and help the person to better self-regulate back to calm.

Conditions That Increase ‘My’ Anxiety and What You Can Do to Help ‘Me’

What you need to know and remember about my anxiety that can lead to challenging behaviours.		How best to help me self-regulate.
1.	I am a ten-second person living in a one-second world.	▪ Please slow down your communications and wait for my response.
2.	I hate not knowing my time limits. I really need to know timelines.	▪ Stay committed to established timelines, e.g., when we are going to the park and warn me when change is necessary. ▪ I really like a timer. Let me set the timer up and start it.
3.	I hate too many choices. Too many choices confuse me.	▪ Ask me “this or that” or “first this – then that.”
4.	I really need to think that I have a choice in what happens.	▪ Ask me, “Do you want to do it now or in five minutes?”
5.	An environment that gives me too much overload (social, sensory or cognitive) makes me anxious.	▪ learn my sensory needs and support me accordingly.
6.	Some hours and some days will just not be good for me, and I don’t know why.	▪ Expect and plan for my “off times” with some of my preferred activities.
7.	When I start to get anxious, please stop making it worse by becoming more logical.	▪ I now need your empathy and validation. ▪ Help me with BB-ABC exercises.
8.	There is a 50% chance that I have PTSD syndrome.	▪ Please stop triggering me with a loud voice and shouting.
9.	I hate changes – I fear the unknown.	▪ Stay on schedule as much as is possible and let me know when you have to change things.

What you need to know and remember about my anxiety that can lead to challenging behaviours.		How best to help me self-regulate.
		- When you tell me about the change, expect me to react with “but what if _____ happens?” If I am non-verbal, I will still be thinking – but what if ____ so keep telling me as much as is possible. - Think out loud as much as you want – the more the better.
10.	I am highly sensitive to your reactions and need to know and feel that I have not upset you.	Please work to stay emotionally self-regulated and tell me if something is bothering you.
11.	I have nine meanings for the word <i>no</i> .	- When I say <i>no</i>, remember it can mean any of the following: - I’m afraid of doing it wrong. - I don’t want to look bad. - I’m not ready yet. - I’m not sure what to do. - I want more information. - Ask me later/again/tomorrow. - I’m afraid to do what you ask. - Give me better reasons to do it. - I’m in pain; please help me.
12.	When I am physically uncomfortable because, for example of constipation, I get agitated and anxious.	Do everything you can to identify and treat my pain.
13.	Uncertainty scares me.	Be consistent and persistent.
14.	Sometimes I get so anxious that I hit, bite or kick.	- Please don’t think I really have a choice. It really does feel better than being really scared – also don’t take it personally. - Start BB-ABC calming as soon as possible.
15.	I have many reasons for not wanting to be around people. One big reason is that most people like to be spontaneous. I hate it!	As much as possible, let me do it my way if plans change. Also let me do a repetitive behaviour because it’s my way of calming when things go off schedule.
16.	My sensory world is very different than yours.	- Learn what I need as a sensory diet – keep my list available for your reference. - Even when you help me to process sensory input, remember I mostly can only process

What you need to know and remember about my anxiety that can lead to challenging behaviours.		How best to help me self-regulate.
		one sense at a time. This is especially true for hearing and seeing. Therefore, stop telling me to look at you when you are talking to me. - My peripheral vision can be much better than yours, so let me use it when I want to. - When you stare at me, I feel anxious. - Because of my linear processing abilities, don't expect me to listen to you while I am doing something else.
17.	Some of my defiant behaviour is me trying to keep my sensory processing on-line.	Please stop confusing my sensory processing with non-compliance. For example, most often attention-seeking or not trying to do something is not only about a functional goal.
18.	When I am anxious, I sometimes freeze.	Before and after I have a <i>fight</i> or <i>flee</i> blow-out I may look calm, but often I am really more frightened than ever, so I <i>freeze</i>. Continue to respond to me as if I am very afraid because often I am. Some BB-ABC Tools work well at this time.
19.	When I get scared my thinking brain (like yours) goes off-line.	- Please stop thinking that I am learning something from you once I get scared. Just like you, I say silly and often hurtful things when I get mad because my upper brain is off-line. If I am upset, I need your calming strategies not your logic. Many behavioural interventions at this time are annoying. I learn next to nothing from them because my learning brain has gone to sleep. - Once I am calm, please revisit what happened and very slowly teach me what I need to know.
20.	More often than you, I lie and embellish the truth. I do this to stay-out of trouble and/or to impress you.	Please stop vetting my words. At these times I am feeling "less than," so please validate me and respectfully redirect my conversation. At these moments, I love to hear things like "you enjoyed doing that didn't you" or "I like the way you ____."
21.	I am a black or white, logical kind of person.	When you see me pondering something or fixated on something, give me time and cues to figure out what is happening.

What you need to know and remember about my anxiety that can lead to challenging behaviours.	How best to help me self-regulate.
	▪ Even let me obsess a bit to figure it out. ▪ Asking me how or what I am feeling at this moment is unhelpful and annoying. ▪ Instead, give me help to find answers: "Okay Peter, that is a ____." ▪ I really need closed or alternate choice questions.
22. I have many ways of stimming, such as rituals, pacing, hand flapping, rocking, finger flicking, vocalizing, tics, twitches, repeating words, etc. etc. Stimming generally (not always) means that I am not feeling comfortable/calm in myself and I need predictability and focus.	▪ Please help me calm with BB-ABC and my preferred activities, e.g., tactile, proprioception, balancing exercises. ▪ Please don't think less of me when I stim. I don't think less of you when you stim with your phone.
23. Sometimes I unknowingly but intentionally annoy you, refuse to cooperate, keep asking questions that I know the answer to or pick a fight with you—even when you have done everything I wanted.	▪ Know that this often distracts my mind away from being scared, nervous or my pain. ▪ Stop responding to what I am saying or doing and respond to my real message. Please help me calm with BB-ABC and my preferred activities.
24. Seemingly minor things that you as a supporter sometimes do make my life miserable and cause my anxiety.	▪ Please try not to: – rearrange furniture in my room or common areas; – stop my stimming unless it's harmful; – get into power struggles with me; – change activities. ▪ If it is necessary to change schedules, please change things gradually with notice and with my input: – use inclusive language, like "Peter would you rather do this or this?" – a social story with pictures is helpful – when I am calm; – be gentle and slow, but be persistent and consistent; – include BB-ABC exercises; – as appropriate tell me what might happen that would change our plan. "Peter, what might happen is this, and we will ____."

What you need to know and remember about my anxiety that can lead to challenging behaviours.		How best to help me self-regulate.
25.	I will give you very clear cues that I am getting anxious and on the edge of a blow-out or blow-in.	Please develop your mindfulness skills so that you can learn to identify when I am becoming anxious and pleading to you for help with calming e.g., BB-ABC.
26.	I hate most transitions. I hate when good activities are over – especially abruptly.	- Please give me a heads-up with what will happen and when. - Please tell me what unforeseen event could happen and what we will do about it. - Please keep me in charge – Ask me – “Do you want to put your coat on before you_____” - I always need a three-minute notice.
27.	I dislike open ended questions – <i>what, how, when, why.</i>	- Use closed questions (that can be answered with yes or no) e.g., <i>would, could, should, is.</i> - Use alternate choice questions e.g. “Do you want this or this?”
28.	I don’t understand metaphors or similes. I take everything literally, even if it is not meant to be literal: e.g., <i>wait a minute.</i>	Be precise and concrete.
29.	I am most likely an introvert, so don’t expect me to live in your world if you are an extrovert.	- Learn my preferred social style. - Always give me choices, if possible, re: social outings.
30.	As with all neurotypical folks, feelings make up my mind around choices that are about me and you.	When possible, give me mostly feeling reasons to do things, not logical reasons: e.g., “Let’s do this now so that we can go and have fun swimming later.”
31.	I am often confused by requests to do things.	Always ask – “Would you please_____now?” This clarifies what you want and when you want it.
32.	I hate to hear <i>no</i> , because it means many things to me and confuses me.	Instead, say, “You can when _____but not right now. Now we need to do _____or _____. What do you want to do?”
33.	I get increasingly anxious when I feel myself start to blow-out, and I need to know you will really help me.	- Make sure I am and others are safe, then as soon as possible reduce the environmental triggers that are in my Sensory Assessment and Plan: e.g., such as lighting, people, noise. - Start a sensory physical activity with me to help me calm and stay calm yourself: - Fear begets fear; calm begets calm. - Only by learning and practicing emotional self-regulation skills will you be able to stay calm. Most tactics that are done when you are upset (emotionally hijacked) are dangerous illusions of helping me

What you need to know and remember about my anxiety that can lead to challenging behaviours.		How best to help me self-regulate.
34.	When I do get upset, there are ways to help me calm down more quickly.	- Start by – - reducing your requirements of me and giving me some personal space. - direct me to BB-ABC strategies. - introduce some pleasant sensory focusing activities e.g., watching a falling feather, or balloons floating or popping.
35.	I need you to teach me literacy and numerical skills in concrete ways. Abstract ideas make me anxious.	Use the times when I am doing physical or sensory exercises or other concrete activities to teach me: for example, building structures with blocks or balancing objects. But keep it simple – only one sense door activated at one time.
36.	Concentrating wears me out, so I get bored easily and boredom makes me feel anxious.	Change my activities fairly quickly: every ten to fifteen minutes maximum.
37.	Incentives and reinforcers are good ways to get me to co-operate without making me feel anxious.	- Learn my preferred activities that you can use as incentives and let me do them as required for me to cooperate and learn. Don't use them to fill-in time, because I lose interest. - Don't give me food for incentives (especially simple carbohydrates and sugar): the more I get, the more I need.
38.	I feel less anxious when you let me watch you do something before I do it.	- Model what you want me to do and describe in words what you are doing: e.g., butterfly hugs or arms up and down with calming breathing. - mirror neurons are alive and well in you and me (NLP research).
39.	Developing my medial lateral prefrontal cortex helps me to regulate my emotions– please help me.	- Two-Three times every hour, remind me to notice, pay attention – “blink if you notice _____.” “say or notice when _____.” - Let me use the rebounder.

What you need to know and remember about my anxiety that can lead to challenging behaviours.		How best to help me self-regulate.
40.	Some days I will not like something that I usually like.	Encourage me to try it, but know that there could be ten reasons why today it's not for me.
41.	If I can see the things associated with my preferred activities all of the time, I will be unable not to focus on them and bug you to do them. We may then get into a power struggle.	Keep the tools and equipment for my preferred activities hidden from me, in a locked place if necessary.
42.	I'm not sure but it seems like for me and some of my friends, fluorescent lights, Wi-Fi and microwaves and dirty electricity bother me.	- Please filter out these anxiety producing triggers, including keeping your cellphone turned off around me. - Filter the outlets in my bedroom at least
43.	My number one sensory need is to stimulate my proprioceptive sense door.	Every hour for sure, give me proprioceptive activities.
44.	Your energy directs mine.	Please learn to stay calm, especially when I get anxious.
45.	When I get anxious, I often give you attitude and resistance. This often gets us involved in a power-struggle and I find fighting with you is an excellent diversion from my anxiety attacks.	Although your power-struggles with me are relatively better than my fears, they often get out of hand and just make things worse. Please learn to not get pulled into my behaviours. I need your calm, caring and conscious connecting to get me back on track.

Recommended Reading

Much of the above has been adapted from the following resources:

Bluestone, J. (2005). *The fabric of autism: Weaving the threads into a cogent theory*. Sapphire Publications

Delahooke, M. (2019). *Beyond behaviors: Using brain science and compassion to understand and solve children's behavioral challenges*. PESI Publishing.

Lipsky, D. (2011). *From anxiety to meltdown: How individuals on the autism spectrum deal with anxiety, experience meltdowns, manifest tantrums, and how you can intervene effectively*. Jessica Kingsley Publishers.

Herbert, M. (2013). *The autism revolution: Whole-body strategies for making life all it can be*. Ballantine Books.

7. Fifteen Bilateral/Biomeridian and Brain Awareness-Based Calming and De-escalation (BB-ABC) Tools to Prevent, Reduce and Eliminate Anxiety, Anger and Aggression

By way of a reminder and reinforcement, difficult feelings and/or challenging behaviour is seldom just about trying to achieve a functional/psychological goal.

The tools that make up our BB-ABC calming and de-escalation process integrate effective calming strategies from the following evidence-based protocols:

- mindful, emotional self-regulation – internal resonance and entrainment;
- bi-lateral stimulation procedures similar to those applied in tactile Eye Movement Desensitization and Reprocessing (EMDR) therapy;
- acupressure (bio-meridian);
- calming through repetitive patterning (Autism Research Institute, n.d.)*;
- mirror neuron enhancement via firing and wiring of the medial prefrontal cortex of the brain;
- Emotional Freedom Therapy and;
- Soles of the Feet Mindfulness-Based program.

The awareness-based calming and de-escalation best practices provided below are most effective when they are integrated into daily, normal living activities. If the person supported does these exercises when they are relatively calm, the practices are normalized and are significantly more likely to be used effectively during times of pre-crisis and crisis.

BB-ABC Exercise # 1: Butterfly Hug

The butterfly hug can be readily taught for self-administration to the vast majority of children, youth and adults who have Autism and other Developmental Disabilities. Supporters can model this simple practice at any time of the day and thereby help influence others to start the practice.

- Fold arms across the chest so that the left-hand rests on the right bicep and the right-hand rests on the left bicep.
- Raise one hand and apply pressure first on one bicep (thus activating the brain), and then on the other. Alternate at a rate of one activation per second. Both the individual and the supporter count out loud: “1,000 Here; 2,000 Here,” up to 10,000 and start over. “Here” is an essential label to keep both you and the person mindful in each moment of activation.
- The person supported activates, models and labels the behaviour of the supporter.
- Whenever you (the supporter) are not talking, silently and mindfully intend calm.

*The Autism Research Institute, (n.d.). *Symptoms of autism*. <https://autism.org/symptoms-of-autism/>

- Continue for up to five minutes. If agitation or difficult feelings continue, introduce other parts of the Behaviour Support Plan and return to the most suitable BB-ABC exercise.

BB-ABC Exercise # 2: Collar Bone Activation

- Using the three middle fingers on each hand, alternating from left side to right side each second, press to activate the sensitive acupressure point of the collar bone region approximately one inch below the top of the collar bone.
- Refer to Exercise #1 for instructions about timing, role modeling, intentions, and affirmations.

BB-ABC Exercise # 3: Hand BB Activation by Supporter

As certain biomeridian areas are activated, if possible, lead the person in the following statements. If the person is non-verbal, encourage them to say the words to themselves and give them time to do it. E.g., “I am letting go of the _____”, “I am releasing resistance to the _____”, “I am more relaxed”- continue to repeat during the hand activation exercise.

- As appropriate, you (the supporter) hold the individual’s hand. With your thumb, activate the sensitive space between the thumb and index finger of the supported person’s hand.
- Alternately activate this region, following the timing, role modeling and intentions as described in instructions for Exercise #1.
- For all exercises remind the recipient to notice how it feels by labelling “here.” This teaches mindfulness and activation of brain-calming circuits (e.g., the medial prefrontal cortex).

BB-ABC Exercise #4 – Mindful Movement Awareness-Based Calming

This exercise should be practiced near daily so that the skill becomes automatic and neuron development is reinforced.

- Stand facing the individual you are supporting. Slightly bend your knees and become aware of what you are doing.
- Ask the individual you are coaching to do what you do.
- On your next inhalation, slowly raise your arms to the count of four; encourage the individual to do the same and to pay attention to how it feels (e.g., “heavy”). Once arms are parallel to the floor have the individual label— say “up” out loud (if the individual is verbal).
- On the exhalation, slowly lower your arms to the count of eight and label “down.”
- Encourage the individual to notice how that feels.
- Repeat the up and down movement five times.
- With arms in the down position, on the next inhalation have the individual tighten their hands and arms to the count of four and notice and label how it feels (e.g., “tight”).

- On the exhalation, have the individual release to the count of eight and ask them to
- notice and label how it feels (e.g., “release”).
- Repeat the muscle tightening exercise at least five times.
- Next, ask the individual to lift one of their feet (or just the heel if balancing is difficult) and label “lift.” Ask them to notice lifting. Place foot down and label “place.” Lift and place the other foot, notice. Repeat five times.
- Optionally, the individual can do the lift, place and notice sequence in a slow walk.

BB-ABC Exercise #5 – Mindful Walking

- Optionally, the person supported can do mindful walking at a slow rate of speed.
- To keep the exercise mindful and thereby grow medial prefrontal neuron cells, incorporate one of the following three noticing activities in the mindful-walking exercise:
 - do a preplanned treasure hunt
 - play “I spy” with a peer or supporter
 - list in categories, e.g., objects, colours, shapes etc.

Supplemental Awareness-Based Calming Exercises (ABC)

All of the next exercises should be done mindfully while encouraging the person supported also to pay attention and be mindful:

ABC Exercise #6	-	hand/foot massage, essential oils optional
ABC Exercise #7	-	high intensity interval training, e.g., rebounder
ABC Exercise #8	-	fitness exercises – core, balance and strengths
ABC Exercise #9	-	mindful, progressive muscle relaxation
ABC Exercise #10	-	calming music and vibro-acoustics
ABC Exercise #11	-	sensory diet as prescribed
ABC Exercise #12	-	neuro/bio feedback
ABC Exercise #13	-	bosu stabilization ball and cushion
ABC Exercise #14	-	balancing exercises, e.g., Wii, Xbox, wobble
board ABC Exercise #15	-	vestibular and proprioception swing.

(Reference Need #6 for more details).

BB-ABC and Emotional Contagion to Calm

While the above BB-ABC evidence-based practices can significantly prevent and de-escalate anxiety, anger and aggressive behaviours, its effectiveness is directly proportional to the calm focus of the family or support professional.

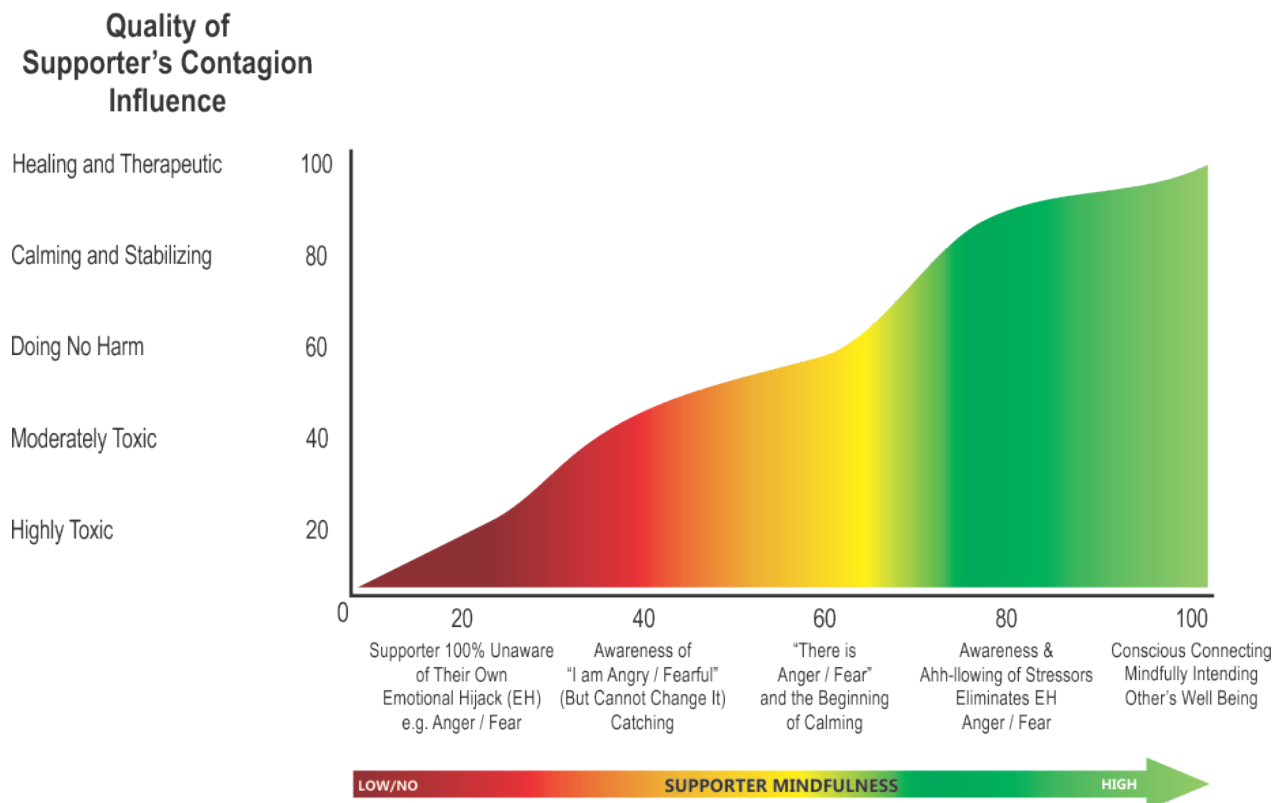
Calm begets calm, fear begets fear!

The mindful, emotional self-regulation skills and kindness of the supporter will influence the person's emotions to calm. This response is based in part on the human social phenomenon called **emotional contagion** whereby human energy systems influence each other. The individual's stress is therefore often caused or made worse by the supporter's agitation or anxiety. If a supporter lacks mindful emotional self-regulation, being under pressure or stress will cause him or her to become increasingly anxious. This anxiety is passed on to the person supported through emotional contagion.

The effect of emotional contagion is not limited to a single occurrence. If, for example, an individual is influenced to feel frightened in relation to a particular person, event or action, the response learned through emotional contagion can repeat itself with each new exposure to that person, event or action.

The following illustration further describes what emotional contagion is and how supporters can be helpful or harmful in influencing individuals whom they support.

Emotional Contagion Calming of Challenging Behaviours



Supporters' Emotional Self-Regulation Skills and Kindness

The mindful, emotional self-regulation skills and kindness of supporters is as important as any other variable in the promotion of well-being and the prevention and treatment of anxiety, SIB and challenging behaviours.

Approximately 50%* of all behavioural incidents appear to be caused or significantly influenced by supporters' power struggles that are unrelated to safety concerns

* Reference: - Anecdotal Reports from approximately 1,000 CCS trained supporters
- Review of approximately 3,000 Behavioural Incident Reports



Emotional contagion is the phenomenon of having one person's emotions and related behaviours directly trigger similar emotions and behaviours in other people. One view developed by Hatfield et al. (1993), is that this can be done through automatic mimicry and synchronization of one's expressions, vocalizations, postures and movements with those of another person. When people unconsciously mirror their companions' expressions of emotion, they come to feel reflections of those companions' emotions. Emotions can be shared across individuals in many different ways both implicitly and explicitly. For instance, conscious reasoning, analysis and imagination have all been found to contribute to the phenomenon. Emotional contagion is important to personal relationships because it fosters emotional synchrony between individuals. The behaviour has been found in humans, primates and dogs.

Hatfield, E., Cacioppo, J. T., & Rapson, R. L. (1993). Emotional contagion. *Current Directions in Psychological Science*, 2(3), 96–99. <https://doi.org/10.1111/1467-8721.ep10770953>

Herrando, C., & Constantinides, E. (2021). Emotional Contagion: A Brief Overview and Future Directions. *Frontiers in psychology*, 12, 712606. <https://doi.org/10.3389/fpsyg.2021.712606>

Morrison, I., Lloyd, D., di Pellegrino, G., & Roberts, N. (2004). Vicarious responses to pain in anterior cingulate cortex: is empathy a multisensory issue?. *Cognitive, affective & behavioral neuroscience*, 4(2), 270–278. <https://doi.org/10.3758/cabn.4.2.270>

van der Gaag, C., Minderaa, R. B., & Keyzers, C. (2007). Facial expressions: what the mirror neuron system can and cannot tell us. *Social neuroscience*, 2(3-4), 179–222. <https://doi.org/10.1080/17470910701376878>

David Eagleman, who was part of the group of neuroscientists who published the book *The Brain: The Story of You*, notes how critical the role of something as simple as the mirroring of facial muscles from one person to another is in the creation of empathy. He reports that “my mind reads your facial expression; my facial expression mirrors yours and then activates a feeling in me of what you may be experiencing” (Eagleman, 2017, 94-95).

Research concludes that there are emotional perception deficits in people with autism and other developmental disabilities. Research does however also indicate that “there is no significant difference in brain activation between people supported and neurotypical individuals during the perception of pain expressed by others”. Both groups show similar levels of activation in areas associated with pain showing evidence of the presence of emotional empathy and emotional contagion.

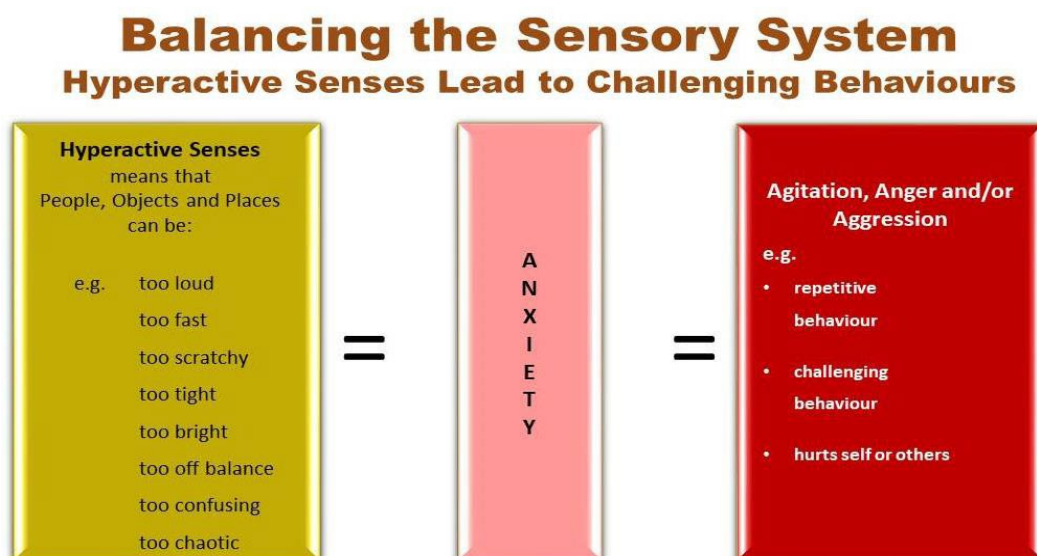
While our research reviews could not (so far) find specific studies on fear contagion in people supported, the fact that their brain does respond neurotypically to pain emotional contagion, the CCS approach trains supporters to assume that the fear/anxiety of the supporter in all probability is at least somewhat contagious between the supporter and the people supported. Anecdotal reports to substantiate this assertion are overwhelming. Mindful, emotional self-regulation skills and kindness are therefore critical.

Hadjikhani, N., Zürcher, N. R., Rogier, O., Hippolyte, L., Lemonnier, E., Ruest, T., Ward, N., Lassalle, A., Gillberg, N., Billstedt, E., Helles, A., Gillberg, C., Solomon, P., Prkachin, K. M., & Gillberg, C. (2014). Emotional contagion for pain is intact in autism spectrum disorders. *Translational psychiatry*, 4(1), e343. <https://doi.org/10.1038/tp.2013.113>.

8. Sensory Integration and Processing

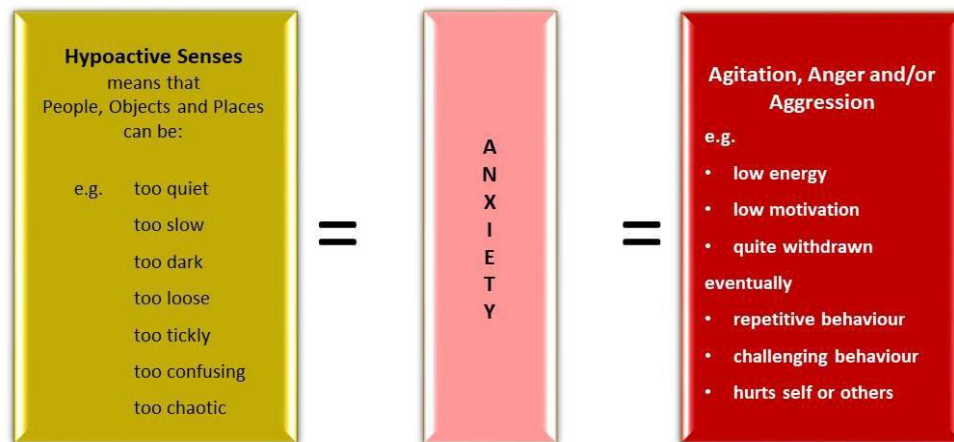
Everyone is dependent on seven main senses to experience life. Each person’s reality is formed through sensory input: taste, smell, hearing, sight, touch, balancing, and body-awareness. People with autism or intellectual/developmental disabilities are more biologically vulnerable than neurotypical people to hypersensitivity and hyposensitivity of the 7 main senses. In both cases individuals are experiencing a loss of sensory integration and balance. The sensory stimulation may be too much or too little or distorted. Their experience may be brain chaos – too much noise and not enough signal because of poor sensory processing. If a sensor is over- or under-stimulated, anxiety can result in anger or aggression.

The following two charts illustrate the effects of hypersensitivity and hyposensitivity in creating anxiety that often results in challenging behaviours (refer to Appendix 2- Screening for Sensory Irregularities).



Balancing the Sensory System

Hypoactive Senses Lead to Challenging Behaviours



Conclusion

CCS Trains Supporters in Primary Biomedical Care

In January 2019, the following vitally important study was published by The Ontario Association for Behaviour Analysis (ONTABA).

The Ontario Association for Behaviour Analysis (2019). *Evidence-based practices for the treatment of challenging behaviour in intellectual and developmental disabilities: Recommendations for caregivers, practitioners, and policy makers.* https://bc-aba.org/wp-content/uploads/2019/02/ONTABA_OSETT-CB_Final_Report_Jan_2019.pdf.

A broad recommendation presented in the report is as follows:

“Assessing challenging behaviours can be influenced by a number of factors including, but not limited to, comorbid IDD and neurodevelopmental disorders, medical issues, and the complexity or history of the challenging behaviour. All individuals who engage in challenging behaviour should receive a medical assessment to rule out the possibility that the behaviour is occurring due to an underlying medical condition. The Canadian Consensus Guidelines (CCG) for the Primary Care of Adults with Intellectual and Developmental Disabilities (Sullivan et al., 2018) provide a comprehensive set of recommendations. These guidelines also identify a number of common medical issues that may contribute to the onset of challenging behaviour. If medical concerns have been ruled out as a cause for challenging behaviour, subsequent assessment strategies should be employed.” (ONTABA, 2019, p. 20)

A Centre for Conscious Care (CCC) –Experiences

In training over 3,000 parents, educators, support professionals and clinicians, from approximately 40 community support organizations and boards of education that support and educate thousands of students and other children, youth and adults with autism and intellectual/developmental disabilities, it is the CCC experience for those who have challenging behaviours that **less than 1 in 5 are assessed and treated in accordance the above ONTABA guidelines and internationally published research.**

Summary of CCS Support Best Practices to Enhance Well-being

1. Facilitate an independent psychotropic medication review with the pharmacist and the primary care physician (PCP). Clarify what medications are managing what symptoms. Track and give updated information on symptoms to the PCP for review.
2. Enlist the services of a naturopathic doctor to test for toxins, food intolerances and infections and start treatment as recommended, for example, stool samples for candida/clostridia and a urinary Organic Acid Test (OAT).
3. Enlist the services of a qualified nutritionist or a registered dietitian and using the results from testing, implement the recommended diet and supplements. Reduce and eliminate unhealthy foods. Starve candida and clostridia: control sugar and simple carbs.
4. Enlist the services of a qualified dentist to complete a dental and myofunctional disorders' assessment and advocate for the individual to implement a treatment plan as indicated.
5. Implement a "dirty electricity" clean-up; for example, filter 110-volt outlets and keep wi-fi power to a minimum. At night, turn off all bedroom monitors (when appropriate), wireless chargers, wi-fi and cellphones.
6. Enlist the services of a qualified occupational therapist and complete a sensory assessment and treat as indicated (reference Appendix 2, Screening for Sensory Irregularities).
7. Advocate to modify behavioural interventions if they induce moderate to high anxiety, except to ensure safety. As directed by the Behaviour Analyst Certification Board Standards, ensure that all biomedical and other treatments are happening prior to or concurrent with Applied Behavioural Analysis (ABA) or Intensive Behavioural Intervention (IBI) interventions.
8. Initiate daily wellbeing practices and exercises:
 - Bilateral, Biomeridian, Awareness-Based Calming (BB-ABC) (e.g., hand BB-ABC, butterfly hug, collar-bone point activation)
 - Physical workouts (e.g., cardio, core, balance and strengthening)
 - Brain coherence development (e.g., bouncing and balancing, and neurofeedback)
 - Medial pre-frontal cortex development (e.g., mindful-movement exercises, mindful breathing, B-FIT mindfulness, and hand and foot massage)
 - Human energy-system mindful balancing and protecting (e.g., satisfactory sleep hygiene, and protection from dirty electricity and wi-fi radiation)
 - Positive emotional contagion and self-regulation skills (e.g., practice B-FIT mindfulness to learn to Catch and Calm yourself)
 - Mindful muscle relaxation (e.g., hands, legs, and arms)
 - Music calming (e.g., vibroacoustics)
 - Essential oil treatment (e.g., lavender)
 - Standard sensory exercises (e.g., Bosu and stabilization balls and cushions, Wi-Fi, Xbox, wobble board, swinging, etc.).
9. Implement Fifteen Support Strategies for Advocating with Professionals.

10. Enhance meaningful day activities, including mindfulness and social connections.
11. All of the above to be facilitated by emotionally mature and mindful, self-regulated supporters applying the integrated CCS and behavioural support strategies.
12. After offering the above optimal support, encourage and validate neurodiversity and other gifts.

Every person with autism or an intellectual/developmental disability must be skillfully supported to have these basic human needs met each day. If the individuals' needs are met in ways that satisfy their unique challenges and complement their emotional, physical, sensory, and neurological predispositions, they can live a significantly enhanced and satisfactory life and achieve their full potential. If supporters fail to recognize the needs of individuals for meaningful support or ignore the well-researched best practices summarized above, they may be contributing to compromising quality of life, including unknowingly increasing the risk of agitation, anger and even aggression.

It cannot be stated too strongly that problematic behaviours must be understood as messages about unmet needs, not symptoms of individuals just wanting their own way. Generally, these problematic behaviours are:

- a communication to ask for help to meet one of their fundamental biological needs
- a distraction from emotional anxiety or physical pain
- a way to balance the body's electromagnetic energy to achieve relative calm or
- an attempt by the individual to have a sense of security through being in control of their life.

Very few families or support professionals intentionally ignore the implementation of these best practices. Most supporters simply lack the knowledge and training on how to and why to implement them. In addition, they often lack the mindful emotional self-regulation that is required to fully commit to support in a more complete way.

I tell you I would have died but for the staff who really cared.

The doctors had just about given up. Forget it for having any will to live. I can't begin to describe the despair. Beyond the relentless physical pain, there was this utter emptiness of heart and soul. Each morning felt like waking up in hell—can you understand that?—every morning, feeling that way, like it was the first time?

And yet some staff here took two or three extra minutes to let me know they weren't giving up. Some just seemed to say at times, even without words—I'm here for you. In minutes they could give me hope, soften my fears and convince me that I wasn't alone. And each gesture came to feel almost miraculous to me. And there were moments when I would say, "You just don't know what this means to me."

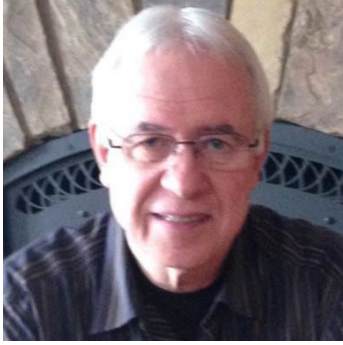
And they didn't! They couldn't or wouldn't. Isn't that wild? They really didn't see it. They really didn't recognize just how much their ordinary expressions of kindness would do for me.

On the one hand, I thought it was wonderful that they wouldn't make a big deal out of something that seemed so simple for them, just showing up. But on the other hand, I wanted to shake them, and say "Do you know how beautiful you are! Won't you see?" It was as if they were angels who had forgotten.

Adapted from

Dass, R., & Gorman, P. (1985). How can I help? Stories and reflections on service. Knopf Publishers.

Our Team



Peter Marks

Founder and Director, A Centre for Conscious Care

- Over 35 years of Human & Health Services' organization & leadership development to facilitate effective, conscious and compassionate care and support.
- University of Toronto, Continuing Studies, Instructor.
- International Mindfulness Facilitator in Canada, USA and Mexico since 1993.
- Co-Founder, Director and/or Consultant to twenty Autism/DD and mental health services systems throughout Ontario.
- Former Social and Health-Care Services development consultant serving over twenty First Nations communities across Ontario and the Yukon.
- Former Regional Director of Addiction Research Foundation.
- Former CEO of EAP Institute of Canada.



Adriana McVicker

Senior Consultant, A Centre for Conscious Care

- Registered Psychotherapist (Qualifying) in Ontario
- 20+ years of experience working with children, adults and their families.
- For the last 15 years, has worked with a service provider in developmental services in various roles including direct support and in positions of management including support services, staff development and project management.
- With her education in counselling, developmental psychology, sociology and health sciences, Adriana deeply values using a comprehensive approach while providing quality support to people and families.
- She is a true believer that all of us are interdependent and that we each carry a responsibility to help one another be the best we can.



Xavier Noordermeer

Senior Consultant, A Centre for Conscious Care

- Xavier is the former Executive Director of Community Living Windsor, an organization that provides support to over 600 people who have an intellectual disability and their families in the Windsor community. Xavier retired in 2020 after 30 years and has been working with people and families since 1981. From 2003 to 2020, Xavier also led the work of Capacita, a special volunteer project providing medical aid to children with disabilities and their families in Nicaragua.
- In 2018, Xavier was a founding board member of Microboards Ontario, a provincial organization that is committed to promoting and supporting the development of microboards across Ontario through education, advocacy and support to people and communities. He remains involved today as a volunteer board member.
- Xavier believes strongly in the importance of respectful and ethical leadership and the benefits that it provides on both a personal and organizational level.



Gareth Marks

Senior Consultant, A Centre for Conscious Care

- A certified elementary school teacher.
- A fitness program consultant and a life skills coach and trainer.
- Gareth has 8 years of experience not only working with and supporting people who have autism and other developmental disabilities, but also mentoring teams that provide support.



Leah Marks

Senior Consultant and Mindfulness Facilitator, A Centre for Conscious Care

- 20 years of teaching students with a wide range of abilities.
- A certified elementary school teacher with additional experience in advocating with children with special needs and their families with other community professionals.
- Coordinated many of the resources for the writing of the Conscious Care and Support and the Conscious Classroom textbooks.

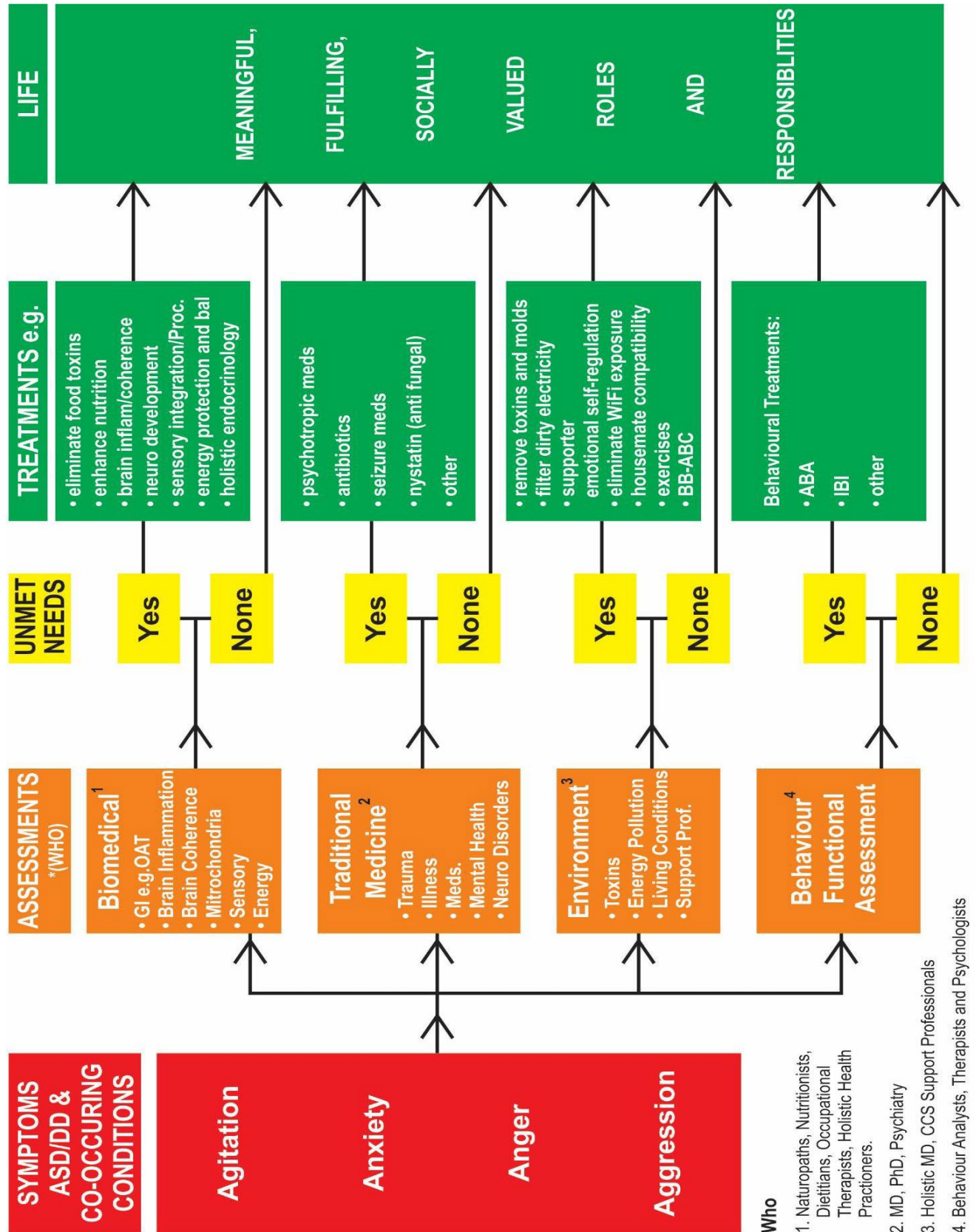


Shawn Allan

Senior Consultant, A Centre for Conscious Care

- 20+ years working with youth and adults with serious mental health challenges and Intellectual disabilities.
- Last 15+ years, has worked with a service provider for adults in residential settings. Has held various positions including direct support, manager in services, transitional aged youth, and community partnerships.
- Over the past few years focus has been primarily staff development including competencies, compassion, resilience, and mindful emotional self-regulation and awareness.
- Various certifications including Instructor of Beyond Silence-Mental Health Champions in the Workplace (PHSA).
- Shawn loves to be in nature (whether it's a hike in the forest, wading in a river, or standing in awe during a Lake Huron sunset) and his hobby is writing poetry.

Appendix 1 - Assessment, Treatment and Support Options



Appendix 2 – Balancing The Sensory System

A very significant example of sensory dysfunction that seems to be treatable and yet is contributing to thousands of incidents of the person's anxiety and aggression is audio irregularities.

Audio Sensory Processing Problems and Solutions:

Paul Madaule, the director of The Listening Centre, has done some excellent work in the field of audio sensory processing. Many of the insights below come from his work.

Audio Sensory Processing Problems



Some people supported often cannot tune in to human speech because they cannot use their middle ear muscles to dampen the lower frequencies. This difficulty compromises attachment, and social engagement abilities and desires.

- In humans, low frequency sounds trigger anxiety because they remind us of predators.
- This hypersensitivity keeps the fight/flight brain mechanism turned on which restricts social engagement.
- When lower frequencies are at full volume, they mask the higher sounds of speech, leaving the person supported hypersensitive to sound.
- Chronic inflammation disturbs developing neural circuits needed for all brain functions including listening.
- Treating the circuits that control the middle-ear muscle can decrease this hypersensitivity and increase social engagement.
- Autopsies of people supported found “particularly striking inflammation in the cerebellum” – the sub-cortical area with close links to the vestibular (inner ear) (Vargas et al., 2005). Sound Therapy is effective in treating this condition.

- The area of the auditory cortex that processes the human voice is under – connected to the brain’s reward centre (dopamine receptors). Therefore, human speech is not pleasurable to many people supported.
- Individuals with Autism have significantly lower levels of oxytocin which also lowers social engagement. (Simple touch significantly increases oxytocin).

References:

- Doidge, N. (n.d.) *Neuroplasticity: How is it possible to help brain conditions with sound?* The Listening Centre. <https://www.listeningcentre.com/why-listening-training/neuroplasticity>.
- Kirsch P. (2015). Oxytocin in the socioemotional brain: implications for psychiatric disorders. *Dialogues in clinical neuroscience*, 17(4), 463–476. <https://doi.org/10.31887/DCNS.2015.17.4/pkirsch>
- Porges, S. W., Bazhenova, O. V., Bal, E., Carlson, N., Sorokin, Y., Heilman, K. J., Cook, E. H., & Lewis, G. F. (2014). Reducing auditory hypersensitivities in autistic spectrum disorder: preliminary findings evaluating the listening project protocol. *Frontiers in pediatrics*, 2, 80. <https://doi.org/10.3389/fped.2014.00080>
- Vargas, D. L., Nascimbene, C., Krishnan, C., Zimmerman, A. W., & Pardo, C. A. (2005). Neuroglial activation and neuroinflammation in the brain of patients with autism. *Annals of neurology*, 57(1), 67–81. <https://doi.org/10.1002/ana.20315>.

Vital Needs to Activate the Parasympathetic Nervous System

The parasympathetic nervous system (in addition to many other calming functions) helps us connect with others, precisely because it regulates the brain area that controls the middle ear muscles (the vestibular system).

These muscles are used to tune in to the higher frequencies of human speech and also turn on the muscles used for vocal and facial expression. Being in “parasympathetic mode” is about calm, collected and connected.

Doidge, N. (2007). *The brain that changes itself: Stories of personal triumph from the frontiers of brain science*. Penguin Life.

Supporter's Optimal Solutions: Screening for Sensory Irregularities

Use the following tool to screen each person supported to determine if an Occupational Therapist should assess the needs for a sensory-integration treatment plan.

1. List the activities that are highly preferred and help people supported do these activities on a near-daily basis.
2. List the activities that are strongly resisted and, as much as possible, eliminate these concerns.
3. Follow the Occupational Therapists' recommendations as much as possible each day.

Use the following tool to screen for sensory issues and then if appropriate engage an occupational therapist for assessment and treatment.

Rating:

1	not applicable/seldom
2	
3	several times per week
4	
5	nearly daily

Things to consider as you make your rating:

- Everyone has some sensory integration problems now and then, because no one is well regulated all the time. All kinds of stimuli can temporarily disrupt normal functioning of the brain, either by overloading it with, or by depriving it of, sensory stimulation. Screen for trends.
- Gut health is an extremely important consideration for sensory integration. Poor GI function limits production of necessary neurotransmitters required to interpret and regulate sensory messages. Regulation often requires improved GI, bowel and digestive symptoms management.
- Once the screening indicates some concerns (e.g., two to three items at ratings of three and above), a qualified occupational therapist should be retained to assess, develop a plan and train supporters to implement the plan.

Signs of Tactile Dysfunction

The tactile sense is the input received from the skin receptors about touch, pressure, temperature, pain, and movement of the hairs on the skin.

Hypersensitivity to Touch (tactile defensiveness)

- becomes fearful, anxious or aggressive with unexpected touch
- appears fearful of, or avoids standing in close proximity to other people or peers (especially in lines)
- becomes frightened when touched from behind or by someone/something they cannot see
- bothered by rough bed sheets (i.e., if old and “bumpy”)
- avoids group situations for fear of the unexpected touch
- resists friendly or affectionate touch from anyone besides parents or siblings (and sometimes them too!)
- may overreact to minor cuts, scrapes and or bug bites
- avoids touching certain textures of material (blankets, rugs, stuffed animals)
- refuses to wear new or stiff clothes, clothes with rough textures, turtlenecks, jeans, hats, or belts, etc.
- avoids/dislikes/aversive to “messy play”, i.e., sand, mud, water, glue, glitter, playdough, slime, shaving cream/funny foam etc.
- will be distressed by dirty hands and want to wipe or wash them frequently
- excessively ticklish
- distressed by seams in socks and may refuse to wear them
- resists brushing teeth and is extremely fearful of the dentist
- can be a picky eater, only eating certain tastes and textures; mixed textures tend to be avoided as well as hot or cold foods; resists trying new foods
- may refuse to walk barefoot on grass or sand
- may walk on toes only
- prefers to be naked

Hyposensitivity to Touch (under-responsive):

- may crave touch, needs to firmly touch everything and everyone
- is not aware of being touched/bumped unless done with extreme force or intensity
- is not bothered by injuries, like cuts and bruises, and shows no distress with shots (may even say they love getting shots!)
- may not be aware that hands or face are dirty or feel his/her nose running
- may be self-abusive; pinching, biting, or banging his/her own head
- mouths objects excessively
- repeatedly touches surfaces or objects that are soothing (i.e., blanket)

- seeks out surfaces and textures that provide strong tactile feedback
 - thoroughly enjoys and seeks out messy activities
 - craves vibrating or strong sensory input
 - has a preference and craving for excessively spicy, sweet, sour, or salty foods
-

Signs of Vestibular/Balance Dysfunction

The balance sense provides input from the inner ear about equilibrium, gravitational changes, and movement experiences.

Hypersensitivity to Movement (over-responsive):

- climbs stairs one at a time
- avoids/dislikes playground equipment (i.e., swings, ladders, slides, or merry-go-rounds)
- prefers sedentary tasks, moves slowly and cautiously, avoids taking risks, and may appear “wimpy”
- avoids/dislikes elevators and escalators; may prefer sitting while they are on them or, actually get motion sickness from them
- may physically cling to an adult they trust
- may appear terrified of falling even when there is no real risk of it
- afraid of heights, even the height of a curb or step
- fearful of feet leaving the ground
- fearful of going up or down stairs or walking on uneven surfaces
- afraid of being tipped upside down, sideways, or backwards; will strongly resist getting hair washed over the sink
- startles if someone else moves them (i.e., pushing his/her chair closer to the table)
- may be fearful of and have difficulty riding a bike, jumping, hopping, or balancing on one foot (especially if eyes are closed)
- loses balance easily and may appear clumsy
- fearful of activities which require good balance
- avoids rapid or rotating movements

Hyposensitivity to Movement (under-responsive):

- in constant motion, can't seem to sit still
- craves fast, spinning, and/or intense movement experiences
- could spin for hours and never appear to be dizzy
- loves the fast, intense, and/or scary rides at amusement parks
- always jumping on furniture, trampolines, spinning in a swivel chair, or getting into upside down positions
- loves to swing as high as possible and for long periods of time

- is a “thrill-seeker;” dangerous at times
 - always running, jumping, hopping etc. instead of walking
 - rocks body, shakes leg, or head while sitting
 - likes sudden or quick movements, such as, going over a big bump in the car or on a bike
-

Signs of Proprioceptive/Awareness of Body and Space Dysfunction

The proprioceptive sense provides input from the muscles and joints about body position, weight, pressure, stretch, movement, and changes in position in space.

Sensory-Seeking Behaviour: (hyposensitive proprioceptive functioning):

- seeks out jumping, bumping, and crashing activities
- stomps feet when walking
- kick his/her feet on floor or chair while sitting at desk/table
- bites or sucks on fingers and/or frequently cracks his/her knuckles
- loves to be tightly wrapped in many or weighted blankets, especially at bedtime
- prefers clothes (and belts, hoods, shoelaces) to be as tight as possible
- loves/seeks out “squishing” activities
- enjoys bear hugs
- excessive banging on/with toys and objects
- loves “roughhousing” and tackling/wrestling games
- frequently falls on floor intentionally
- would jump on a trampoline for hours on end
- grinds his/her teeth throughout the day
- loves pushing/pulling/dragging objects
- loves jumping off furniture or from high places
- frequently hits, bumps or pushes other people
- chews on pens, straws, shirt sleeves etc.
- difficulty with grading of movement:
 - misjudges how much to flex and extend muscles during tasks/activities (i.e., putting arms into sleeves or climbing)
 - difficulty regulating pressure when writing/drawing; may be too light to see or so hard the tip of writing utensil breaks
 - written work is messy and he/she often rips the paper when erasing
 - always seems to be breaking objects and toys
 - misjudges the weight of an object, such as a glass of juice, picking it up with too much force sending it flying or spilling, or with too little force and complaining about objects being too heavy

- may not understand the idea of “heavy” or “light”; would not be able to hold two objects and tell you which weighs more
- seems to do everything with too much force; i.e. walking, slamming doors, pressing things too hard, slamming objects down
- plays with animals with too much force, often hurting them

Signs of Auditory Dysfunction (no diagnosed hearing problem)

Hypersensitivity to Sounds (auditory defensiveness):

- distracted by sounds not normally noticed by others (i.e., humming of lights or refrigerators, fans, heaters, or clock ticking)
- fearful of the sound of a flushing toilet (especially in public bathrooms), vacuum, hairdryer, squeaky shoes, or a dog barking
- startled with or distracted by loud or unexpected sounds
- bothered/distracted by background environmental sounds (i.e., lawn mowing or outside construction)
- frequently asks people to be quiet (i.e., stop making noise, talking or singing)
- runs away, cries and/or covers ears with loud or unexpected sounds
- may refuse to go to movie theaters, parades, skating rinks, musical concerts etc.
- may decide whether they like certain people by the sound of their voice

Hyposensitivity to Sounds (under-registers):

- often does not respond to verbal cues or to name being called
- appears to “make noise for noise’s sake”
- loves excessively loud music or TV
- seems to have difficulty understanding or remembering what was said
- appears oblivious to certain sounds
- appears confused about where a sound is coming from
- talks self through a task, often out loud
- had little or no vocalizing or babbling as an infant
- needs directions repeated often, or will say, “What?” frequently

Signs of Oral Input Dysfunction (taste):

Hypersensitivity to Oral Input (oral defensiveness):

- picky eater, often with extreme food preferences; (i.e., limited repertoire of foods, picky about brands, resistant to trying new foods or restaurants, and may not eat at other people’s houses)
- may gag with textured foods

- has difficulty with sucking, chewing and swallowing; may choke or have a fear of choking
- resists/refuses/extremely fearful of going to the dentist or having dental work done
- may only eat hot or cold foods
- refuses to lick envelopes, stamps, or stickers because of their taste
- dislikes or complains about toothpaste and mouthwash
- avoids seasoned, spicy, sweet, sour or salty food; prefers bland foods

Hyposensitivity to Oral Input (under-registers):

- may lick, taste, or chew on inedible objects
- prefers foods with intense flavour; i.e. excessively spicy, sweet, sour, or salty
- frequently chews on hair, shirt, or fingers
- acts as if all foods taste the same
- can never get enough condiments or seasonings on his/her food
- loves vibrating toothbrushes and even trips to the dentist

Signs of Olfactory Dysfunction (Smells)

Hypersensitivity to Smells (over-responsive):

- reacts negatively to, or dislikes smells which do not usually bother, or get noticed, by other people
- tells other people (or talks about) how bad or funny they smell
- refuses to eat certain foods because of their smell
- offended and/or nauseated by bathroom odours or personal hygiene smells
- bothered/irritated by smell of perfume or cologne
- bothered by household or cooking smells
- decides whether he/she likes someone or some place by the way it smells

Hyposensitivity to Smells (under-responsive):

- has difficulty discriminating unpleasant odours
- may drink or eat things that are poisonous because they do not notice the noxious smell
- unable to identify smells from scratch 'n sniff stickers
- does not notice odours that others usually complain about
- fails to notice or ignores unpleasant odours
- makes excessive use of smelling when introduced to objects, people, or places
- uses smell to interact with objects

Signs of Visual Input Dysfunction (no diagnosed vision deficit)

Hypersensitivity to Visual Input (over-responsiveness):

- sensitive to bright lights; will squint, cover eyes, cry and/or get headaches from the light

- has difficulty keeping eyes focused on task/activity he/she is working on for an appropriate amount of time
- easily distracted by other visual stimuli in the room (i.e., movement, decorations, toys, windows, doorways etc.)
- has difficulty in bright colourful rooms or a dimly lit room
- rubs his/her eyes, has watery eyes or gets headaches after reading or watching TV
- avoids eye contact
- enjoys playing in the dark

Hyposensitivity to Visual Input (under-responsive or difficulty with tracking, discrimination or perception):

- has difficulty telling the difference between similar printed letters or figures; for example, p and q, b and d, + and x, or square and rectangle
- has a hard time seeing the “big picture”; focuses on the details or patterns within the picture
- has difficulty locating items among other items (i.e., papers on a desk, clothes in a drawer, items on a grocery shelf, or toys in a bin/toy box)
- often loses place when copying from a book or the chalkboard
- difficulty controlling eye movement to track and follow moving objects
- has difficulty telling the difference between different colours, shapes, and sizes
- often loses his/her place while reading or doing math problems
- makes reversals in words or letters when copying, or reads words backwards; for example, “was for “saw” and “no” for “on” (after first grade)
- complains about “seeing double”
- difficulty finding differences in pictures, words, symbols, or objects
- difficulty with consistent spacing and size of letters during writing and/or lining up numbers in math problems
- difficulty with jigsaw puzzles, copying shapes, and/or cutting/tracing along a line
- tends to write at a slant (up or down hill) on a page
- confuses left and right
- difficulty judging spatial relationships in the environment; bumps into objects/people or missteps on curbs and stairs

Internal Regulation (the interoceptive sense):

- becoming too hot or too cold sooner than others in the same environments; may not appear to ever get cold/hot, may not be able to maintain body temperature effectively
- difficulty in extreme temperatures or going from one extreme to another (i.e., winter, summer, going from air conditioning to outside heat, a heated house to the cold outside)

- respiration that is too fast, too slow, or cannot switch from one to the other easily as the body demands an appropriate respiratory response (heart rate variability (HRV))
- heart rate that speeds up or slows down too fast or too slow based on the demands imposed on it (HRV)
- narrow range of heart rate variability, e.g., high resting, low when exerted
- respiration and heart rate that takes longer than what is expected to slow down during or after exertion or fear (HRV)
- severe and frequent mood swings throughout the day (angry to happy in short periods of time, perhaps without visible cause)
- unpredictable state of arousal or inability to control arousal level (hyper to lethargic, quickly vacillating between the two; over-stimulated to under-stimulated, within hours or days, depending on activity and setting, etc.)
- frequent constipation or diarrhea, or mixed during the same day or over a few days
- does not seem to know when he/she has to go to the bathroom (cannot feel the necessary sensation that their bowel or bladder are full)
- unable to regulate thirst; always thirsty, never thirsty, or oscillates back and forth
- unable to regulate hunger; eats all the time, won't eat at all, unable to feel full/hungry
- unable to regulate appetite; has little-to-no appetite and/or will be "starving" one minute, then full two bites later, then back to hungry again (prone to eating disorders and/or failure to thrive)

Responses to Sensory Challenges:

Pay attention to what individuals spontaneously do to calm themselves, and then help them do it when they start to become agitated. Encourage following the prescribed daily sensory diet developed by an occupational therapist to help senses remain balanced and prevent sensory overload (see examples below).

Use techniques as recommended by a qualified occupational therapist to enhance levels of organization in the brain with the possibility of growing new neuron cells.

The following are examples of activities that could be beneficial with frequent and consistent use, depending on OT recommendations:

Vestibular/Balance Integration Exercises to Stimulate:

- jumping, hopping, bouncing on mini-trampoline or stabilization ball, catching, throwing, skipping or bouncing on pogo stick;
- swinging, rotating or hammocking in all directions (also improves inner-ear function);
- walking toe-to-heel on balance beam (1" x 6" x 8" boards in pattern);
- balancing on boat bumpers;
- vaulting (sudden jolts are very helpful);

- standing and balancing on elliptical cushion while catching balls;
- doing balancing exercises on Wii or Xbox;
- sitting on an air cushion (weight shifting stimulates balance and improves inner ear and motor behaviour functioning therefore reducing movement fear and anxiety).

Proprioceptive Body Awareness Integration Exercises to Stimulate:

- vibration (highly stimulating to our proprioceptive sense, e.g., massage chair);
- weighted/compression clothing and blankets (self-calming to this sense);
- measured strengthening exercises to learn to use an appropriate level of force;
- squeeze machine;
- regular doses of touch from massage, brushing, handholding;
- caving or rock climbing;
- pushing and pulling;
- carrying heavy objects;
- weight resistance and pressure workouts;
- jumping on the trampoline;
- throwing or catching a heavy ball or beanbag;
- rolling up tightly in a blanket;
- “bicycling” (two people laying on backs playing bicycle with their feet);
- digging in heavy sand;
- sucking on a water bottle;
- chewing heavy, crunchy food.

Tactile Integration Exercises:

To stimulate:

- Use chewing appliances;
- Walk on a variety of textures in bare feet;
- Use gripping appliances to stimulate feeling;
- Choose colourful clothing, pictures;
- Experience different textures through hand stimulation (e.g., from sand to water, from rough to smooth, from hot to cold).

To calm:

- Avoid people who get too close;
- Choose user-friendly clothing—not too tight or too scratchy;
- Arrange for snoezlen-type environments: slow moving, soft light, soft textures and colours, soft music, bubble tubes;
- Use ear plugs or headphones;
- Serve soft-textured food (minced, pureed, smoothies);
- Wear sunglasses.