THE HIGHLY SENSITIVE BRAIN

A guide to recognizing the trait of high sensitivity, understand it, manage it, and value it in an overstimulating world with scientifically recognized information and strategies



WHAT DOES IT MEAN TO HAVE A HIGHLY SENSITIVE BRAIN?

Approximately one in four people have a highly sensitive brain: they **perceive** environmental stimuli (what they see, feel, and hear) more **deeply**, notice and remember more details and are therefore more often tired or frustrated. Highly sensitive people have greater activation of the areas of the brain involved in attention, emotion, and consciousness^{1,2}. This is a **normal variation of temperament**, not a disorder, and is found in more than 100 animal species ³, including humans. Differences in sensitivity are explained by both genetic (47%) and environmental factors (53%) such as family, work, school, culture, etc.⁴

Not shy. On the alert.

One can imagine that sensitive individuals in various animal species, including humans, have the role of **sentinels**: they constantly monitor the environment and raise an alarm in the event of potential threats.



Depth of processing

The depth of processing occurs at both the conscious and subconscious levels. Highly sensitive people observe, think deeply, and reflect more on past and possible future events^{5,6}.

Attention to details

Highly sensitive people process details more deeply. They are more attentive to subtleties, expressions, and changes in the environment: they notice inconsistencies between what is said and what they perceive by processing non-verbal clues.

Empathy and emotional responsiveness

The mirror neurons of highly sensitive people are more active than those of people with lower sensory thresholds⁷. Highly sensitive people are 'emotional guides', are always the first to respond with emotions⁸ and often choose professions and hobbies in which their sensitivity is useful: therapists, teachers, artists, designers, philosophers, and counselors.

Overstimulation

A more sensitive nervous system notices danger earlier than others. Heightened awareness and deep processing can make highly sensitive people quickly overstimulated or overwhelmed, and therefore nervous and tired.⁶

DIFFERENCES

People with a highly sensitive nervous system are not all the same: depending on the **context** and different experiences, they may behave very differently. What remains constant is the tendency to **perceive** and **process** stimuli more deeply than the general population.

Highly sensitive people who understand and manage their sensitivity are **empowered** people, i.e. capable of expressing and experiencing their full potential. Highly sensitive **disempowered** people, on the other hand, can be very reactive: they explode with anger or victimize themselves; they may have difficulty managing their emotions or being assertive and thus make themselves easily manipulated⁶.

Often, people with high sensitivity tend to be **observant** before entering new situations, which is why they are perceived as 'shy'. In reality, shyness is not innate but learned.

Furthermore, being empathic is not the same as being highly sensitive: one person may be empathic but not highly sensitive, while others may be highly sensitive and understand well what people are thinking and feeling, but not necessarily care about it.

A highly sensitive person can also be a **High Sensation Seeker** or seeker of strong sensations, one who has a natural attraction to situations in which they experience strong emotions.

30% highly sensitive people

HIGHLY SENSITIVE MEN

Men with highly sensitive brains often **hide** their emotionality and sensitivity, mainly for **cultural** reasons. Highly sensitive boys are often told that they must not cry, that they must be strong, and not show fear. The dominant culture in the West is still that men are not meant to be sensitive, and as a result, the only acceptable emotion for men to express their feelings seems to be anger. This **cultural misconception** does not make it easy for highly sensitive men to be authentic about their feelings.⁷

Having a more sensitive nervous system, being more emotional, and thinking more deeply - compared to the majority of the population - is not wrong. Highly sensitive people do **not have to be adjusted**. They should not be asked to feel less, think less, and be less emotional. **Every species needs individuals with different degrees of sensitivity**, from low to high. It is important to bear in mind that people have different feelings and that not all are characterized by the same emotional intensity.

Validating one's own emotions and those of others is fundamental: everyone must feel free to feel and express them without being judged.

Sensitive and attentive as a wolf



STRENGTHS

When people with a highly sensitive nervous system are happy, they are extremely happy! The perception of **deep** inner states, combined with excellent intuition, promotes healthy actions. Highly sensitive people have greater prospective and retrospective thinking, i.e. the tendency to **foresee consequences and possible scenarios** and to think hard about their mistakes to do better in the future. This also leads to greater creativity in problem-solving, a pronounced ability to grasp associations between situations and concepts, and thus more easily create an overall picture of the situation and develop creative solutions.

Highly sensitive people have a greater ability to put themselves in the shoes of others, **listen** deeply, and make others feel understood and at ease; they are often skilled peacemakers and, wherever there are conflicts or tensions, with **empathy** and **compassion** they can create affinity. People with sensitive brains see the world with less cultural bias than less sensitive people, precisely because they think more about everything, including cultural norms⁸.

As orchids, to blossom they require a suitable environment

For evolutionary reasons, humans pay particular attention to negative characteristics and 'dangers'. A highly sensitive nervous system pays even more attention to dangers and therefore the person feels more vulnerable. In the Western world, the vulnerable person is considered weak and is the one who must be adjusted or brought back to normal. It is only in recent decades that research has shown that highly sensitive people derive **more benefit from positive experiences** than people with low sensitivity: sensitivity, therefore, becomes an advantage,⁹ but only in an environment that is suited to the person's characteristics, **non-competitive, with few stimuli and with adequate time to process all stimuli and recover energy**.

DIFFICULTIES AND CHALLENGES OF SENSITIVITY

Precisely because the nervous system of highly sensitive people processes stimuli more profoundly especially potential threats - highly sensitive people suffer more often from headaches, stomachaches, digestive problems, allergies, and asthma.¹⁰ Recent research has shown that children with a highly sensitive nervous system have a greater susceptibility to the family and cultural environment: growing up in a favorable environment gives the highly sensitive person an advantage over the general population. Conversely, growing up in a disabling environment predisposes

highly sensitive people to emotional and physical

People with a highly sensitive nervous system are more often diagnosed with anxiety and depression, but research has shown that participation in mindfulness or depression prevention program is very effective in improving the wellbeing of highly sensitive people.

disorders.

People with a highly sensitive people. $\frac{11}{11}$ than less sensitive people and have a greater need for rest, but they also often have problems with insomnia.

Highly sensitive people - more often than less sensitive people - report experiencing pain even in the absence of obvious physical causes. This may be due to heightened body awareness, or to a more pronounced activity of mirror neurons that make other people's pain feel like their own.

In addition, highly sensitive people may find it helpful to consider that, being very empathic, they may have difficulty separating their own perceptions and feelings from those perceived by others - even physical pain.

HIGH SENSITIVITY IS NOT AUTISM

High sensitivity is a **normal** temperament trait and not a disorder. **Due to a lack of knowledge about the trait of high sensitivity**, people with a highly sensitive nervous system risk being misdiagnosed with disorders such as depression, anxiety, bipolar disorder, oppositional defiant disorder, borderline personality disorder, avoidant personality disorder, attention deficit hyperactivity disorder (ADHD/ADD) or other mood disorders, personality disorders, somatoform disorders, and even autism¹² when in fact they only have a particularly sensitive nervous system¹³

Like people with attention deficit hyperactivity disorder, highly sensitive individuals can easily become distracted by the large number of details they perceive in their environment. However, highly sensitive people can master themselves and concentrate well if they are in a distraction-free, safe, and **favorable environment.** Those with ADHD, on the other hand, show difficulties in mastering and concentrating even in quiet environments.

Although highly sensitive persons may share with a percentage of persons with Autism Spectrum Disorder a high sensitivity to external stimuli (sound, light, touch, smell, and taste) and maybe more easily overwhelmed and thus more responsive, there is a fundamental difference between them¹³. People with Autism Spectrum Disorder, even level 1 (or Asperger's syndrome) have more difficulty in intuitively understanding the intentions and thoughts of others - a concept called the **theory of mind**.¹⁴ This is not the case for highly sensitive people who are generally very good at imagining what others are thinking and predicting their behavior.

Give your best, with the right support.

THE IMPORTANCE OF AWARENESS. FOR ALL.

For people with average or low sensitivity, it is important to learn that there are people (3 out of 10) who perceive more stimuli (visual, auditory, emotional, etc.) and process them more deeply. It is important not to judge other people by their perceptive abilities and empathy: each person perceives the environment differently. Deeper perception requires more time to process all the information and to recover energy: this is not wrong - on the contrary - attention to details and future consequences is a gift and a skill that protects everyone from potential dangers. One should learn to have an attitude of understanding toward people's different degrees of sensitivity.

Highly sensitive people need to appreciate and **accept** their high perception of reality, understanding that most people in the world have much less sensitivity and do not experience the same feelings as they do. Dr Elaine Aron suggests that highly sensitive people should:⁵

- 1. Understanding the high sensitivity trait
- 2. Creating a life compatible with the characteristic of high sensitivity
- 3. Recontextualizing the past in the light of the trait
- 4. Processing past traumas and preventing future ones
- 5. Getting to know other sensitive people and hanging out with them

47% genetic component of high sensitivity

SUGGESTIONS FOR HIGHLY SENSITIVE PEOPLE

Since people with a highly sensitive nervous system experience physical sensations and emotions more profoundly than less sensitive people, they may benefit from learning emotion **regulation** skills and learning to **accept** their sensory sensitivity and situations, focusing on the **present moment**.^{15,16}

1. **Protect oneself from sensory overstimulation**, e.g. by planning to do fewer activities in a day⁵, by using earplugs or noise-canceling headphones (also for sleeping to filter out low-frequency sounds that are interpreted by the brain as dangerous).¹⁷

2. Bringing awareness to one's feelings and thoughts, to manage them instead of suffering them. For this reason, methods that lead to awareness of the way one thinks (third-wave psychotherapy) and loving acceptance of oneself and others are mainly suggested.¹⁸

3. Live mindfully.

Through mindfulness techniques, people live by cultivating a state of being aware of the present moment without judging it, and opening up to their experiences with acceptance¹⁶ People who are more mindful, non-impulsive, non-judgmental and accepting, able to describe their feelings and act consciously, experiencing less anxiety and greater wellbeing. Some of the most popular and scientifically validated techniques for improving well-being are based on the development of mindfulness and emotion regulation skills, such as the Mindfulness-Based Stress Reduction (MBSR) Programme¹⁶ and the Mindful Self-Compassion (MSC) Program¹⁸, both 8-week programs.

Other scientifically validated and more complex programs that can support competence development, useful for highly sensitive people, are Acceptance and Commitment Therapy¹⁹ and Dialectical Behavioural Therapy (DBT).^{20,21}

PRACTICAL ADVICE

- **P** Taking care of the body (illness, pain, not ignoring the body's messages)^{20,21}
- Balanced, binge-free, healthy, and chemical-free food^{20,21}
- E Avoiding mood-altering substances (coffee, cigarettes, alcohol, excessive medication)^{5,20,21}
- ▲ Listening to music^{17,20}and expressing creativity
- S Balanced sleep⁵ and pauses for reflection^{16,18,20}
- E Regular exercise (improves mood, decreases stress, increases memory)^{5,20}
- Spending time in nature/with animals⁵
- Cultivating Spirituality²⁰
- Choosing Friends Carefully⁵
- Offloading the weight of thoughts from the brain by writing or drawing ideas and reflections

SCIENTIFIC REFERENCES

Main reference book:

Elaine Aron (1997). **The Highly Sensitive Person: How to Thrive When the World Overwhelms You**. Harmony

Reference book for specialists:

Elaine Aron (2010). **Psychotherapy and the Highly Sensitive Person. Improving outcomes for the minority of people who are the majority of clients.** Routledge.

Scientific References

1. Aron, E. N., Aron, A., Jagiellowicz, J. (2012). Sensory processing sensitivity: A review in the light of the evolution of biological responsivity. Personality and Social Psychology Review, 16(3), 262-282.

 Acevedo, B. P., Jagiellowicz, J., Aron, E., Marhénke, R., Aron, A. (2017). Sensory processing sensitivity and childhood. quality's effects on neural responses to emotional stimuli. Clinical Neuropsychiatry: Journal of Treatment Evaluation.
 Wolf, M., Van Doorn, G. S., Weissing, F. J. (2008). Evolutionary emergence of responsive and unresponsive personalities. Proceedings of the National Academy of Sciences, 105(41), 15825-15830;

4.Assary, E., Zavos, H. M., Krapohl, E., Keers, R., G Pluess, M. (2020). Genetic architecture of Environmental Sensitivity reflects multiple heritable components: a twin study with adolescents. Molecular Psychiatry, 1-9.

5.Aron, E. N. (2020). (1997). The Highly Sensitive Person: How to Thrive When the World Overwhelms You. Harmony
 6.Acevedo, B. P. (2020). The basics of sensory processing sensitivity. In: B. P. Acevedo (Ed.), The highly sensitive brain.
 Research, Assessment, and Treatment of Sensory Processing Sensitivity (pp. 1-15). Academic Press.

7.Acevedo, B. P., Aron, E. N., Aron, A., Sangster, M. D., Collins, N., & Brown, L. L. (2014). The highly sensitive brain: an fMRI study of sensory processing sensitivity and response to others' emotions. Brain and behavior, 4(4), 580-594.

8.Aron, A., Ketay, S., Hedden, T., Aron, E. N., Rose Markus, H., Gabrieli, J. D. (2010). Temperament trait of sensory processing sensitivity moderates cultural differences in neural response. Social cognitive and affective neuroscience, 5(2-3), 219-226.

9 Jagiellowicz, J., Zarinafsar, S., Acevedo, B. P. (2020). Health and social outcomes in highly sensitive persons. In: B. P. Acevedo (Ed.), The highly sensitive brain. Research, Assessment, and Treatment of Sensory Processing Sensitivity (pp. 75-98). Academic Press.

10.Pluess, M., & Belsky, J. (2013). Vantage sensitivity: individual differences in response to positive experiences. Psychological bulletin, 139(4), 901.

 Pluess, M., & Boniwell, I. (2015). Sensory-processing sensitivity predicts treatment response to a school-based depression prevention program: Evidence of vantage sensitivity. Personality and individual differences, 82, 40-45.
 Elaine Aron (2010). Psychotherapy and the Highly Sensitive Person. Improving outcomes for the minority of people who are the majority of clients. Routledge.

13.Acevedo, B., Aron, E., Pospos, S., Jessen, D. (2018). The functional highly sensitive brain: a review of the brain circuits underlying sensory processing sensitivity and seemingly related disorders. Philosophical Transactions of the Royal Society B: Biological Sciences, 373(1744), 20170161.

14.Baron-Cohen, S. (2000). Theory of mind and autism: A review. International review of research in mental retardation, 23, 169-184.

15. Soons, I., Brouwers, A., Tomic, W. (2010). An experimental study of the psychological impact of a Mindfulness-Based Stress Reduction Program on highly sensitive persons. Europe's Journal of Psychology, 6(4), 148-169.
16. Kabat-Zinn, J. (2005). Wherever You Go, There You Are: Mindfulness Meditation in Everyday Life. Hachette Books.
17. Porges, S. (2017). The Pocket Guide to the Polyvagal Theory: The Transformative Power of Feeling Safe. WW Norton & Co.
18. Neff, K. D. (2005). Self-Compassion: The Proven Power of Being Kind to Yourself. William Morrow Paperbacks.
19. Harris, R. (2008). The happiness trap. Stop Struggling, Start Living. Robinson Publishing.
20. Linehan, M. (2014). DBT Skills Training Manual. Guilford Press.

21.Safer D.L., Adler, S, Masson Ph. (2018) The DBT Solution for Emotional Eating. Guilford Press.



The questionnaire: highly sensitive people



The questionnaire you can find at the following link has been scientifically tested. Warning: this is not a diagnosis because high sensitivity is not a disorder. https://sensitivityresearch.com/self-tests/adult-self-test/

FOR MORE INFORMATION:



HSP-PAS Association Switzerland

Website: www.hsp-pas.ch Facebook: High Sensitive Persons - HSP Switzerland Instagram: @hsp.pas.ch Twitter: @hsp_pas_ch



Contents: Eva-Lena Fehlmann (President of the Association High Sensitive Persons Switzerland) and Sabrina Bresciani Ph.D. (Politecnico di Milano)

Special thanks to Prof. Michael Pluess Ph.D., Francesca Lionetti Ph.D., Elena Lupo, Luciana Castelli Ph.D., members of the Association High Sensitive Person Switzerland and members of the Associazione Kolours Italia ONLUS. Original graphic project by Raimondo Simone Caramazza, Amerigo De Pisapia, Alessandro Nason, Davide Ponselè and Davide Valentini for the Workshop Tirocinante 2022, BA in Communication Design, School of Design, Politecnico di Milano. Lecturer: Prof. Sabrina Bresciani; T.A.: Ludovica Polo. Lavout adapted by Eva-Lena Fehlmann, Sabrina Bresciani and Ludovica Polo.

Published by Associazione Kolours and Association High Sensitive Person Switzerland Lugano (Switzerland), 2023.



