

# The Highly Sensitive Child and Behavioural Inhibition

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Most children have an easy and outgoing nature. They are curious about new people and places, keen to explore and try out new and interesting toys, they are adventurous but not fearless, and when upset they can easily be comforted and recover quickly from disappointments and setbacks.

Other children are born with a more cautious temperament and respond to new situations and people with wariness, they are slow to warm-up and are easily distressed by unfamiliar, unpredictable and unexpected events. They take longer to recover when upset.

Elaine Aron coined the phrase “highly sensitive child” for these children, describing them as very aware and quick to react to everything. Jerome Kagan, who did the early research on infants and young children who appeared sensitive and fearful, called this temperament trait behavior inhibition (BI).

These differences in children’s nature are called temperament traits and are determined by biological differences in the way in which the brain records, processes, interprets and responds to information from the environment which in turn determines an individual’s behavior and learning.

## Behavioural inhibition: the cautious/fearful child

Behavioural inhibition is a specific temperament trait first identified and described by Jerome Kagan in the 80’s. Children with an inhibited temperament are cautious, restrained and even fearful in response to unfamiliar people, objects and situations.

**Inhibited children have a very active fear system.** The regions of the brain that assess signals from within the body (such as body sensations) and information from the environment for the presence of potential threat or danger, are unusually alert and reactive. Things that are new, unfamiliar, different or difficult are interpreted as being threatening or dangerous. This creates a fear response and activates the body’s fear behaviors of fight, flee or freeze.

Cautious/fearful infants may be fussy, react strongly to any changes such as being undressed, are difficult to calm, react strongly to strangers or new situations. They also are very sensitive to being wet, hungry, or in discomfort. These infants become easily over-aroused and distressed when there is a lot going on around them. As they get older they may develop a strong fear of strangers, cling to parents in new situations and develop separation anxiety.

As the cautious/fearful child gets a little older he/she may avoid activities that seem difficult, physically challenging or complex. Intense physical activity such as running or jumping creates strong sensations of effort within the body – and the child may interpret these as being threatening and so avoid physical activity.

## The orienting response and the autonomic system

The orienting response is the brain's way of responding to novel and interesting events in the environment. When a new event occurs the brain makes a decision as to whether it is safe to approach and investigate, or is not safe and needs to be avoided. This is followed by the orienting response which includes activation of the autonomic system affecting breathing, heart rate and blood supply to the muscles and changes in muscle tone in preparation for action.

Stephen Porges describes three ways the autonomic system can respond the events, each with a different set of body responses:

**The social engagement system** - mediated by the polyvagal system (a part of the parasympathetic system) orients the organism towards a situation and promotes engagement.

**The sympathetic system** primes the body for action and provides the impetus for muscle work. In situations of danger, it is the sympathetic system that promotes flight or fight responses - whichever is more appropriate.

**The primitive parasympathetic system** primes the body for freezing in situations where not responding and being very still has survival value.

### The three systems in action

If the child finds the situation interesting and challenging she will orient her attention towards what she encounters, her attention will become focused and the physiological systems needed for action will be mobilized with just enough energy for the task. In social situations she will act with positive facial expressions and focused attention to the human voice. *The child experiences the event in a positive manner and feels good about herself.*

However if the child perceives the situation to be threatening, the brain's fear/avoidance systems prime the sympathetic system towards the flight or fight responses. The heart starts to beat faster, breathing rate increases, there is a sensation of butterflies in the stomach. *These responses create the feeling of either excitement or of fear.*

The other way in which the child may react to a threatening situation is to "freeze" - the body is primed for disengagement, for being very still, not responding and not being noticed. This is the most basic and primitive way for an organism to respond to threat. *The child simply refuses to engage with a situation, and no amount of persuasion will get her to change her mind.*

### Fear creates unpleasant sensations in the body

Fear is experienced both in the mind and in the body: it may be experienced as a feeling of tightness and constriction in the throat, tightness or pressure on the chest wall or butterflies in the stomach.

Most young children can identify where in their bodies they experience their fear. Ask your child "Where do you feel scared?" Point to the throat, chest, and tummy and ask "Here, here or here?" Each child has a particular way of experiencing fear.

### BI, highly sensitive, cautious children and fearful behavior

All young children show a fear response when confronted by frightening or very unusual situations. They will respond by staying close to their parents, and exhibit facial expressions of fear, crying and a refusal to investigate and approach.

However cautious/fearful children may show fear responses in situations that are not particularly threatening or frightening but are unfamiliar, different, unpredictable or unexpected.

There is also a group of children with higher levels of behavioral inhibition (high BI) who show more extreme fear behaviours that may include signs of distress and crying, clinging, withdrawal from the situation, complete refusal to participate even in situations with low threat level.

Children with high BI show patterns of dysregulated behavior. They show fear responses even in situations that are not threatening and at times their fearful behavior and levels of distress are extreme and continue long after the threat has been removed.

*High BI children and those with a dysregulated fear responses (DF) have a fear system that is highly vigilant and constantly on the lookout for threats.*

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## BI and a very cautious nature and a sensory processing disorder (SPD)?

The Sensory Processing Disorder (SPD) Foundation describes sensory processing as follows: "Sensory Processing Disorder (SPD, formerly known as "sensory integration dysfunction") is a condition that exists when sensory signals don't get organized into appropriate responses. Pioneering occupational therapist and neuroscientist A. Jean Ayres, PhD, likened SPD to a neurological "traffic jam" that prevents certain parts of the brain from receiving the information needed to interpret sensory information correctly. A person with SPD finds it difficult to process and act upon information received through the senses, which creates challenges in performing countless everyday tasks."

**The SPD Foundation website goes on to make the following claim:** *Motor clumsiness, behavioural problems, anxiety, depression, school failure, and other impacts may result if the disorder is not treated effectively.*

In contrast to the large body of scientific evidence that links a fearful temperament style (BI) to a range of difficult behaviours, including aberrant responses to sensory inputs, there is no evidence to show that "motor clumsiness, behavioural problems, anxiety, depression, school failure" are caused by difficulties with sensory processing or integration.

At any given time an individual's interpretation and responses to sensory information (proprioception, interoception, touch, visual and auditory signals) depends on the situation, general state of positive or negative emotional tone, expectations, plans for action and many other factors. All these factors together play a role in selecting what information is important (salient) what gets filtered out, what gets attention, and what gets used in pursuit of present goals.

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## Some common fear triggers

### **Feeling physically unsafe and in danger of falling**

Some cautious/fearful children are particularly sensitive to danger and feeling physically unsafe. In particular they are fearful of trying new activities that have an element of risk.

Fearful children may avoid climbing on play equipment, jungle gyms, trees, walking on raised surfaces, climbing up steep slopes, playing on see-saws and roundabouts, ladders and slides. Riding in an elevator or on an escalator may provoke a fear response.

### **New situations**

Highly sensitive children who are cautious/fearful children usually approach new situations or activities very hesitantly, and seem nervous or uncomfortable.

They get upset at being left in new situations for the first time and may take many days to adjust to kindergarten, preschool, or childcare.

### **Busy and noisy environments**

Cautious/fearful children often dislike situations that include lots of people moving around, unexpected noises and events.

They are particularly sensitive to unexpected events. They do not like surprises. They prefer to be in control.

**They are also less good at predicting what is going to happen next** which means that things that most children expect to happen in the normal course of events turn out to be unexpected for children with high behavioural inhibition and high fear arousal.

When walking down the aisle of a busy supermarket with many people walking in in different directions we naturally look ahead, notice who is coming directly towards us and take action to avoid a collision. We know how to pay attention to the most important information and filter out unnecessary information and manage to walk along the aisles without bumping into people and things.

A child with high fear arousal may not be able to filter all out unimportant noise and visual information or be able to select the most important information; they become overwhelmed and are not able to plan their path ahead, instead the child bumps into people and things and may lose sight of mom who has gone around the corner with the trolley.

### **Loud, unpredictable and unexpected noise**

Some children are very sensitive to noise levels, especially unexpected and unpredictable noises. Thunderstorms may provoke a strong fear response.

A child may develop a particular dislike and fear reaction to particular sounds such as sirens and when someone shouts loudly. If a child is a worrier he may react strongly to sounds of loud sirens going off close by: what does it mean, what has gone wrong, is there a fire, are we in danger? Children with high levels of arousal may find too much background noise unpleasant.

### **Fear of unfamiliar adults**

Some children may be particularly withdrawn or fearful in the presence of strangers. The child may be very shy and refuse to engage with friendly unfamiliar adults even in a safe environment.

### **Shyness with other children**

Cautious/fearful children may be shy when first meeting new children and reluctant to approach a group of unfamiliar children to ask to join in. They may prefer to watch other children, rather than join in their games.

### **Hypersensitivity to tactile inputs**

Some children develop a dislike to the feel of clothing with certain textures or clothing that is tight and fits closely. They may also develop a dislike to the feeling of different surfaces and textures under their feet or to the feel of soft and sticky stuff on their hands.

The reason for the development of tactile hypersensitivity is not clear. The argument that it is due to a sensory processing disorder does not take into account the complex nature of how the brain filters, selects and weights sensory information.

## **The highly sensitive child, behavioral inhibition and anxiety**

Behavioral inhibition as a temperament style is related to a child's fear responses to unfamiliar and unpredictable situations as well as familiar events that are perceived as threatening. Some children with high BI are at risk for later development of anxiety disorders including generalized anxiety disorder and social anxiety disorder.

### **What are the signs of anxiety in children?:**

- finding it hard to concentrate
- not sleeping, or waking in the night with bad dreams
- not eating properly
- quickly getting angry or irritable, and being out of control during outbursts
- constantly worrying or having negative thoughts about things such as
- feeling tense and fidgety, or using the toilet often
- always crying

- being clingy all the time (when other children are ok)
- complaining of tummy aches and feeling unwell
- may be very hard on themselves and strive for perfection.
- may seek constant approval or reassurance from others.

Source: NHS <http://www.nhs.uk/conditions/stress-anxiety-depression/pages/anxiety-in-children.aspx>

**If you think your child may have an anxiety disorder it is important to talk to your child's primary care physician/GP.**

## Varied experience promotes coping behaviours

It is helpful to remember that fearful children are particularly sensitive to events that are new, unfamiliar and unpredictable.

Children who have been encouraged to explore, take risks and take on challenges develop better coping skills and learn to moderate their tendency to withdraw or avoid situations they perceive to be threatening. A broad range of experience also means that the young child is faced with fewer unfamiliar situations and is better at predicting what will happen next.

A young child who has been encouraged to climb up onto the sofa as a toddler, has learned to climb up onto kitchen chair to reach a shelf, has been helped up to climb up the ladder of a high slide and been encouraged to slide down, and has played rough and tumble games with daddy is used to dealing with what can appear to be physically dangerous situations and also enjoys to mixture of fear and excitement that goes with tackling new physical challenges. The same child may be cautious but does not experience excessive fear responses when he/she goes to a new outdoor play area that has many new and interesting climbing apparatuses.

Children who have been given lots of opportunities to get their hands dirty and sticky from an early age are happy to play messy games as pre-schoolers. Messy play starts when infants are allowed to play with their food: smearing yogurt or porridge on the table, eating soft food with their fingers, and feeding themselves with a spoon even when the food mostly does not reach the mouth.

## Sensitivity to unexpected and unpredictable events

High BI children often have heightened levels of fear arousal, which makes them extremely sensitive to any events in the environment that are unexpected. They do not like situations that are unpredictable.

A child in a state of heightened fearful arousal is usually busy monitoring what is happening in the here-and-now and this also interferes with his/her ability to predict what will happen next. This means that the environment becomes even more uncertain.

A typically developing child sitting at the top of a high slide anticipates the sensations that go with the upcoming fast descent down the slide.

A fearful child may be paying attention to the anxiety that goes with being so high off the ground that he does not anticipate the fast movement of his buttocks on the slide or the rush of air past his face as his body makes its rapid descent. These sensations are unexpected even though he has been down the slide several times before.

## Fearful children tend to form strong negative associations

When two events happen more or less at the same time we tend to form a strong association between the two: a drink of cold water on a hot day relieves your thirst and tastes good, A negative association happens when an unpleasant or threatening event occurs at the same time as a neutral or low threat event.

I am happily eating a plate of oats porridge when there is a very loud, fear provoking noise out on the street. I get a very big fright, my heart starts to pound and there is a feeling of tightness in my chest which lasts for quite a long time.

A connection is made in my brain between eating oats porridge and all the unpleasant sensations that were caused by the loud bang. As a result I have developed a really strong dislike of oats porridge.

## Tendency to exaggerated fear learning

Fearful children can develop a strong dislike and fear response after just one unpleasant or threatening experience.

- A single unpleasant experience with a big dog may provoke a fear of all dogs.
- A fall of the lowest rung of the jungle gym may lead to refusal to climb on the jungle gym again.

## Negative responses to strong sensations from their bodies

The brain continuously monitors information from the body. This information comes from the many sensors in the skin, fascial structures, joints and muscles, blood vessels, internal organs, and vestibular system. Depending on the context the sensitivity of the sensors in all these structures can be adjusted to provide more or less information.

Much of the time we are not aware of the incoming information from our bodies. We sit on a chair without being aware of the pressure of the buttocks on the seat, we walk without taking any notice information from the soles of our feet as they make contact with the ground, and the regular beating of our hearts and movement of the chest wall as we breathe goes unnoticed. However, any changes in the intensity of the information coming from our bodies usually reaches our attention and may provoke an emotional response.

As adults we often know what is causing the increase in sensations: we expect the muscles to ache a little, the heart to beat faster and our breathing to become laboured when we engage in effortful physical activity. Cautious/fearful children are often highly sensitive to such increased sensory input from the body sensors and may respond with increased fear arousal.

A little bit of discomfort from muscles that are working hard or being stretched, a slight increase in the rate of the heartbeat, a bit of distension in the abdomen after a large meal may feel threatening and provoke a disproportional emotional response.

Children may avoid any effortful physical activity because they want to avoid these sensations of effort that are perceived as threatening. .

## A tendency focus attention on threatening events

Some cautious/fearful children have a tendency to hone in on any sensations arising from their bodies or sensory information from the environment which they perceive as a threat. **This is termed attentional bias to threat.**

The perceived threat grabs their attention and they have difficulty shifting the focus of their attention

away from the threat. Maintaining attention focus on a perceived threat increases arousal levels which in turn increases the tendency to focus on the threat.

Perceived threats that may lead to strong attentional bias include sensory inputs from the environment such as unexpected and unpredictable loud noises, unfamiliar people, unfamiliar animals, fear provoking objects such as a toy spider or noisy unpredictable toy.

I sometimes play a jumping game where a child jumps over a gap from one cushion to another. The gap is a pretend river and in the river there is a toy wooden crocodile. If the child falls into the river he gets eaten by the crocodile. Every now and then I meet a child who refuses to jump until I take away the wooden crocodile. Usually I just put it back on the shelf and the child forgets about it, but one little boy became so focused on the wooden crocodile that I had to put it out of sight in a cupboard and lock the door before he would continue with the game.

## Sensitivity to mistakes and failure

From a very young age children monitor the success or failure of their attempts to achieve a goal. Success tends to tweak the brain's reward systems which provides the child with that good feeling that goes with success. The more challenging the task, the greater the sense of achievement.

Young children are also very aware of failed attempts and in most instances use this information to adapt their actions on the next trial and in this way learn from their mistakes. Cautious/inhibited on the other hand often experience failure as threatening. Instead of learning from failed attempts they get upset, give up and may refuse to try again. They may also become very upset when they make a mistake. This is a real problem because without repeated practice and a good mixture of both successful and failed attempts learning does not happen.

**Fear of failure leads to freezing and avoidance.** Cautious/inhibited children often respond to their fear of failure by finding ways to avoid doing a task.

- One avoidance strategy is to simply refuse to engage with the task, and no amount of cajoling and pleading can get them to change their minds.
- Sometimes children will make a very half-hearted attempt to perform the task and then engage in distracting chatter and sometimes acting silly. Cautious children often become the class clown.

## Movement skills and the cautious/fearful child

Learning to perform a new movement based task requires engagement and sustained mental effort to support the emotional and cognitive work needed to approach a new and unfamiliar situation, control and sustain attention, explore ways of achieving the goal and keep going until the goal is achieved, often in the face of frustration and failure.

When tackling an unfamiliar task, a children need to regulate their emotional responses, direct their attention appropriately (effortful control) and call into play a range of thinking skills (executive functions) needed for planning and organizing his actions.

**Self-regulation refers to the child's capacity to control the inherent tendency to react to situations in a particular way**, such as approach or avoidance, holding back or rushing in. It refers to a child's ability to adapt and control his or her innate responses to stimuli from within the body and from the environment, and the ability to direct and use attention in an appropriate way.

## Cautious/fearful children learning a new skill

Cautious/fearful children may find engaging with an unfamiliar task overwhelming. The immediate response, before even considering the task, may be a fear reaction with over-arousal and feelings of anxiety. The child's emotional system may go into panic mode leading to an emotional outburst, but more often the physiological response is to freeze and simply refuse to even try.

Another child may be willing approach the task, but become discouraged at the first hurdle, and not be able to work out what to do next. Or he may narrowly focus his attention on one aspect of the task - get stuck on that and refuse to proceed.

Jess (5 years) likes playing with her collection of 20 piece puzzles. Sometimes she tips all the pieces out on the table and then with great concentration and persistence sorts out the pieces and builds them all. Recently her mom bought her a new 50 piece puzzle depicting an underwater scene. Together they sat down, tipped out all the pieces and looked at the picture on the box. They started to look for the pieces that made up the large brightly coloured fishes but after a few minutes and much to her mom's surprise Jess' initial enthusiasm quickly gave way to an emotional outburst. She wiped the puzzle pieces off the table, called the puzzle stupid and stomped off to her bedroom.

## Learning a task that involves physical effort

Cautious/fearful children sometimes over-focuses on the physical sensations from within the body and may react strongly to the sensations of effort that accompany activities that require muscular effort or get the heart beating fast.

Many of the physical activities young children engage in require quite strenuous muscular and cardiovascular exertion.

- Running will also get the heart beating rapidly - and the child finds this unpleasant because he associates this sensation with fear and anxiety.
- Jumping high or far elicits a powerful contraction in the quadriceps muscles, and a feeling of pressure in the knees - and the child finds this unpleasant and dangerous.
- Hanging from the monkey bars is scary because you are a long way from the ground, but it also quite hard on the hands and creates strong activity in the shoulder muscles. It is no wonder that highly sensitive children avoid the monkey bars and climbing frame.

Molly (aged 6) is a cautious little girl with joint hypermobility. As part of her strength training program I wanted her to do some big jumps from one cushion to another over a gap. This activity requires forceful contraction of the leg muscles to initiate the jump and then to absorb the momentum on landing. Molly did 3 jumps and then moved away and sat on a bench near the door. She refused to try again.

I sat down next to her and talked about how the knees feel when one does a big jump; the muscles have to work very hard and sometimes that feels a little uncomfortable. Molly listened to my explanation but still refused to try again, and in response to my continued efforts to coax her into action she blurted out that her bones felt like they were breaking and she did not want to go to hospital. She also told me that her granny had a fall recently and needed an operation to fix her hip.

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coax her into action she blurted out that her bones felt like they were breaking and she did not want to go to hospital. She also told me that her granny had a fall recently and needed an operation to fix her hip.

By the age of five a young child with movement difficulties watches his peers doing a range of balance, climbing, agility and ball skills. He expects to be able to do them as well as his friends and gets disheartened when he cannot compete and keep up. What he does not understand is that his peers have invested a great deal of time and effort over a number of years into learning and perfecting these skills. And as a result they are also more agile, stronger and fitter.

## School for bravery: Helping very cautious children to overcome their fears

In my work with fearful children who have movement difficulties I am always amazed at how quickly and easily a child can be shifted from fearfulness to courage in the face of physical challenges. As one 6-year-old put it "I have learnt to face my fears".

The same child had also learned to enjoy working his muscles hard and to interpret sensations of tiredness in his muscles as a good thing - because "it means that my muscles are working hard enough to make them stronger".

He had learned to put in the extra effort needed to complete a task when his muscles were starting to tire, and the pleasure of pushing himself hard to reach a goal or meet a challenge.

Michael was nearly five when he first came to see me. He tolerated the assessment tasks for about 20 minutes - then started to whine and wanted to leave. So we switched to games. We played being chased by a lion and did shuttle runs across the room, with me shouting loud warnings about the lion catching me and encouragement to run faster. When we stopped I encouraged him to feel his heart beating. Yes, it was beating very, very fast because that is what hearts do when one runs. He wanted his mom to feel his heart, and then wanted to feel my heart beating fast. After a little rest he wanted to run again - so that he could feel his heart again.

His perception of his heart beating fast had shifted from being a signal of an anxiety-provoking situation to the sensation of effort, exercise and excitement. (You do have to realize that I make a great deal of fuss about escaping from that lion that is chasing us.)

We also did some jumping from one big cushion to another - big jumps across a river. He did a few, then refused to do any more. So we had a conversation about what his knees felt like when he jumped. And my response was "That is what knees feel like when you jump". His mom reported that in the car on the way home Michael was very excited about feeling his knees. "Mom" he said "I can feel my knees". He also did a lot of jumping at home in the week that followed.

## More information

**The Skills for Action website** <https://skillsforaction.com>

**Motor learning and effortful control** <https://skillsforaction.com/motor-learning-effortful-control>

**Sensory processing disorder or an anxious temperament?** <https://skillsforaction.com/sensory-processing-disorder>

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