

How the Sensory Systems Impact our Journey Through Life

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Abstract

Human function is predicated on sensory systems performance. Sensory difficulties are often '*hidden disabilities*' difficult for those '*without them*', to understand those '*with them*'.

Efficient, integrated, systems are needed for optimum function. Disintegrated, inefficient, over-loaded systems are unable to accurately process sensory information affecting performance. Frequently present, in those with learning difficulties, they cause behaviours leading to labels. The 'underlying reasons' are often poorly recognised, misunderstood, ignored, or attributed to 'behavioural problems'. Assessments establish baseline function using formal tests or critical observations. Therapies, such as **Lightwave Stimulation (LWS)** - coloured pulsed light to help address light sensitivity and light processing deficiencies, **Auditory Integration Training (AIT)** - to help improve auditory processing and reduce over and under sensitivity to sound, **Neuro-developmental Programme (NDP)** - a sensory integration programme to inhibit Primitive Reflexes enabling Postural Reflexes emergence for development to progress. These therapies help improve social, emotional, behavioural and academic performance.

Keywords: Sensory, Processing, Light, Sound, Therapies

INTRODUCTION

The Sound Learning Centre opened its doors in 1994 and specialises in providing assessments, coloured light therapy, sound therapy and developmental programmes for those with sensory difficulties. Our purpose is providing people with sensory difficulties (which often underlie many learning difficulties) support, information, helpful therapies and hope that we can improve their social, emotional, behavioural or academic performance and that things can get better for them or their loved ones.

Identifying Sensory Difficulties

Largely our work is with a relatively niche sector of the population, and many of us will know someone who, on some level, has sensory difficulties. We see a lot of children with a variety of conditions such as speech and language difficulties, Dyslexia, Dyspraxia, and Attention Deficit Hyperactivity Disorder. Some are on the Autism spectrum, non-verbal and with quite obvious difficulties. We also see a number of high functioning adults who under perform against their intellectual ability.

Many individuals are able to compensate for sensory difficulties using 'coping mechanisms'. However, these strategies may come at an emotional, physical or academic cost and be difficult and exhausting to sustain. Additional pressures or responsibilities can mean things reach a tipping point. That's often when people find us.

How our Sensory Systems Work

Human function is really predicated on how well our sensory systems work for us. If our systems are disintegrated, inefficient and over-loaded, then accurately filtering sensory information can become impaired, affecting our overall performance and wellbeing. We believe it's our job to help identify areas where a child or adult struggles and see how we can help.

Our Assessment establishes how the sensory systems are functioning and where appropriate, we provide coloured light therapy, sound therapy and developmental programmes, to help make a difference. We also provide a unique insight and detailed explanation to those involved. Understanding why we function the way we do, can be very healing and enlightening. Many clients we have worked with didn't realise they have sensory difficulties – they just thought that everyone functioned that way!

Unusual Sensory Processing

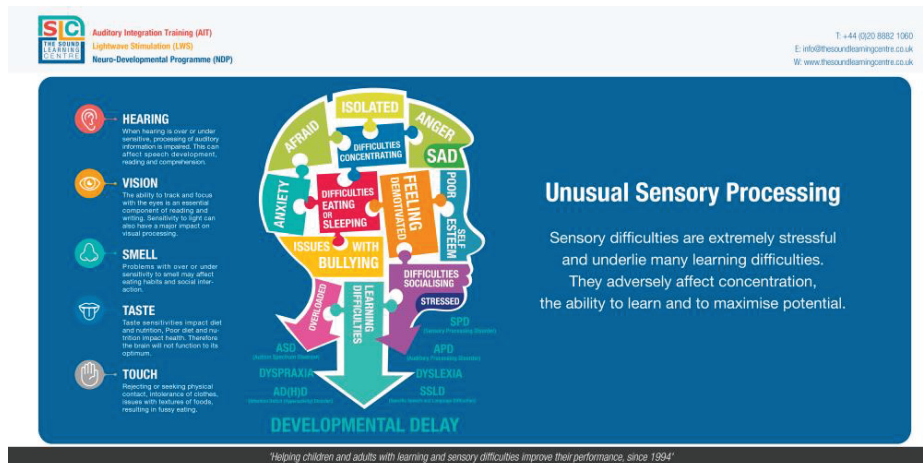


Figure 1: Unusual Sensory Processing.

So, what are sensory difficulties? You can see here what we call the five direct senses, hearing, vision, smell, taste and touch. The job of our senses is to collect information about our environment for our brain to interpret. Our brain then makes sense of this information using a combination of previous experiences and subsequent learning. However, if the senses are over-loaded, and unable to filter extraneous information, then that can lead to feeling overwhelmed and switching off as a defence mechanism, impacting confidence, self esteem and mental health. Clearly, this is not ideal in a classroom, at college or University, and definitely not at work!

Impact of COVID-19 Global Pandemic

In the past 18 months, we have seen how the COVID-19 global pandemic has permeated the very fabric of our societies, having a huge impact on the entire world.

‘Trauma’ can come in many guises, be it in the form of a road accident, relationship breakdown, bereavement or even job insecurity or loss. In this instance we have been denied normal social interaction and contact with our friends and family, with most important communication taking place via video conferencing apps.

Alice through the looking glass

It's as though we've stepped through into Lewis Carroll's Alice in Wonderland, and peered 'through the looking glass' into a world of illogical behaviour, where all the 'norms' we are used to, have been reversed.

For many, it has been a shocking glimpse into the world of sensory overload that so many of our clients deal with on a daily basis. For the first time in many people's lives, they have felt a

combination of anxiety, poor concentration and lethargy, as well as problems with eating and sleeping. COVID-19 has been a catalyst for disrupted and over-loaded sensory systems.

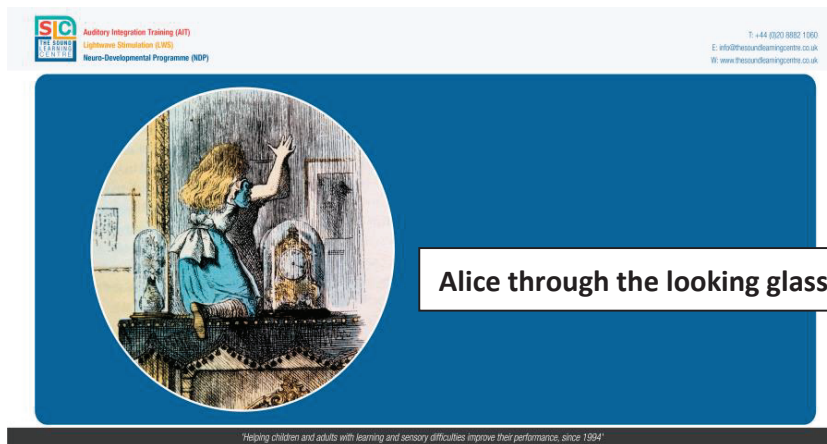


Figure 2: Alice through the looking glass ...

The Road back to 'Normality'

Through comprehensive vaccination programmes around the world, the effects of COVID-19 are now receding, however, there are still the issues of variants which may be vaccine resistant.

The path back to 'normality' may be twisting and turning, and this lack of certainty, continues to impact mental health and wellbeing.

From our point of view, from working with a 'niche sector' of the population with sensory issues, it seems almost everyone has experienced what we describe as 'overloaded systems'.

We believe a greater understanding of what it means to have sensory overload and difficulties is essential. For many people now experiencing this 'overload', their anxieties will recede as the world steadies again on its axis. Some of them, however, may need understanding, compassion and therapeutic support to get back on track.

Interpretation and Explanation

An individual's ability to help themselves and understand their difficulty or that of a family member, is often all in the interpretation of investigations or tests they have done. We provide clear, detailed explanations of our tests and observations to ensure our clients understand the meaning of their results, and our Assessment is our starting place, exploring the visual, auditory and developmental systems.

Visual and Non-Visual Systems

We frequently see clients with visual processing difficulties, unrelated to visual acuity, that are more about how an individual is taking light into the brain through the eyes. As well as the rods and cones for vision, there is a third set of receptors in the eye known as intrinsically photosensitive retinal ganglion cells (ipRGCs) that drive the Autonomic Nervous System which plays a major role in synchronising the circadian rhythms.

When people are stressed they are often light sensitive, their colour visual fields tend to reduce and these non-visual systems are driven less efficiently.

Visual Fields of Awareness (VFA)

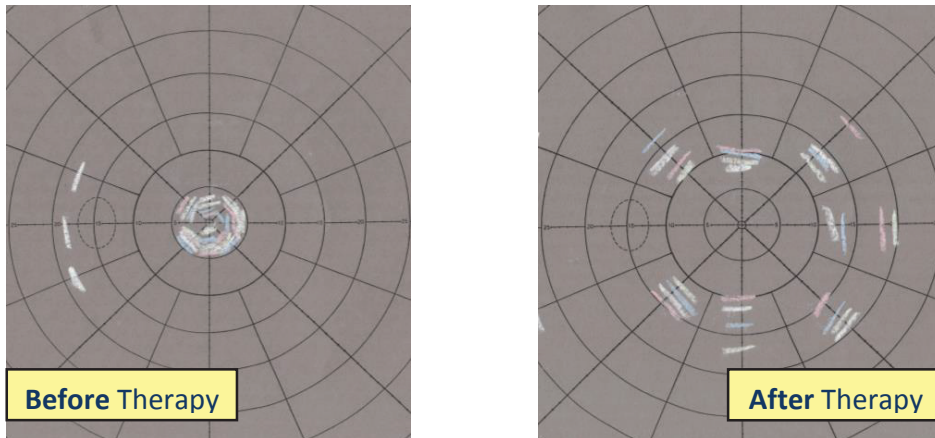


Figure 3: Visual Fields of Awareness (VFA).

We have found that the presence of restricted colour Visual Fields of Awareness is an indicator that light energy is not being efficiently processed through the eye to the brain and may relate to stressed systems. Reduced Visual Fields of Awareness can make it difficult to construct a complete internal ‘picture’ of the surrounding environment, leading to uncertainty that may trigger feelings of insecurity and unease.

In the Figure 3 comparison of a client’s left eye, you can see the colour visual fields have expanded after therapy.

As mentioned earlier, light helps to influence the Autonomic Nervous System, which acts largely unconsciously regulating bodily functions, such as heart rate, digestion, respiratory rate, emotions and pupillary response. If an individual is light sensitive, they will tend to avoid light whereas in reality they may need ‘more’ light exposure in order to help balance their Autonomic Nervous System which is divided into the Sympathetic and Parasympathetic branches.

Generally, the sympathetic division prepares the body for stressful situations, such as ‘fight or flight’, while the parasympathetic division controls ordinary body functions and is involved in ‘rest and repair’. The Sympathetic and Parasympathetic Nervous Systems work in opposition to maintain homeostasis. If this process is disrupted, identification is crucial, to accurately interpret the impact it has on an individual.

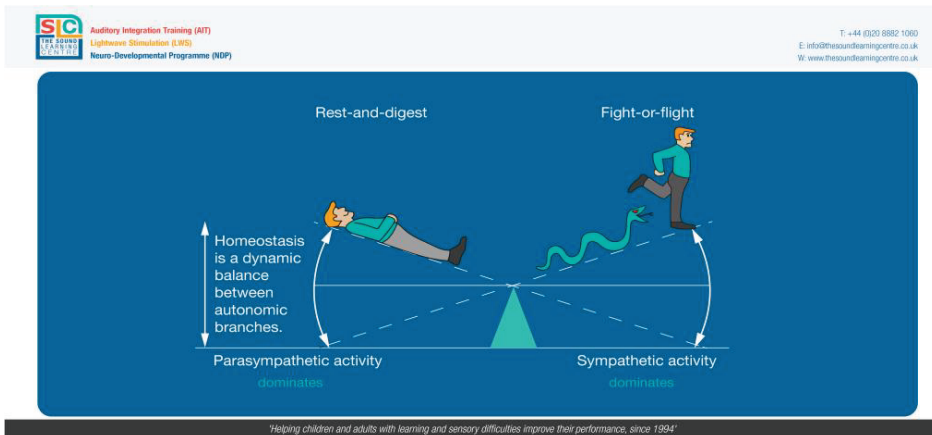


Figure 4: Autonomic Nervous System.

Auditory System

This issue of interpretation can also extend into other sensory areas, such as the auditory system. When speech and language, comprehension, sound sensitivity or auditory processing is an issue, it's common practice to have the hearing tested, typically on 4 or 5 frequencies and the results then averaged to determine any 'deafness' and need for intervention. Parents are frequently told their child's hearing is 'within normal limits', without really understanding the concept of the hearing test.

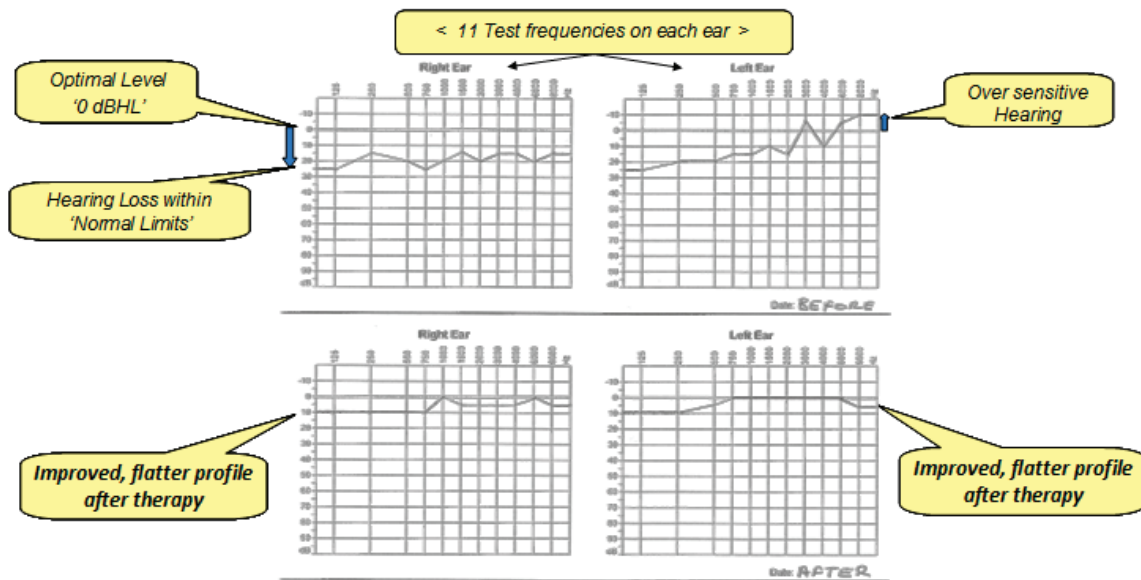


Figure 5: Typical Audiograms – Before and After Therapy.

We test on 11 frequencies and take particular note of any over sensitivity as well as hearing loss.

We also observe the pattern of any peaks and troughs on the hearing profile and do not average the results, since this may give a false degree of confidence that hearing is not related to the learning and sensory difficulties experienced.

Reflex Development

Another example of the importance of our observations, is our understanding of the developmental systems.

During foetal development, the Primitive Reflexes emerge, and begin to inhibit during the first year of life. Following this period, the Postural Reflexes should fully emerge to help deal with the demands of a gravity-based environment.

If there are clusters of retained Primitive Reflexes, or underdeveloped Postural Reflexes, this may lead to performance issues, in areas such as, co-ordination, balance and fine and gross motor skills.

Summary

There's a good deal of overlap between the visual, non-visual, auditory and developmental reflex systems and they all contribute to our overall performance.

Part of our approach is looking holistically across all these systems. We believe that it's only when these systems are viewed together that we can see how they are all related. We firmly believe, it is

never just 'one thing' that is the problem. It is often lots of small things, that when viewed as a whole, can become quite challenging if not identified, understood and helped.

We use three independent therapies to help improve people's performance, they are Lightwave Stimulation (LWS), Auditory Integration Training (AIT) and Neuro-developmental Programme (NDP).

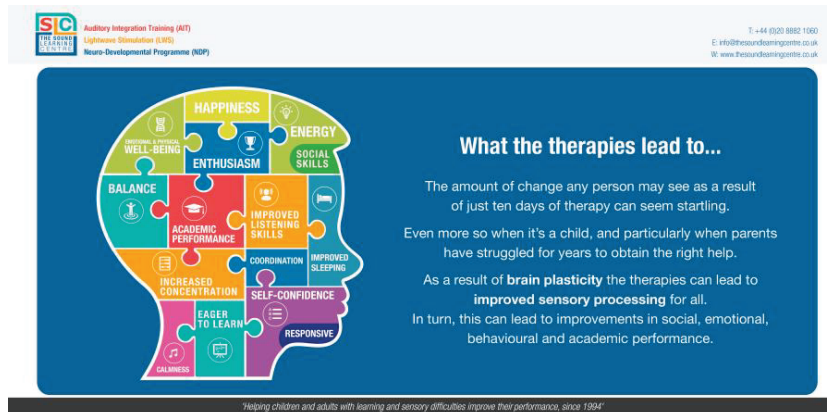


Figure 6: What the therapies lead to.

When the sensory systems are well integrated we see improvements in areas such as: Listening skills, Concentration, Self-confidence, Co-ordination and overall well-being, Happiness and social skills.

27 years of working with sensory difficulties has taught us a lot. We now share that knowledge and experience. Our approach is one of 'authenticity', dealing with 'real people' and 'real lives' and providing practical help in the form of coloured light, sound and developmental therapies. We are honest and open and do all we can to empower the families we see and enable them to feel 'heard'.

Sample Testimonials received following therapy

- The first is from a 20 year old Female University Student who had experienced Sensory Difficulties throughout school: "I would like to thank you for all of your help – I cannot tell you how much improved my life is now! Since visiting with you, I have lived as an independent adult for the first time – held down a full time job, had an active social life, made and regained friendships, changed almost every aspect of my life and had almost no problems doing so, and moved away from the boyfriend I used as a crutch. Really, I thank you".
- The second testimonial is from the parent of a 4 year old boy with Auditory Processing Problems: "Thank you so much for everything – you saved my son from a life of frustration, isolation and academic failure. Thank you".

CONCLUSION

Sensory difficulties have been 'hidden disabilities' and it's been difficult for those 'without them', to understand those 'with them'.

Our new world order has given us all a telling insight into sensory difficulties, and we hope this new-found knowledge will encourage understanding and compassion in all areas of life, at home, in school and in the workplace.

In conclusion, sensory system functioning can be improved through non-invasive therapies and better integrated sensory systems can positively impact social, emotional, behavioural and academic performance, smoothing our journey through life.