



National
Autistic
Society

Autism Specialist
Award
Beacon 2023



The sensory and physical
environment for neurodivergent
children

PINS



Aims

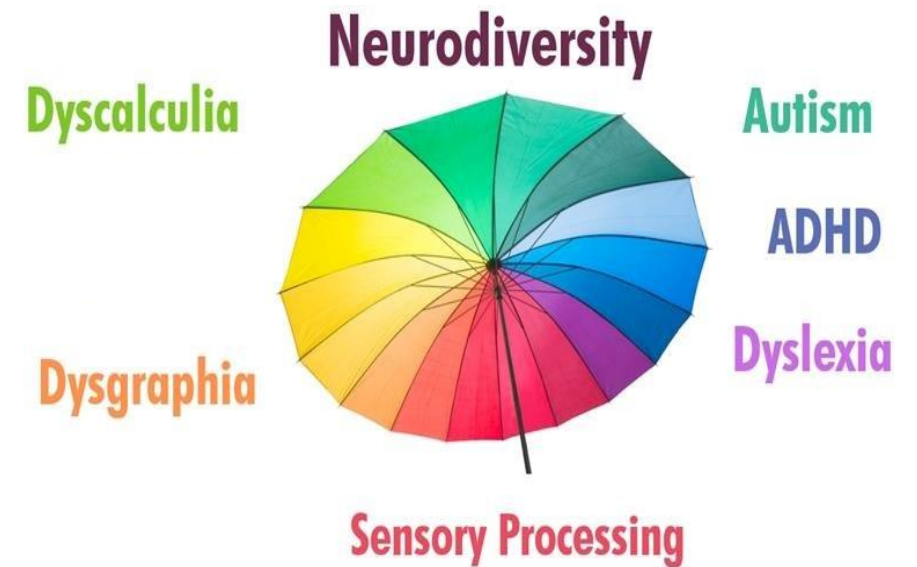
- Increase understanding of sensory and physical needs in all neurodivergent children, and to consider how sensory input influences behaviour and affects engagement in education.
- Audit of the current school environment supported by resources to ensure that schools can continue to re-assess the environment themselves.
- Supporting staff to make changes to the classroom environment in order to enhance children's learning experience and regulation.

What is Meant by 'Neurodiversity'?

The term 'neurodiversity' describes the natural variation in the way all human brains are structured and work, a biological fact.

'Neurodiversity is the diversity of human minds, the infinite variation in neurocognitive functioning within our species.'

Walker (accessed April 2024).



Co-occurring Conditions and Intersectionality

- **Acquired neurodiversity.**³
- **ADHD** – 1 in 20 children, up to 1 in 25 adults.¹
- **Autism** – 180,000 autistic pupils in England.⁴
- **Dyscalculia** – 1 in 20 people.⁹
- **Dyslexia** – 6.3 million people.⁸
- **Developmental Coordination Disorder (DCD)/ Dyspraxia** - 3-5% of adults in the UK.²
- **Mental Health** - 18% of children aged 7 to 16; 22.0% of young people aged 17 to 24 years (2022).⁶
- **Tourette's** - 300,000 people in the UK.⁷



This is not an exhaustive list, but shows the potential overlap between co-occurring conditions, and the number of people thought to have these diagnoses.



Introduction

“Learning how each individual person's senses function, is one crucial key to understanding that person” (O'Neill)





Sensory Processing

'How the brain receives and processes sensory information so that we can do the things we need to do in our everyday life.'

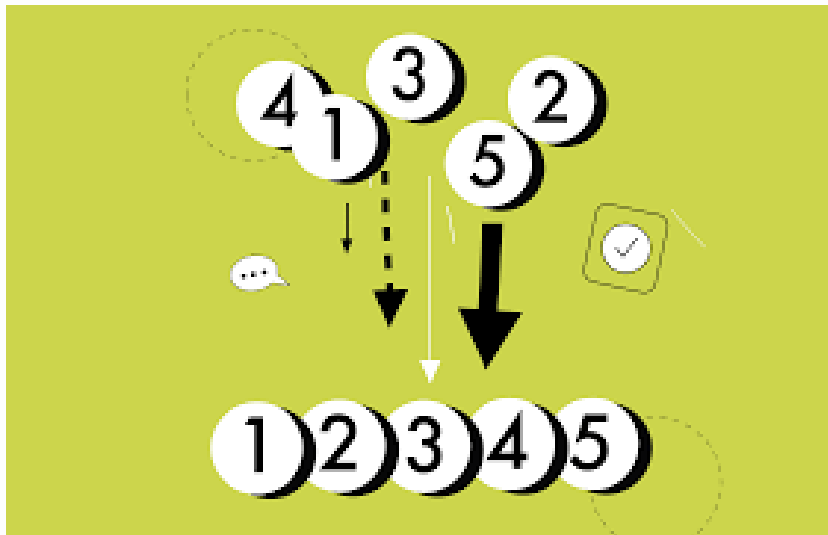
- Input enters the body
- Sensory neurons transmit to the brain
- Brain processes output
- Motor neurons transmit to the body for action
- Almost instantaneous and based on previous experiences

Aim to assure safety and wellbeing





Sensory Integration



Sorting, logging and assigning priority order to sensory information so that an 'efficient' response to solve the problem can be delivered.



The Sensory Processing & Integration Cycle

We receive sensory information
(reception/detection)

This information is sent to the brain

The brain filters the information, adjusts, balances the flow of
sensory information and focuses on what matters

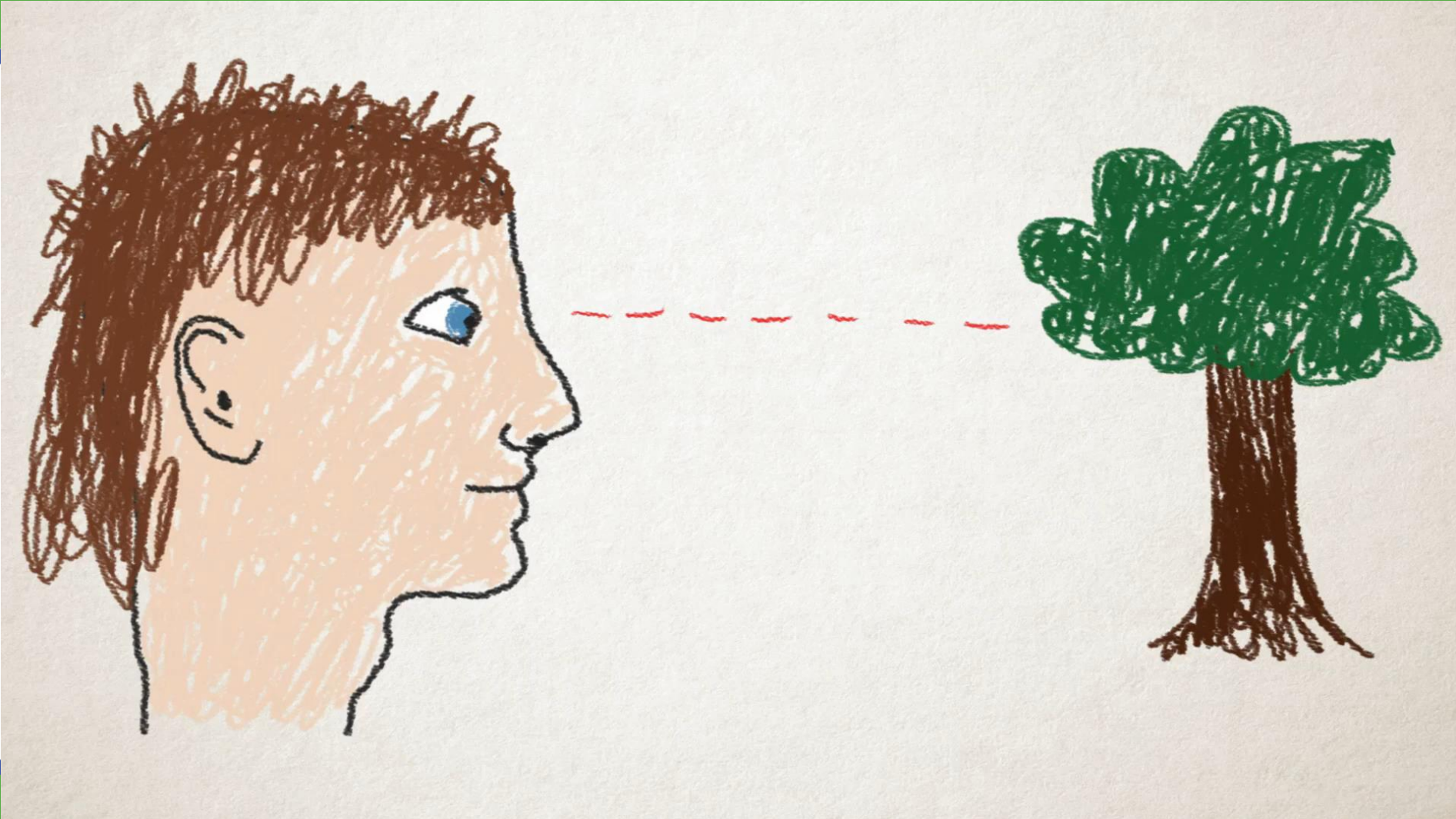
We perceive the qualities, similarities and differences
before acting/responding

Sensation - Interpretation - Comprehension



Making Sense of Sensory

<https://www.youtube.com/watch?v=hWP5YNXRCTY&t=1s>



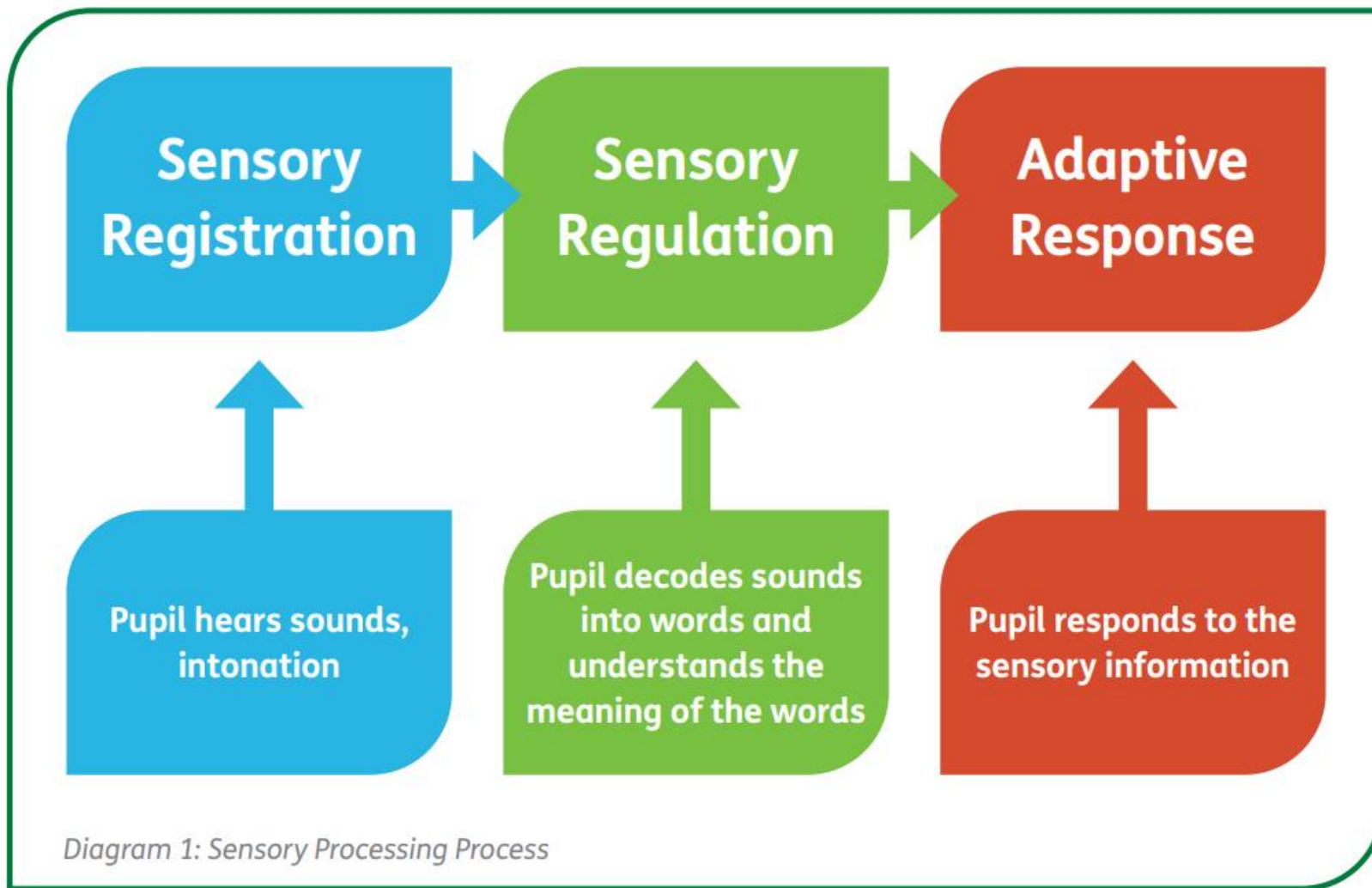


Diagram 1: Sensory Processing Process



Integration & Modulation differences

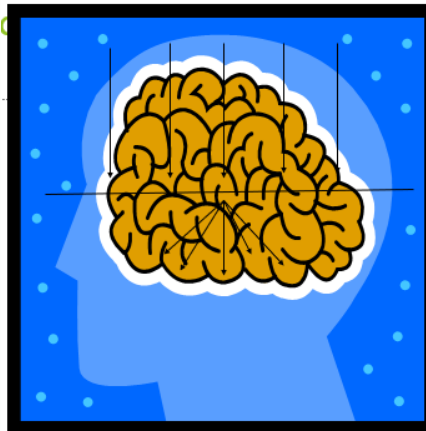
- Fluctuation
- Overload
- Gestalt Perception
- Fragmentation
- Delayed Processing
- Distortion
- Shutdown
- Compensation



Any, or many, of these may affect any of the senses at any time!

“When sensations flow in a well organised or integrated manner, the brain can use those sensations to form perception, behaviours and learning. When the flow of sensation is disorganised, life can be like a rush hour traffic jam”

Jean Ayres
(Sensory Integration and the Child)







Potential Areas of Impact

- **Motor skills** *e.g. handwriting, cutting participation in PE*
- **Self-regulating** *e.g. toileting, sleep*
- **Emotional stability**
- **Attention and sustained focus**
- **Social communication skills**
- **Organisational skills** - *Executive Functioning Skills*

You are looking for behaviours that occur with a *frequency, intensity and duration* that are **not** in line with a child's chronological age of development level.



Lived experience of sensory differences



The school bells physically hurt me and went off every hour every day. Can't concentrate on GCSE's when anxiously anticipating the bells.

My daughter doesn't eat at school on a Friday (it's fish & chip day). She can't cope with the smell so won't go in the dinner hall, says the smell goes through the whole school and makes her feel sick & unable to learn.

The first class after lunchbreak was zone out time. I was not aware of this at the time. Sensory overload from a noisy, unstructured 'break' that was too long to tolerate.

I have trouble filtering out auditory information. When I would take tests, if a student near me had a cold, every time they sniffed I got distracted. I began to just sit & wait until everyone was finished & only then would I take my test. It affected my grades.

Any lesson that followed PE was a write-off for me as I couldn't focus on anything thanks to having to dress quickly after showering. All I could feel was my damp skin, all I could smell was spray deodorant (even worse after swimming when the chlorine smell surrounded me!)

Her sensory needs impact her ability to wear the uniform required. She can't tolerate the shirt, won't wear anything around her waist, doesn't like socks/coats/jumpers....Uniform issues will literally stop my child from attending education.



Autism Education Trust

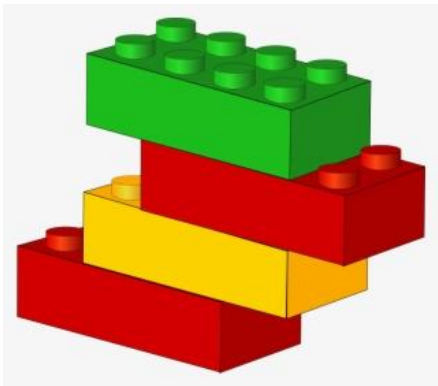
Sensory overload can be physically painful and very frightening. It can lead to high levels of stress and anxiety, and sometimes to 'meltdowns' and a strong need to remove themselves from the situation to help themselves feel safe.

The learning environment needs to be adapted to better meet the needs of autistic pupils. We need to carefully observe the pupil in a range of activities and environments to understand the best way to achieve this.



Not enough sensory input can lead to seeking behaviours and impact on ability to learn.

Our sensory processing and integration forms the *foundations for our learning and development* and how we understand and respond to the world.



It is estimated that up to 95% of autistic pupils experience sensory processing differences. The theory of sensory processing proposes that it is an *automatic process of the brain* that organises input from our senses and attributes meaning to what is experienced (Ayres, 1972).

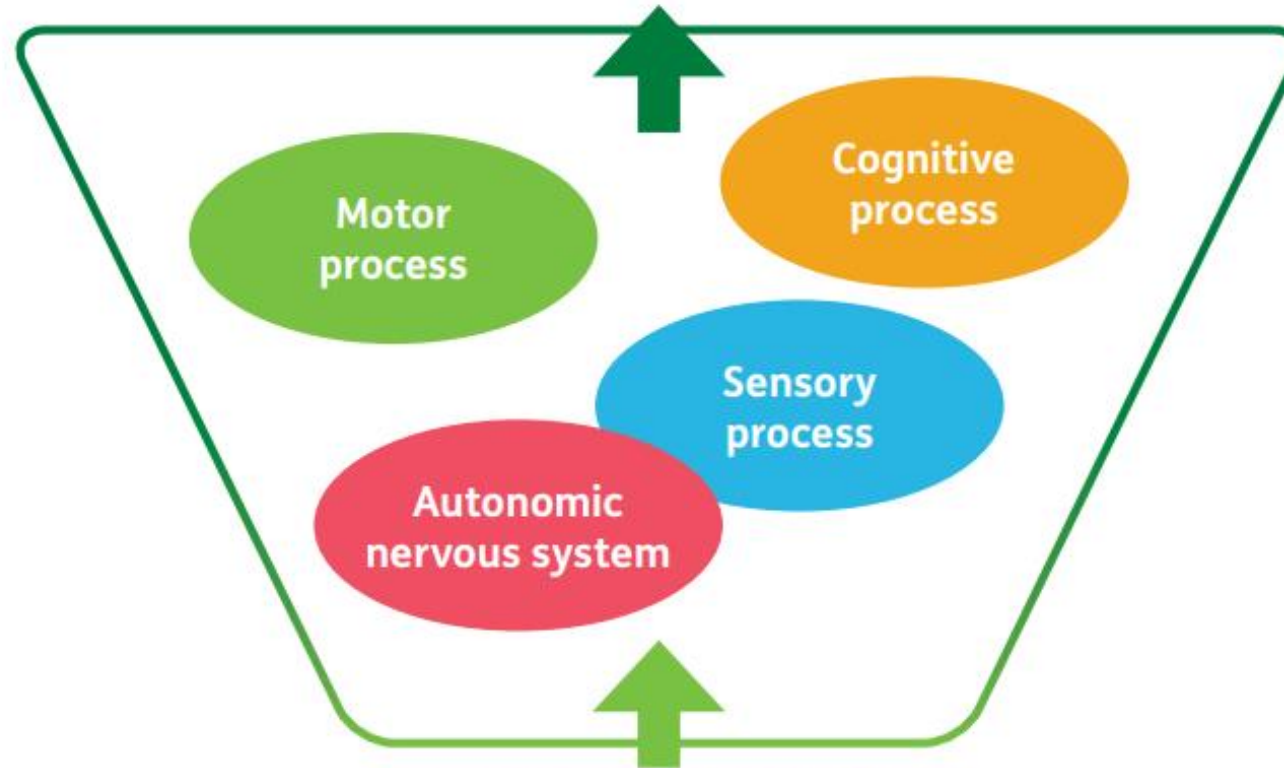


THINKING

CONNECTING

COMMUNICATING

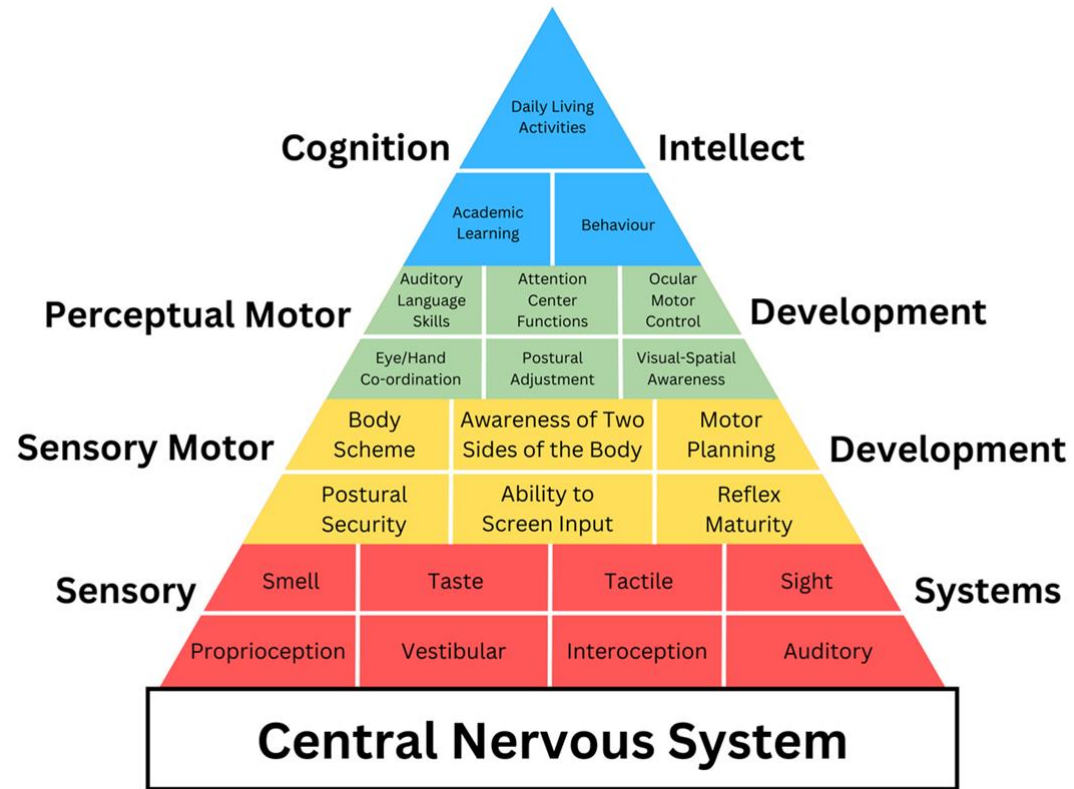
MOTOR OUTPUT



SENSORY INPUT

Touch Movement Proprioception Vision Sounds Tastes Smells Interoception

Diagram 3: Systems involved in Sensory Processing



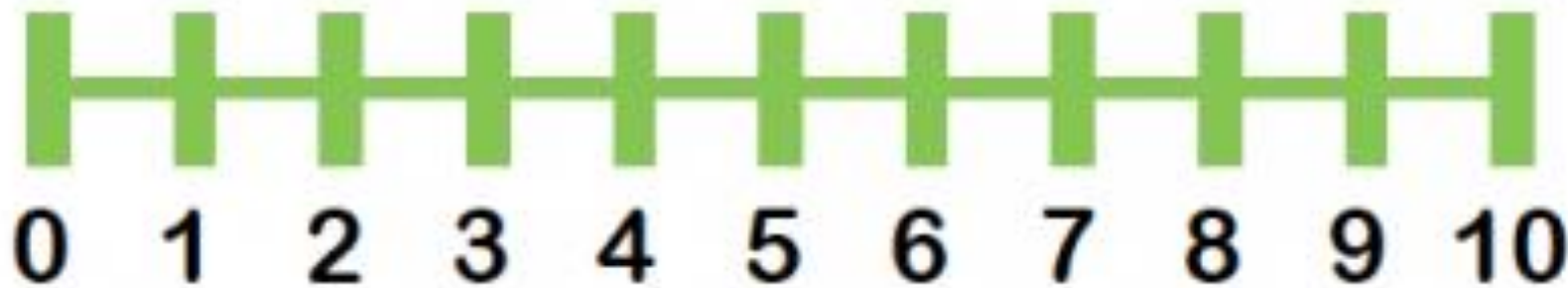
The Pyramid of Learning - Taylor and Trott

The development and regulation of the sensory systems are the foundations necessary for attention, engagement, focus and learning



Calm/Alert Balance (regulation)

ACTIVITY : Where do you feel on this scale right now?
What would/could lower that scale number? What might increase your arousal levels?



Freeze

Stuck/frozen, words won't come out/

Overalert

Fight: stropy/teasy/grumpy/angry
Flight: Teasy/want to be alone/irritated

Calm and Alert

This is where we think learn and remember best.

Underalert

Awake but not all the brain fired up yet
Could be like this when we are bored

Sleep

Everything from sleepy to asleep and deep sleep

3 Arousal Modes



High Mode

Playing sports or when you're in a dangerous situation



Medium Mode

Learning, playing games, focusing, and following directions



Low Mode

Sleeping and relaxing



Poor Registration

- Missing sensory input
- Daydreaming
- FREEZE

Seeking

- Seeking sensory input
- Distracted
- FIGHT

Sensitive

- Overloaded
- Notice all sensory input
- FRIGHT

Avoidance

- Anxious
- Avoiding sensory input
- FLIGHT

Diagram 2: Four Sensory Areas



THE STRESS RESPONSE IN KIDS

FIGHT

Yelling, Screaming,
Using Mean Words

Hitting, Kicking, Biting,
Throwing, Punching

Blaming, Deflecting
Responsibility, Defensive

Demanding,
Controlling

"Oppositional",
"Defiant", "Noncompliant"

Moving Towards What
Feels Threatening

Irritable, Angry,
Furious, Offended
Aggressive

FLIGHT

Wanting to Escape,
Running Away

Unfocused, Hard
to Pay Attention

Fidgeting, Restlessness,
Hyperactive

Preoccupied, Busy with
Everything But the Thing

Procrastinating, Avoidant,
Ignores the Situation

Moving Away From What
Feel Threatening

Anxious, Panicked
Scared, Worried,
Overwhelmed

FREEZE

Shutting Down,
Mind Goes Blank

Urge to Hide,
Isolates Self

Verbally Unresponsive,
Says, "I don't know" a lot

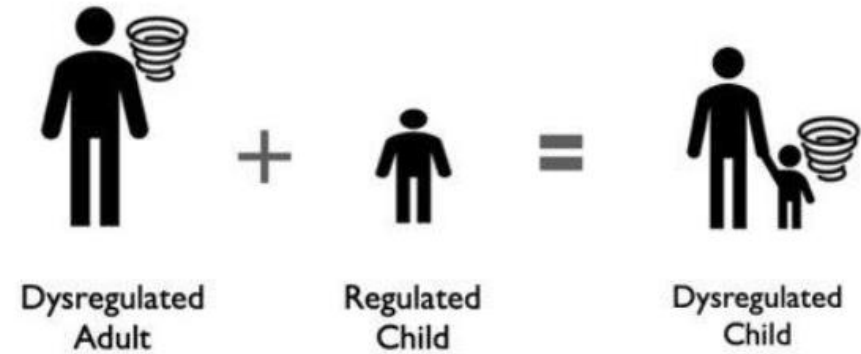
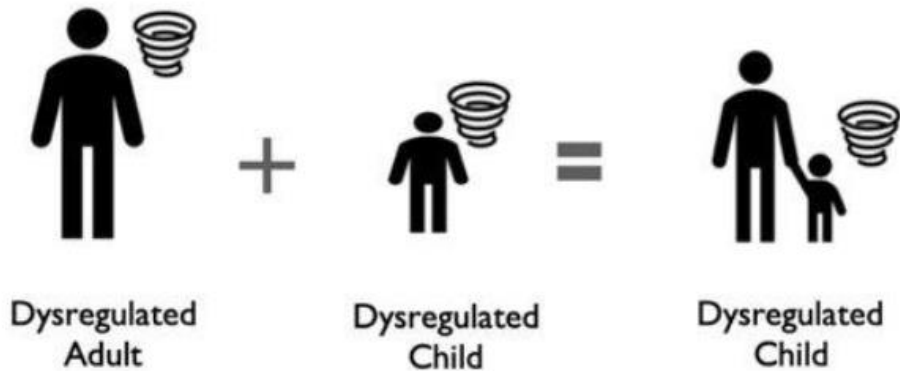
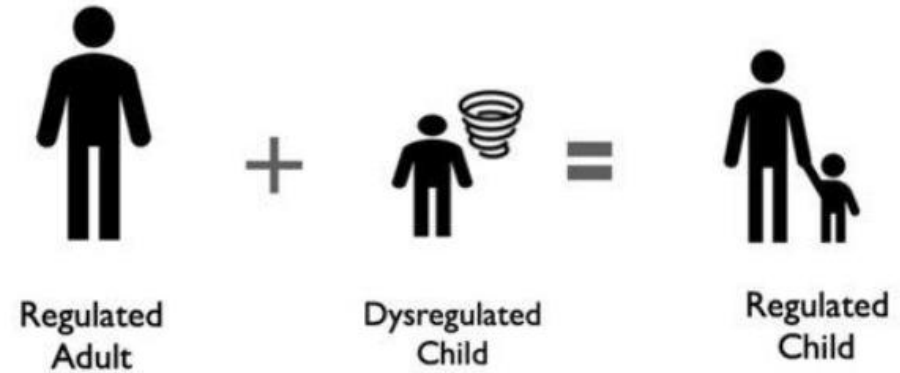
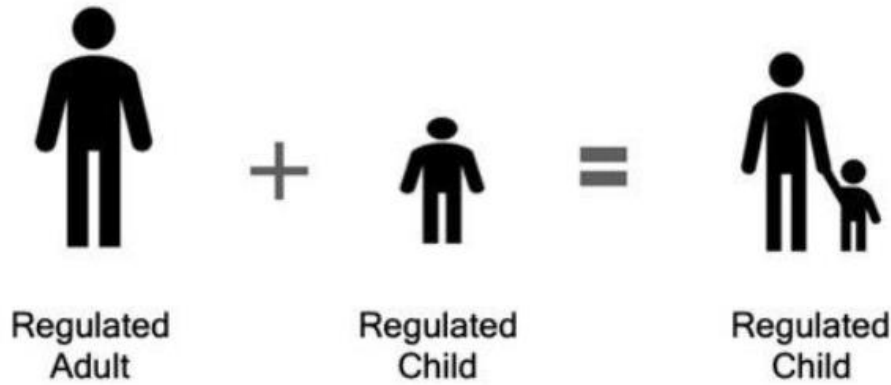
Difficulty with
Completing Tasks

Zoned Out,
Daydreaming

Unable to Move,
Feeling Stuck

Depressed, Numb,
Bored/Apathetic,
Helpless

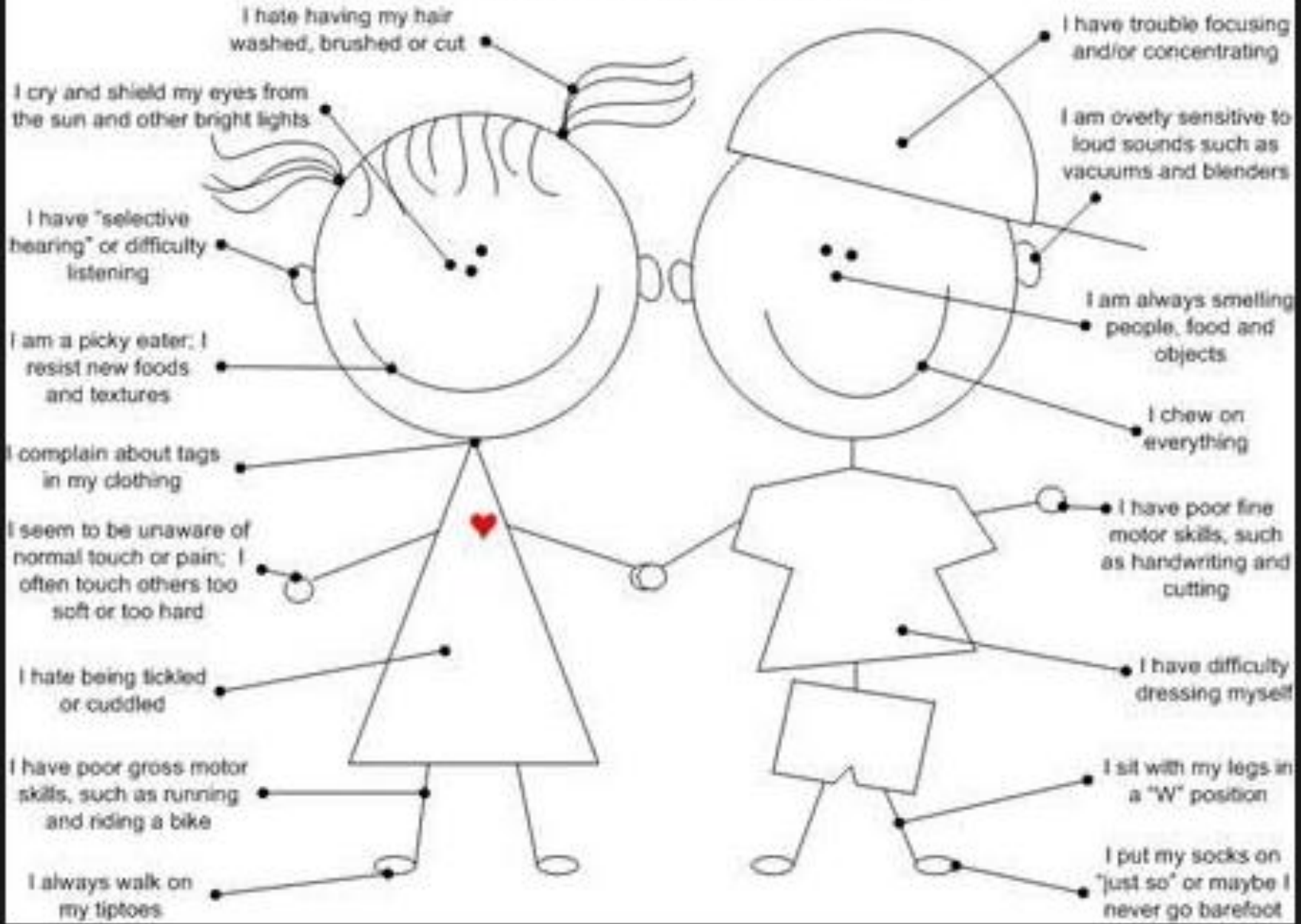
Dynamics of Co-regulation





Level of input →

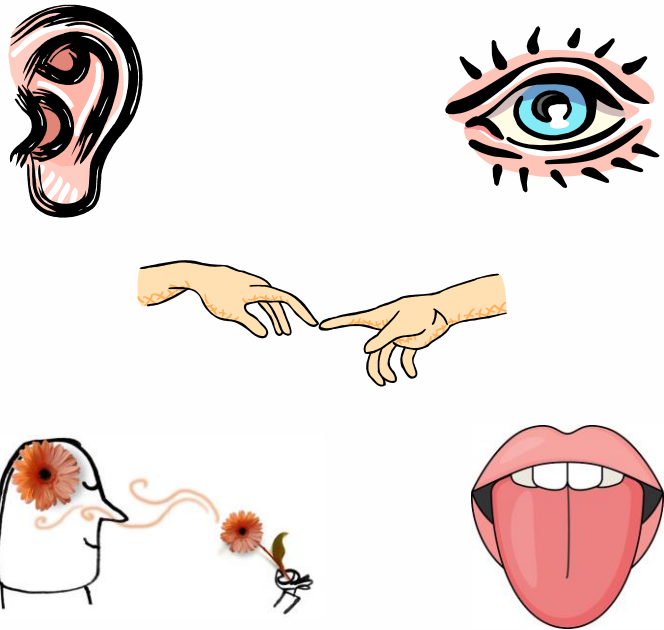
DO YOU KNOW ME?



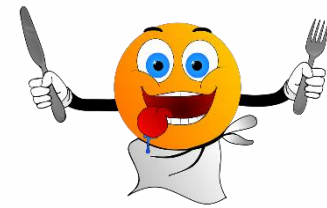


8 Sensory Systems

External Senses

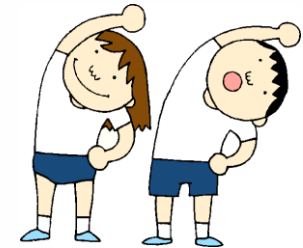


Internal Senses

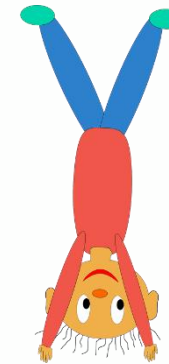


Interoception

Proprioception



Vestibular



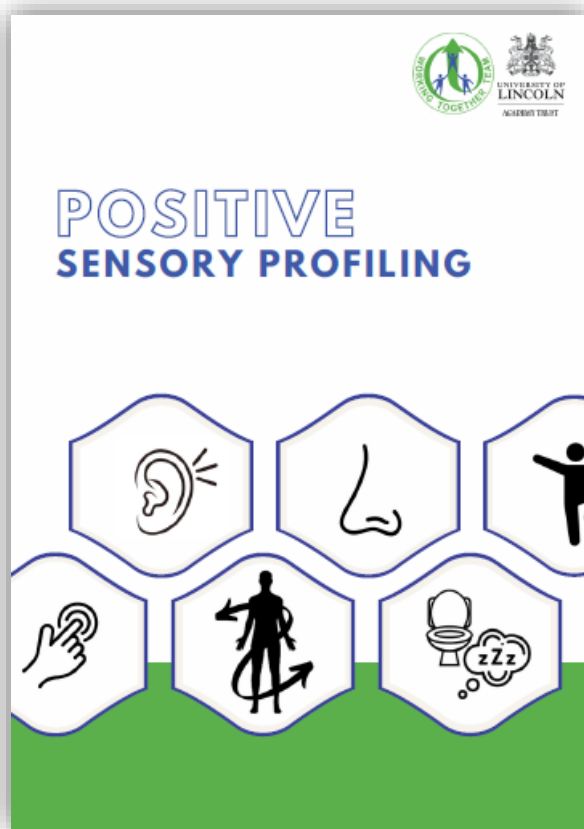
Sensory Profile of Behaviour

Help build a picture of sensory differences and adjust/adapt the environment and our behaviour to address these differences





Creating a Positive Sensory Profile



A pre-recorded presentation offering a step-by-step guide to creating a *Positive Sensory Profile* is available on our website

<https://www.wtt.org.uk/page/?title=Sensory+Processing+%26amp%3B+Integration&pid=26>

A screenshot of the 'Positive Sensory Profile' form. The form is titled 'Positive Sensory Profile' and includes a 'Name:' field. Below this are sections for 'Sensory Preferences', 'Sensory Aversions', 'Positive Sensory Programme', and 'Sensory Support'. The 'General Impression' section is titled 'Highlight most appropriate' and lists four options: 'Low Registration', 'Sensory Seeking', 'Sensory Sensitivity', and 'Sensory Avoiding'. There is a circular placeholder for a profile picture in the top right corner.

A sensory 'diet'

Sensory based activities that are available throughout the day with the aim of the child regulating him/herself and being calm and alert so they can engage in the activities of the day. We all use sensory strategies to help us cope with stressful situations



Vision



Hearing



Smell



Taste



Touch



Vestibular



Proprioception



Consider:

- How could you engage each sense to make your pupil feel more alert?
- How would you engage each sense to help your pupil feel calm?
- What other senses do you need to calm/to heighten (additional input) your pupil's sense of alertness or calmness?

Sensory Circuits

- Developed in the Peterborough area by specialist OT Jane Harwood
- Short and *snappy* sensory motor skills programme to help set children up for a school day - to energise and settle-be ready to learn.
- Enables children to reach the level of alertness needed to focus more effectively during lessons
- Children participate in a 10-15 minute session of activities designed to improve brain processing efficiency, and they generally find that the circuit is a fun way to start the day

Alerting

Alerting Activities

The aim is to provide vestibular and proprioception stimulation. The activities should make the head change direction rapidly

This prepares the brain for learning



Alerting Activities

- Bouncing
- Skipping
- Jumping
- Step ups
- Spinning

Organising

Organisation Activities

This section includes activities that require motor sensory processing, balance and timing

The child needs to organise their body, plan their approach and do more than one thing at a time in a sequential order



Organisation Activities

- Throw and catch
- Obstacle courses
- Bending a rope into different shapes
- Commando crawling
- Walking along a bench
- Egg and Spoon

Calming

Calming Activities

These activities provide the input to ensure the child leaves feeling calm, centred and ready for the day ahead

Activities will involve deep pressure, proprioceptive input and heavy work



Calming Activities

- Press-ups on a wall
- Log rolling
- Weighted blanket
- Lifting and moving
- 'Steamroller' squash

A Sensory Circuit Approach

- Build in *Alerting, Organising and Calming* into the timetable/classroom.
- Some children will need more frequent sensory input than others.
- Explore the pupils day and look at when they start to show dysregulation. Plan input to address this proactively.

The focus is on the movement and the order rather than equipment

Further training for the implementation of sensory circuits and on using a sensory circuit approach in the classroom are available from WTT

This is Lyla. She is 11 years old.

I hate the lesson change over. The corridors are too loud and busy. There are so many people, and they bump into me and it hurts! Also the bell rings and is so noisy.

I like break time and lunch time because I can go to the SEND base to eat my lunch. This is better than the dining hall where it smells of whatever has been cooked that day. The SEND base is quieter and calmer too so I can relax with a couple of friends. I bring my own lunch so I know I will like the food. I often bring spicy crisps like Chilli Sensations which are my favourite!

Bright lights give me a headache, and I don't like the fire alarm. I cover my ears when it goes off. I found it hard to sit still and I don't like wearing tight clothing.

I can hear what people say even when they are across the room and whispering. It's like my superpower!

I can smell things that other people don't seem to notice and if it's not a nice smell I find it difficult to stay in the same room. The PE changing rooms smell vile.

At home I like to hang upside down on the tree in the garden or lie with my head hanging off the sofa! My sister says I am like a monkey.

I have a toilet pass so that I don't have to ask to leave the classroom. Sometimes I forget to go at break and then I *really* need to go during a lesson!

I am a fantastic cook. I can make stir fry and curry and I love baking cakes!

I prefer the summer to winter as I don't like being cold. The only thing with summer is I have to take my sunglasses everywhere I go as it hurts my eyes when I go outside if it is very sunny.



Environmental Considerations







Sensory Aware Classrooms

Visuals to reduce need for verbal instructions: e.g.

- lesson structure displayed
- list of equipment needed
- group work cards to clearly define the role of individuals
- graphic organisers/writing frames



- Name of classroom & staff displayed on door
- For early communicators, add an object that's related to the function of the room e.g. for food technology display a tea spoon
- Reduce the amount of overly vibrant displays

Provision of a clutter free workstation / desk optional learning space



Additional Tips


- Reduce noise distractions e.g. fan of projector, bell, buzzing light
- No scent, perfume, aftershave, smelly breath e.g. coffee breath
- Anxiety reducing strategies are displayed
- Dress yourself plainly
- Calm tone of voice
- Slower body movements
- Clear facial expressions
- Allow additional processing time



Sensory environment checklist



This sensory checklist is to help practitioners to assess and create an environment that enables the participation of pupils with autism. It does not cover all aspects, but gives ideas on the ways in which a setting might be altered if pupils experience sensory processing difficulties and find it hard or very anxiety-provoking to tolerate certain sensations or situations.

Sense	Good practice and evidence to look for	Current situation	Action needed
General sensory issues	Sensory profiles for individual pupils are completed and used to identify strategies to meet their sensory needs. Practitioners should have agreed strategies in place if a pupil is experiencing sensory overload e.g. there is a quiet room or space available.		
Visual 	Lighting is suitable for pupils with autism e.g. fluorescent lights are regularly checked as flickering lights can be very disturbing The room is orderly and not cluttered so that pupils can make sense of the environment e.g. materials and resources are clearly labelled with a picture or symbol.		
Taste	Practitioners are aware of individual differences		

This sensory audit is based on an audit designed by Val Jones and Ian Attfield to help staff in assessing and creating an environment that encourages the participation of pupils on the autism spectrum.

VISUAL

Pointer	Evidence to look for	Current Situation	Possible action (if needed)
Classroom illumination is suitable for pupils on the autism spectrum.	Fluorescent lights are regularly checked and changed. (Flickering lights can be very disturbing.)		
	The effects of light coming into the room through blinds and creating distracting patterns are minimised.		
	Light reflecting on objects such as metal or shiny surfaces in the classroom is minimised.		
The classroom is orderly and not cluttered so that pupils can make sense of the environment.	The impact of wall displays is considered. (Busy and cluttered wall displays can be distracting).		
	Designated areas for specific activities to give clarity to the classroom organisation.		
	Pupils have the opportunity to work at a workstation to focus their attention, if necessary.		

More auditing & profiling tools and resources available on www.wtt.org.uk





Buttons

Threads

Puppets

Mesh

Ribbons

Fabric Crayons

Feathers

Sheet

Hessian

Sparkles

Felt

Bino

Lace

Wool

Fur

Beads

Pom-poms

Fabric

Wool

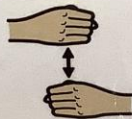
Owen



Hello ...



Basket



Actions



Try food



Toilet



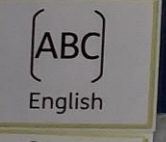
Good walking



Bag



Quiet time





Teachers in Rabbit class

Morning



After
Playtime



Afternoon



Owl Class teachers



Maths

This term we are learning

Place Value

Use the number line to show the value of the underlined digit.

2275

Place Value

Place Value of 2275

Numbers Word Mat

Use the word mat to help you write numbers in words.

one hundred	one hundred	one	one
two hundred	two hundred	two	two
three hundred	three hundred	three	three
four hundred	four hundred	four	four
five hundred	five hundred	five	five
six hundred	six hundred	six	six
seven hundred	seven hundred	seven	seven
eight hundred	eight hundred	eight	eight
nine hundred	nine hundred	nine	nine
one thousand	one thousand	one	one

Roman Numerals

Can you count by only using letters?

I	1	XIII	30
II	2	XL	40
III	3	L	50
IV	4	LX	60
V	5	LXX	70
VI	6	LXXX	80
VII	7	LXXXI	90
VIII	8	C	100
IX	9	D	500
X	10	M	1,000
XI	11		
XII	12	MD	1,500

HM Hundred Millions 100 000 000	TM Ten Millions 10 000 000	M Millions 1 000 000	HTh Hundred Thousands 100 000	TTh Ten Thousands 10 000	Th Thousands 1 000	H Hundreds 100	T Tens 10	O Ones 0	t Tenths 0.1	h Hundredths 0.01	th Thousandths 0.001
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Money Vocabulary Word Mat

British Money

Coins and Notes

Geometry

Movement and Direction

- whole turn
- quarter turn
- left
- straight line
- right
- turn
- journey
- right
- clockwise
- direction
- rotation
- half turn
- right angle
- anticlockwise

Directions

1000	100	10	1	0.1	0.01	0.001
10000	1000	100	10	1	0.1	0.01
100000	10000	1000	100	10	1	0.1
1000000	100000	10000	1000	100	10	1







School



Agreement



Feel Good



Kind



Work Hard



Friends



Article 24



Article 12



Article 29



Article 15



Think



Look at the weather



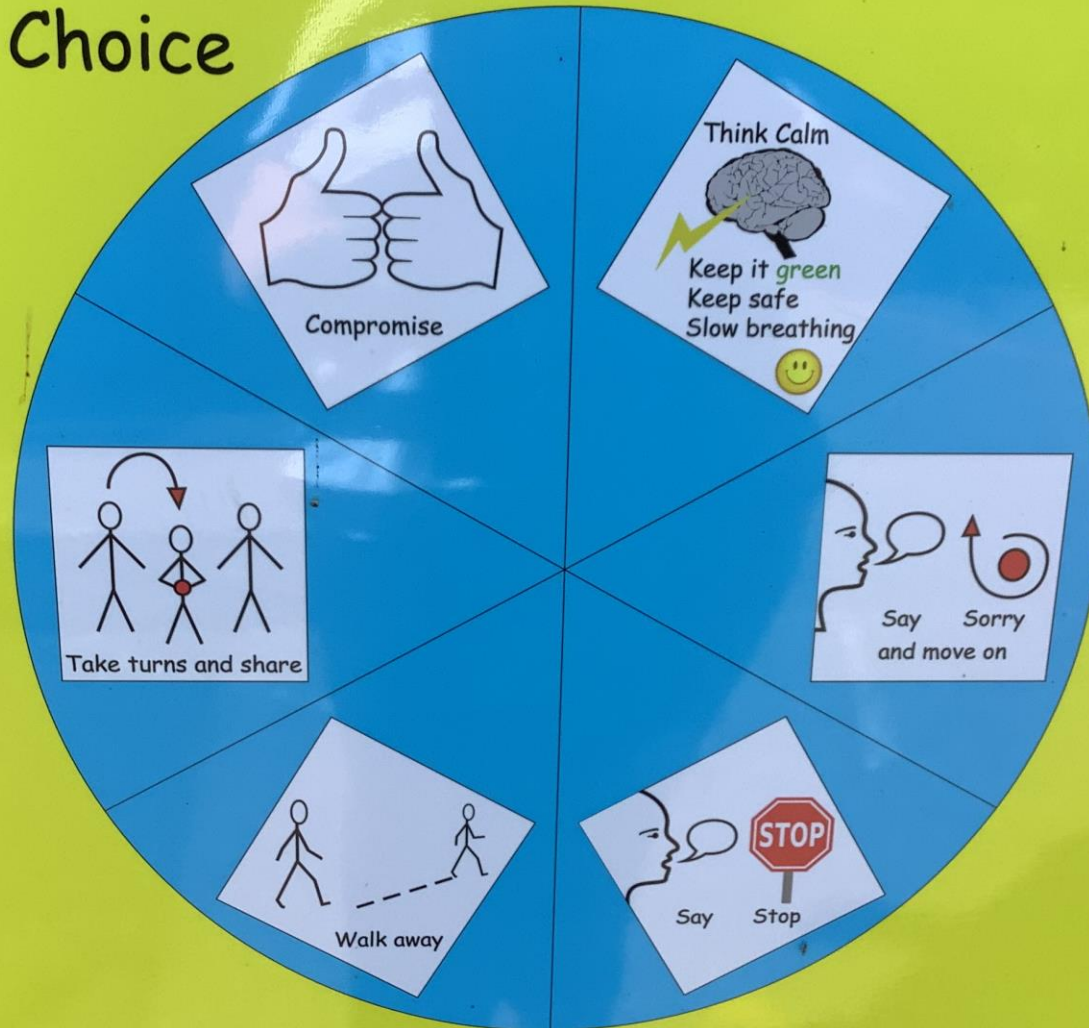
Do you need to wear your

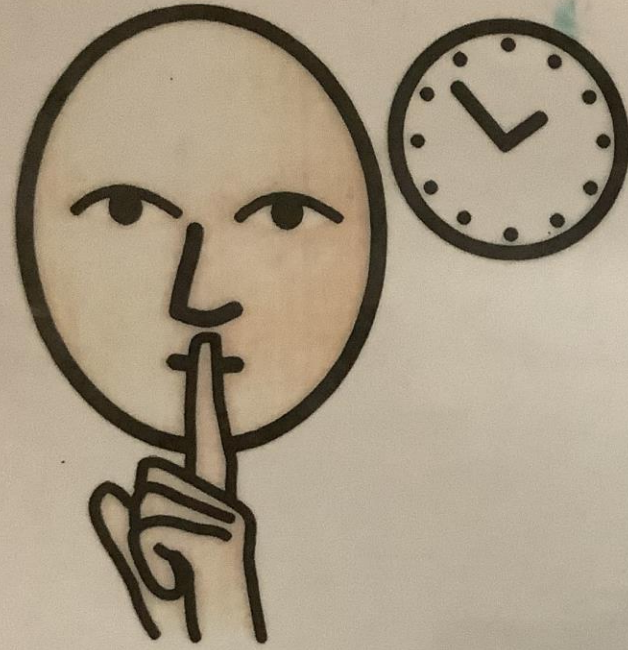


coat, gloves, scarf, hat?



Wheel of Choice





Quiet time please



Swimming pool rules

- * Be kind
- * All guests clean
- * Listen to teachers
- * Attend your lessons and complete your work
- * Be safe in school
- * Keep problems small and be green

Swimming pool rules



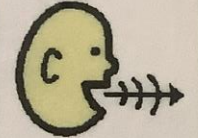



- * Remember your kit
- * Swimsuit, swim cap, goggles
- * Listen to all teachers
- * Be safe please
- * Show the pool safety
- * Be kind
- * Get out of the pool straight away

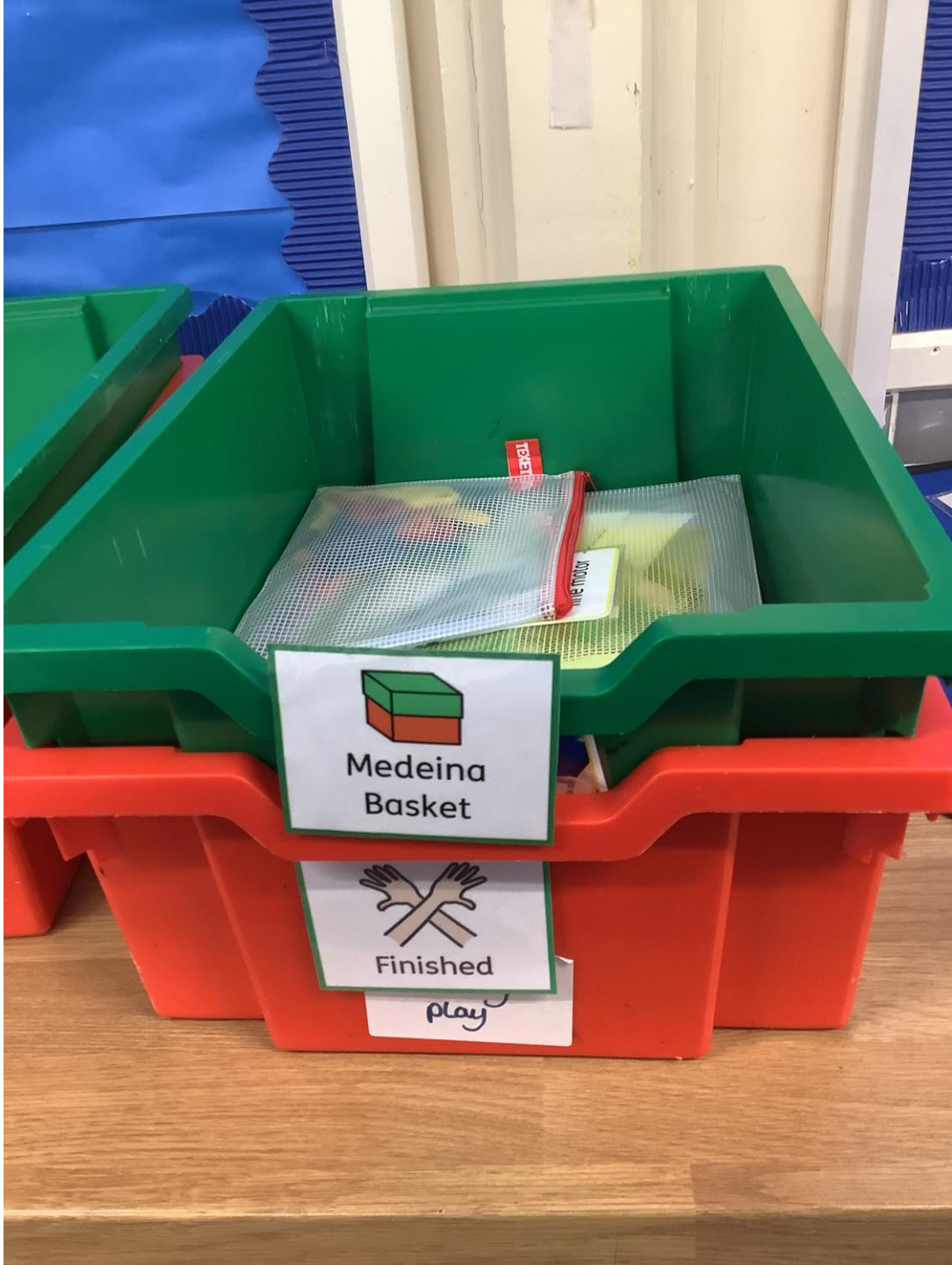








5	Red voice = Yelling Outside		
4	Orange voice = Loud Outside		
3	Yellow voice = Normal Inside voice		
2	Green voice = Quiet Inside voice		
1	Blue voice = Little talking Quiet whisper		
0	Grey voice = NO TALKING Quiet!		




Medeina
Basket

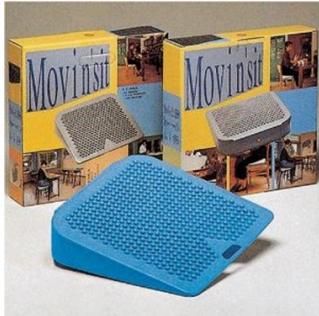

Finished

play





Classroom Sensory Adaptations



Calming Objects



Key take aways

- Audit the environment when children are in school
- Profile the individuals sensory differences
- Make adjustments to the environment for all neurodivergent children
- Adapt the individuals sensory diet to regulate and maintain "balance"