Sensory Processing and Autism: Foundation Stage and KS1

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Diagnostic Criteria

**DSM-IV**

**Triad** of core symptoms

- Triad
- Social communication
- Restricted interests and repetitive behaviours
- Social interaction

**DSM-5**

**Dyad** of core symptoms (May 2013)

- Social Communication
- Restricted interests and repetitive Behaviours
- **Core feature - unusual sensory responses**
Sensory Modulation

• The sensory processing difficulties associated with autism tend to be sensory modulation difficulties
• ‘..the nervous system’s process of self-regulation’
• A balance of facilitation and inhibition
Thresholds of response

• We generally function around a normal threshold of response
• The normal amount of sensory input in the environment is enough to keep us alert, but without feeling overwhelmed
• We focus on relevant input and ignore irrelevant input
  • The ideal state for learning and interacting: ALERT AND CALM-
    ‘THE TEACHABLE MOMENT’
## Sensory Profile (Dunn, 1999)

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Sensory Modulation and Autism

- Winnie Dunn relates this quadrant model to the social, communicative and behavioural difficulties associated with autism
Sensory Sensitivity in Autism

• Pupil becomes distressed with changes and transitions
• Pupil becomes distressed in response to specific sensory stimuli
• Many pupils with autism dislike auditory and tactile input
• Pupil is very distractible in the learning environment
• Pupil is very distractible during social interactions
• Pupil is cautious in new experiences
Sensation Avoiding in Autism

• Pupil prefers routine and familiar environments
• Pupil avoids social interaction and communication
• Pupil creates rigid rituals
• Pupil engages in repetitive play in order to avoid new and unfamiliar activities
• Pupil may engage in stereotyped behaviours as a means of blocking out distressing stimuli
Sensory Seeking in Autism

- Pupil engages in repetitive behaviours
- Pupil engages in self-stimulatory behaviours e.g.:
  - Rocking
  - Spinning
  - Hand flapping
  - Echolalia; repetitive noises
  - Fidgeting
- Pupil follows intense interests and becomes fixated on these
- Pupil tends to be overactive
- Pupil is likely to have attention difficulties
Low Registration in Autism

- Pupil is unaware of others in the environment
- Pupil does not actively engage in interaction or activities
- Pupil appears to be socially withdrawn
- Pupil engages in non-challenging repetitive activity due to limited motivation and engagement
- Pupil is slow to respond to teacher’s voice etc.
- Pupil may have motor difficulties e.g. low muscle tone, poor coordination
Tactile hypersensitivity

• Dislikes and avoids:
  – Messy play (e.g. Finger painting, sand play)
  – Touching unfamiliar textures
  – Physical contact with others (e.g. P.E., groupwork)

• Emotional and/or aggressive behaviours may be displayed

• Avoidant behaviours: e.g. hiding, running from classroom, avoidant strategies

• There may be a strong dislike and avoidance of certain food textures

• Dislike of some clothing fabrics
Tactile system: desensitisation

• Increase participation in tactile activities by gradually increasing the time and intensity of the task

• Example: Finger painting
  – Allow the pupil to wear gloves and then gradually cut the fingers off the gloves and then remove completely
  – Allow the pupil to use a long brush, then a short brush, then finger brushes, then small pieces of sponge and then fingers!
  – Gradually increase the time spent on the task (and use a visual timer)
  – Immediately follow with a favourite toy or task (use First/Then schedule)
Principles of Desensitisation

• **Be patient!** The process of desensitisation may take months (or even years) before achieving the long term goal.

• **Celebrate small achievements.** Recognise the small steps in the process.

• **Recognise distress.** The pupil’s distress is genuine so immediately stop the activity.

• **Deep pressure input.** Provide deep input during the activity to enhance a calm state (e.g. Deep pressure to the shoulders).
Physical contact

• Allow child to stand at the back of the line
• Tape feet symbols to the floor
• Provide a mat or hoop as the child’s safe area
• Ensure alternative non-contact activities are available in the playground and P.E.
• Consider seating in the classroom
Tactile system: sensory seeking

• Some children fidget as they are seeking tactile input
• This helps them to stay alert and focused
• Provide fidget toys, pencil tops, blu-tac etc.
• Attach a piece of fabric to clothing or under the desk
• Provide a ‘feelie box’ in the classroom and allow the pupil to access this during the day
Vestibular System: Hypersensitivity

• Dislike and avoidance of:
  – Movement, especially rotary movement and backward movements
  – Playground and P.E. equipment

• Gravitational insecurity
  – Dislikes having feet off the ground e.g. chair, toilet
  – Prefers a stable base of support

• Preference for sedentary activities

• Motion sickness
Avoidance of movement activities

• Avoid spinning and backward movements

• Provide alternatives in the playground
  – Ball games, skipping, hopscotch, board games

• Use deep pressure input if the pupil seems nauseous or upset after movement
Vestibular System: Sensory seeking

- Some pupils will seek out movement during the day to keep themselves alert

- This leads to impulsive and hyperactive behaviours
  - Difficulty staying in seat
  - Walking around classroom
  - Fidgeting in chair
Provision of Movement

• Seating (e.g. Movin’ Sit cushion, exercise ball)

• Sensory Diets (can be used to provide any form of sensory input to increase alertness during the day)

• Movement breaks

• Weighted lap cushion (proprioceptive system but may help the pupil to stay seated)

• Therabands

• Vary positions when working e.g. standing, kneeling, lying
Auditory Over-responsiveness

• Avoids or becomes distressed in noisy environments
  – Playground
  – Dining hall
  – Assembly

• Makes noise (e.g. shouting, screaming) to block out background noise

• Distracted by background noises

• Difficulty attending to instructions in the classroom
Controlling Auditory Input

• Allow the pupil to wear headphones in noisy environments
• Control the noise in the classroom using a ‘traffic light’ system
• Visual cue card for ‘time out’
• Use of visual communication strategies
• Short simple instructions
• Allow time to process
• Desensitisation
Auditory System: Desensitisation

• Example: Assembly
  – Allow the pupil to sit outside the hall, then at the back and then with the class
  – Gradually increase the amount of time spent in Assembly
  – Allow the pupil to wear headphones and then gradually remove
  – Provide a ‘distractor’
  – Use of timers and First/Then Schedules
  – Provide deep pressure input
Auditory System: Under-responsiveness

• Some pupils are slow to respond to auditory instructions because they are in a state of under-arousal
• Use visual communication strategies
• Some pupils may hum, sing and chat to keep themselves alert
• Provide increased sensory input to gain attention
Visual System

• Many pupils with autism have a visual learning style/preference

• However, they can become distracted by too much visual information

• They may also be hypersensitive to sunlight, bright light, fluorescent lighting etc.
Visual System

- Reduce visual distractions in the classroom
  - Reduce ‘clutter’
  - Consider display boards
  - Turn off computers and whiteboard when not used
  - Store or cover classroom resources
- Limit the amount of information on the page
- Remove fluorescent lighting
- Consider where the pupil is seated in the classroom
Gustatory System

- Pupils may present with strong likes and dislikes regarding the tastes of foods
- Other pupils may prefer very bland foods, leading to a restricted diet
- Some pupils like strong flavours and may become more alert after eating strongly flavoured foods (e.g. sour sweets, mints)
Introducing new foods

- Allow pupil preferred food at mealtimes
- Introduce new food outside mealtimes and then gradually include in meals
- Follow new food with high preference object or activity
- Keep mealtimes calm and positive
- Use preferred texture of food
- Do not simultaneously introduce a new taste AND texture
Olfactory System

• Some pupils will become distressed in new environments because they are hypersensitive to smells
• Other pupils like to smell people and objects and seek out this input
• Provide a cloth with a strong scent
• Provide jars in the classroom filled with different smells
Proprioceptive System

- Almost all pupils will enjoy proprioceptive input; we generally do not see dislike or avoidance of proprioceptive input.
- Proprioceptive input will alert pupils who are under-responsive in the classroom.
- Proprioceptive input will calm pupils who are hypersensitive to the sensory input in the classroom.
Proprioceptive Activities

- Crawling, wheelbarrow walks, animal walks
- Jumping (e.g. on trampoline)
- Pushing and pulling activities
- Carrying books (e.g. in backpack)
- Cleaning tables and brushing floors
- Passive input (e.g. deep pressure input)
- ‘Hot dog’
- Stress ball or chewy tube
- Oral motor activities
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Proprioceptive Activities
Sensory Integration Theory

• Places emphasis on the development of the following systems:
  – Tactile system
  – Proprioceptive system
  – Vestibular system

• This will then have a subsequent impact on gross and fine motor skills
Tactile System

• Efficient tactile processing is essential for:
  – Development of grasp patterns
  – Fine manipulation
  – Functional skills e.g. handwriting, dressing
  – Also speech and language development and eating
  – Gait pattern
Proprioceptive System

• Efficient proprioceptive processing is essential for:
  – Body awareness
  – Position in space
  – Motor coordination
  – Control of force and pressure
  – Handwriting
  – Functional skills e.g. dressing
Vestibular System

• Efficient vestibular processing is essential for:
  – Tolerance of movement
  – Participation in gross motor activities
  – Balance
  – Bilateral coordination
  – Speed and velocity of movement
Sensory Processing and Speech and Language Development

Because speech and language depend upon many sensory integrative processes, they are apt to develop slowly whenever there is irregularity in any aspect of sensory processing.

(Ayres, 2005)
Sensory Processing and Speech and Language Development

• Social interaction and the production of speech and language involves a high level of sensory integration
• Input from various sensory systems needs to be processed and integrated before individuals can participate in interaction and communication
• Cortical level functions (e.g. speech) depend upon efficient sensory processing at a subcortical level
Interaction and Communication

• The ability to interact and communicate with others requires the complex integration of:
  – Auditory information
  – Visual information
  – Tactile information
  – Proprioceptive information
Vestibular System

• The vestibular system has an organising function
• It organises sensory input and motor output
• It contributes to the organisation of sensory input at a subcortical level to support functional performance
• The vestibular system relates closely to other sensory systems:
  – Auditory system
  – Visual system
  – Proprioceptive system
Vestibular system and speech development

• Research (e.g. Ayres) has shown a correlation between poor vestibular and somatosensory processing and speech disorders

• Many children with vestibular difficulties have delays in speech development

• Association between shortened postrotary nystagmus and communication disorders

• Association between postural difficulties and language disorders
Vestibular Input

- Some children with speech and language difficulties seem to respond positively when vestibular input (movement) is given
- Vocalisations often increase during and after movement activities
- The child appears more engaged in interactions
- Improvements reported in auditory processing and expressive language
Activity ideas...vestibular system

- Trampoline
- Jumping, skipping, hopping etc.
- Space hopper
- Scooter board
- Balance beam (or wider bench)
- Balance board
- Tall kneeling and half kneeling
- Bilateral activities
Activity ideas...tactile system

• Messy play
  – Sand and water play
  – Finger painting
  – Tracing in trays of flour, shaving foam etc
  – Sandpaper letters

• Use of varied materials and textures

• Hiding toys in boxes of different textures (e.g. rice, lentils, polystyrene)

• ‘Feelie’ bag
Activity ideas...proprioceptive system

- Tracing letters/shapes in ‘heavy materials’ e.g. lentils, rice
- Drawing letters/shapes against resistance e.g. chalks on the ground
- Forming large letters/shapes in the air, on the ground or on a wall/easel
- ‘Walking’ the shapes of letters