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Sensory Integration in the Classroom

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Slides used were developed by the SI Network Lecture Team

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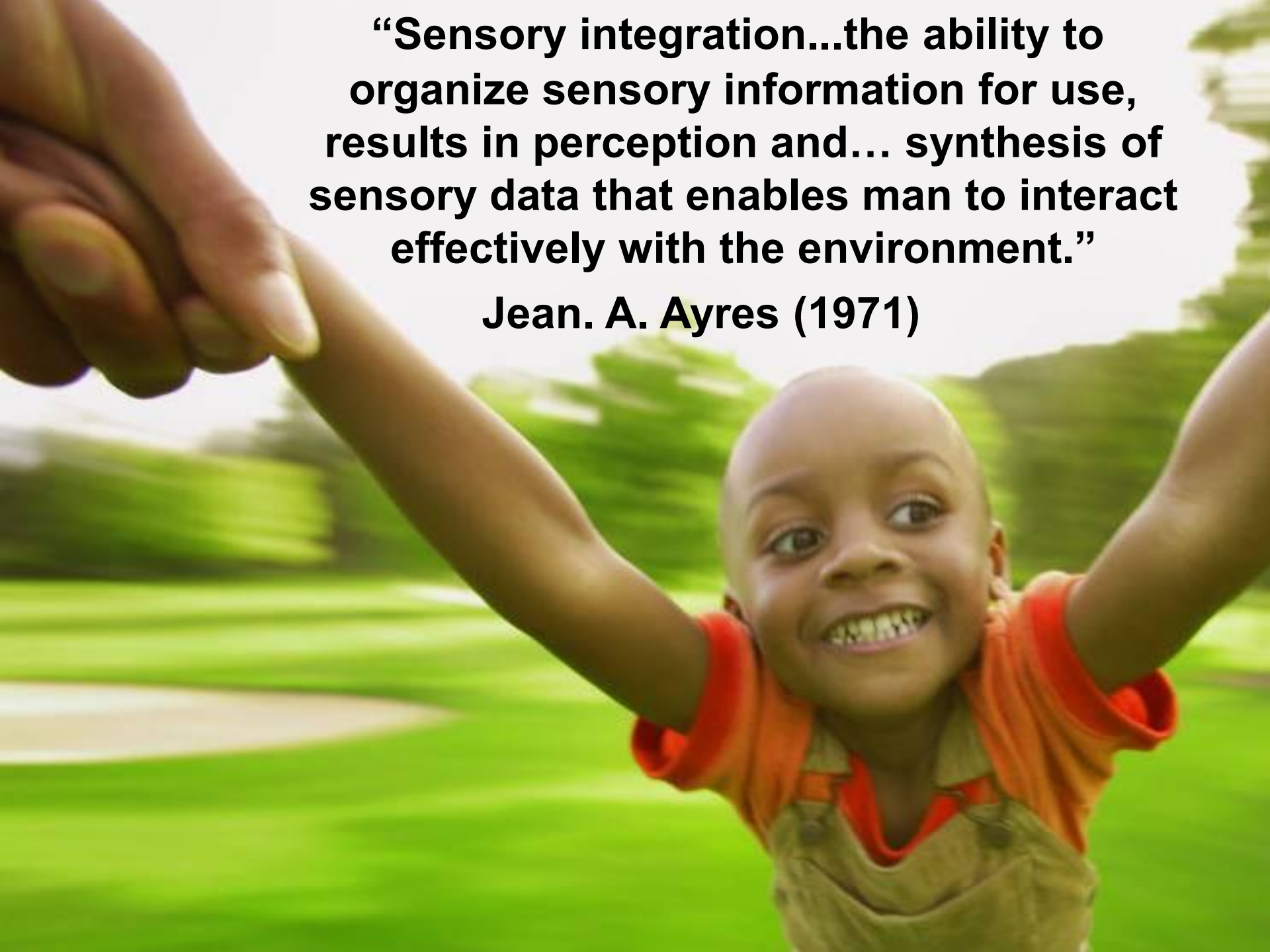

“Sensory integration...the ability to organize sensory information for use, results in perception and… synthesis of sensory data that enables man to interact effectively with the environment.”

Jean. A. Ayres (1971)

“Sensations are ‘food’ or nourishment for the nervous system,
the brain needs continuous variety of sensory nourishment to develop and then to function”

Ayres 1979

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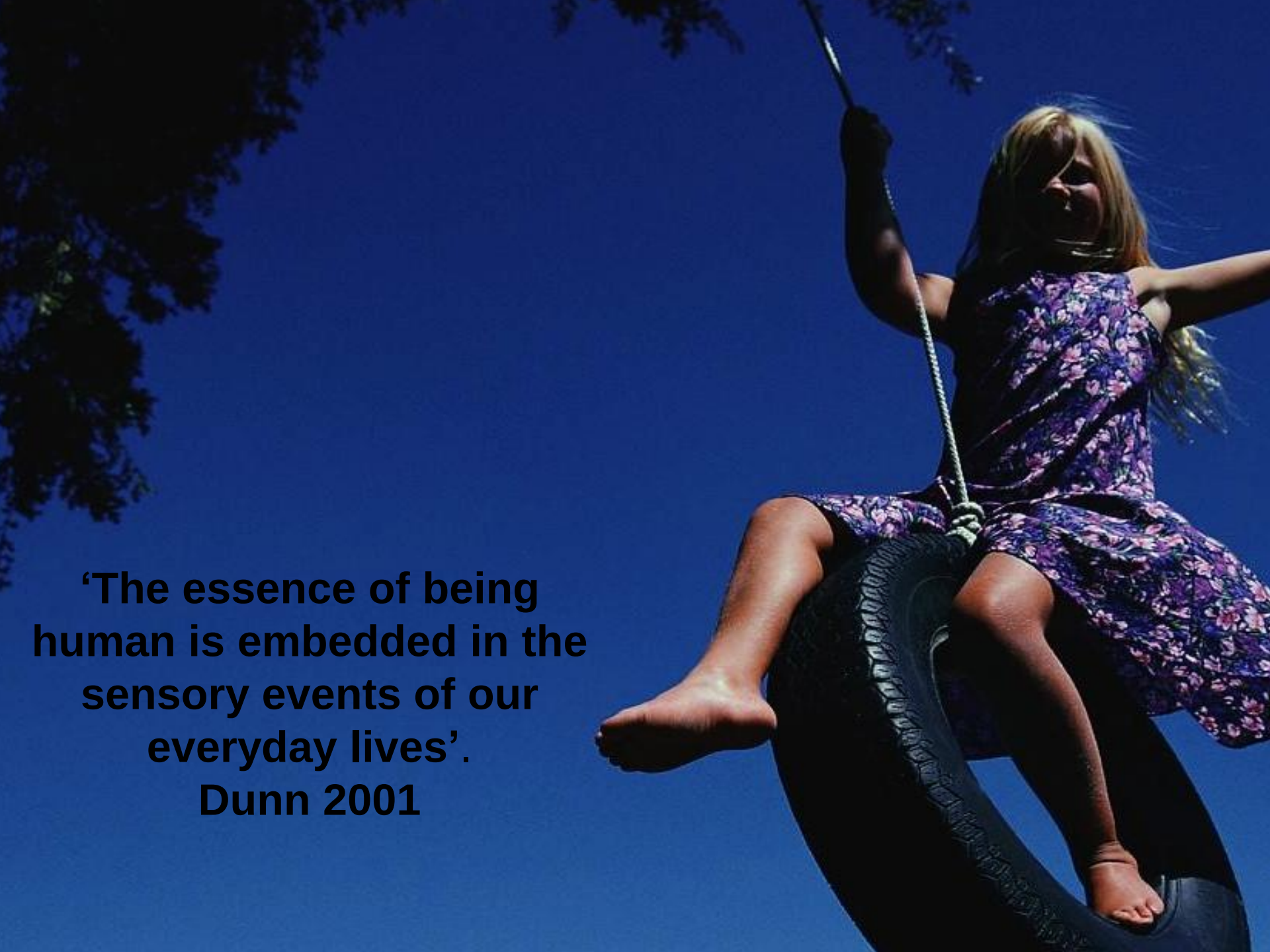
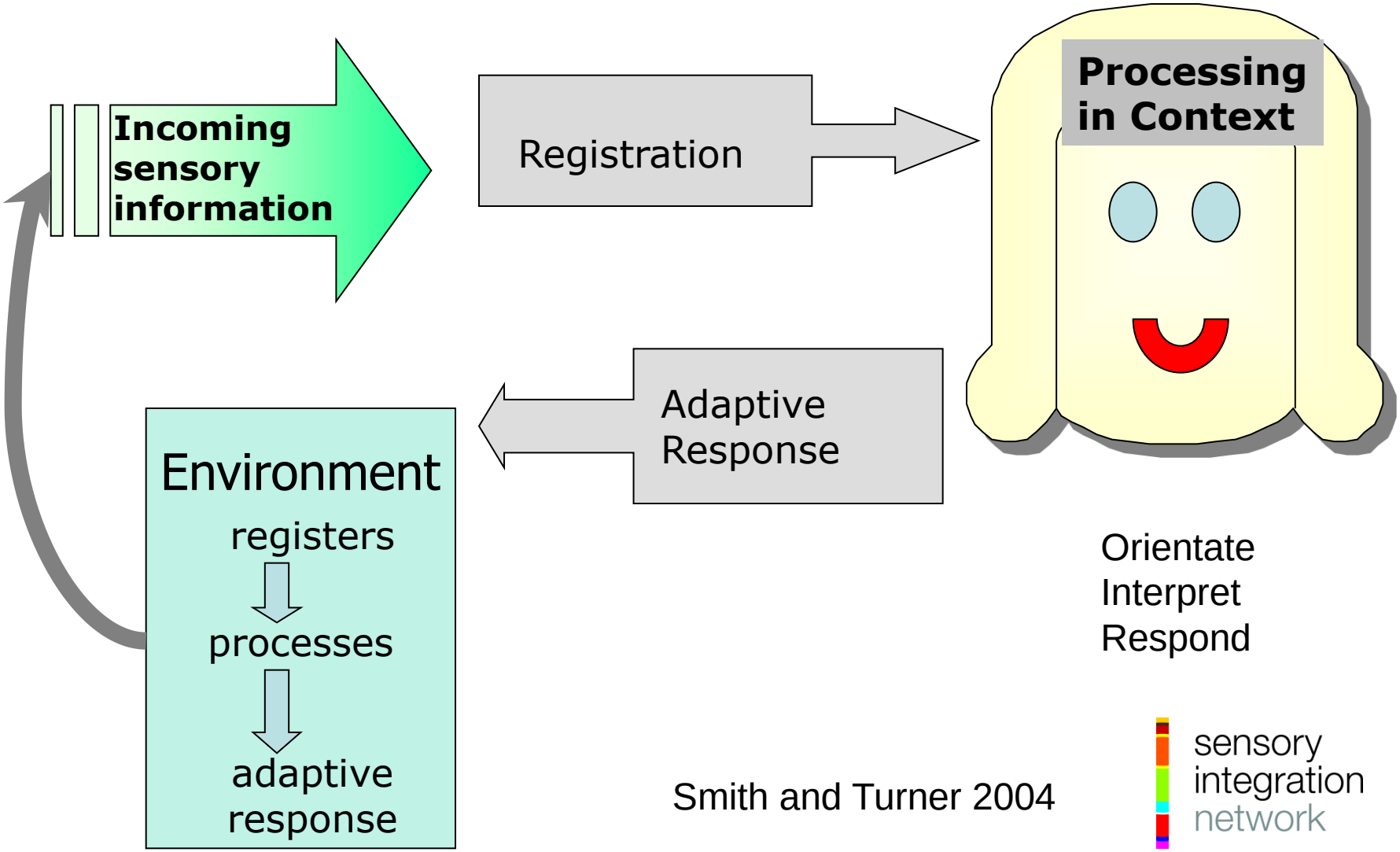


‘The essence of being human is embedded in the sensory events of our everyday lives’.
Dunn 2001

Sensation is the **only** pathway the human system can use to receives information from the environment.



Smith and Turner 2004

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SENSORY INTEGRATIVE PROCESSES

INTEGRATION OF THEIR INPUTS

THE SENSES

Vestibular (gravity and movement)

Proprioceptive (muscles and joints)

Tactile (touch)

Visual (seeing)

eye movements

posture

balance

muscle tone

gravitational security

sucking

eating

mother-infant bond

tactile comfort

body perception

coordination of two sides of the body

motor planning

activity level

attention span

emotional stability

speech

language

eye-hand coordination

visual perception

purposeful activity

END PRODUCTS

ability to concentrate

ability to organize

self-esteem

self-control

self-confidence

academic learning ability

capacity for abstract thought and reasoning

specialization of each side of the body and the brain

Published by
WPS® 1979, 2005

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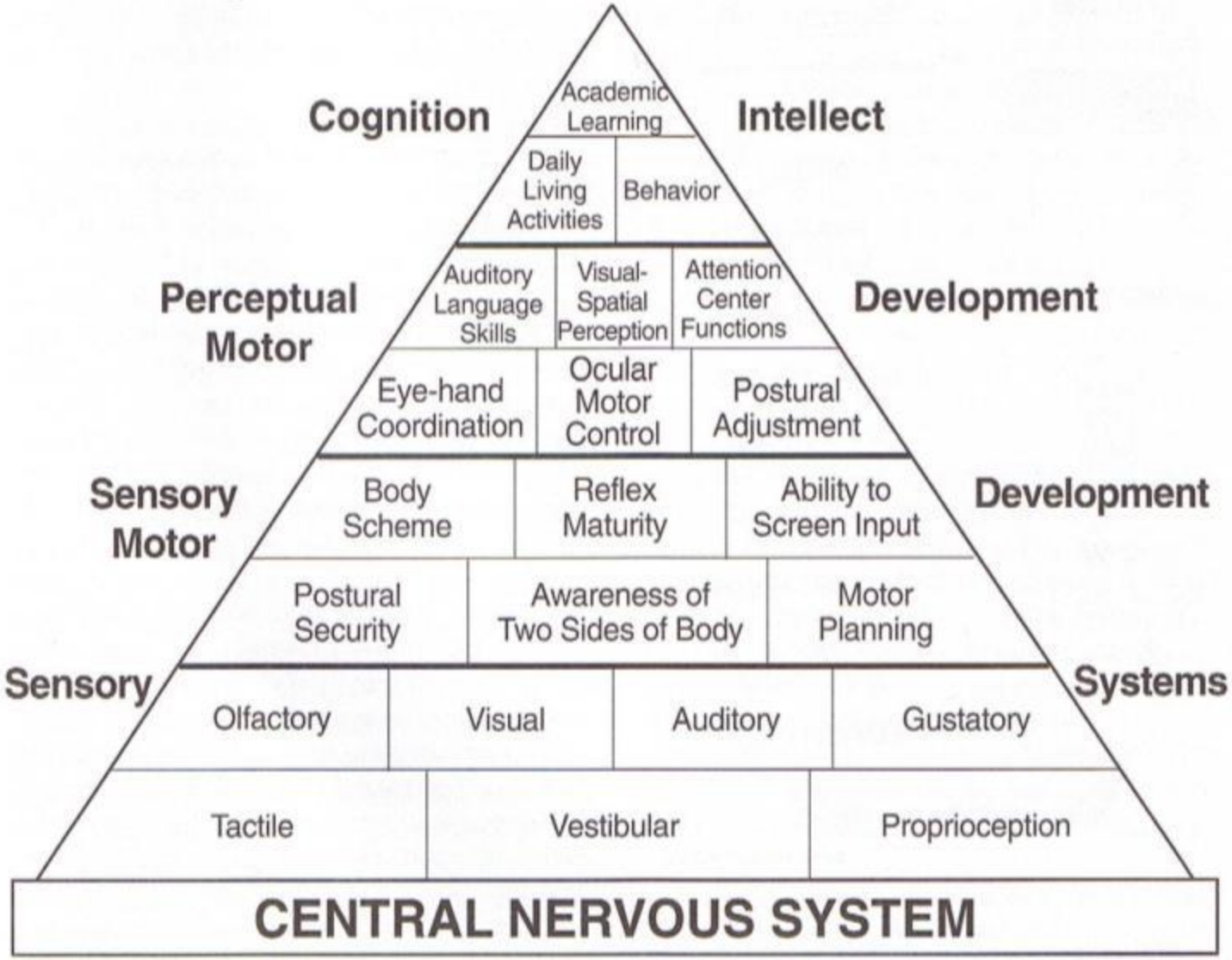

Figure 1-3. Printed with permission. © Taylor/Trott 1991

1-4 "How does your engine run?"

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Sensory Processing difficulties interfere with Activities of Daily Life…

Self Care/Personal Care

Leisure and Play

Work Environments including School

Personal Relationships

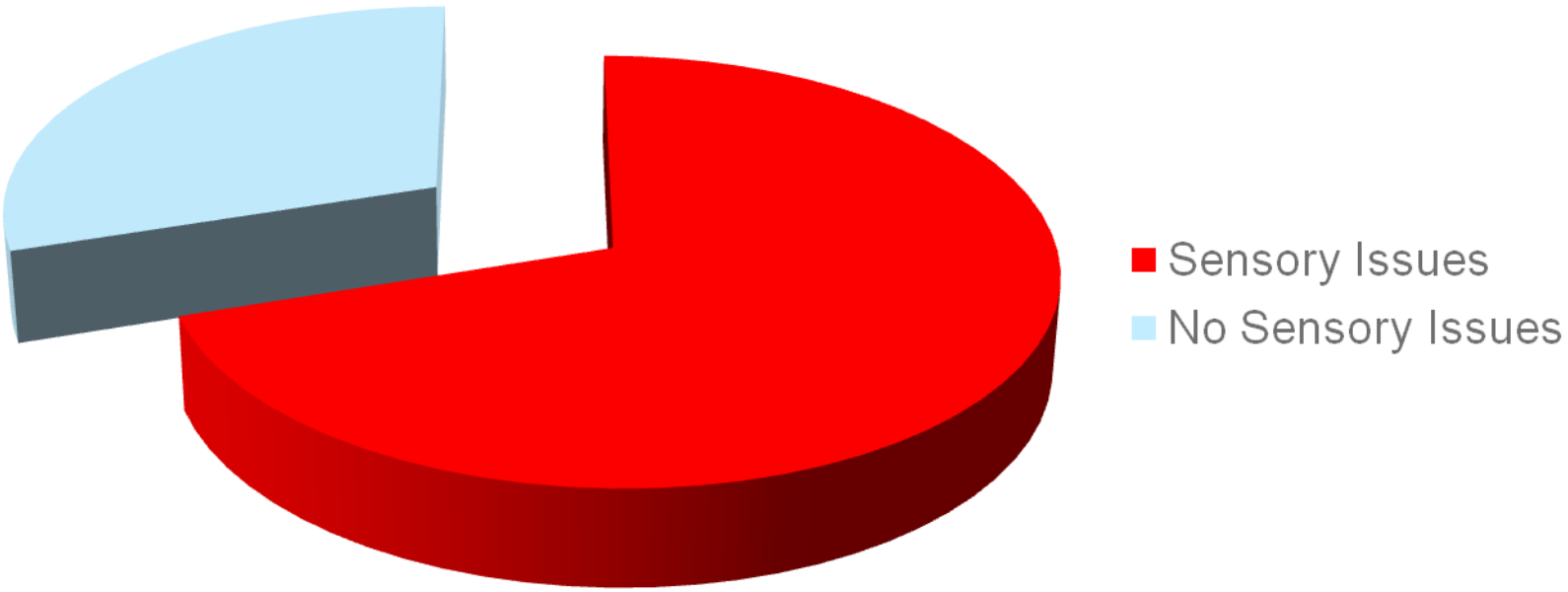
[at any level can include behaviours that challenge]

‘high and consistent levels of impairing sensory problems from childhood to adulthood in almost all individuals diagnosed with classic autism’

Klintwall 2010

Sensory Modulation Difficulties 70 % to 90 %

Adamson 2006



5 - 15 % general population (Miller 2006)

Sensory Processing and Integration issues

- Pain and hearing were the most commonly affected modalities (Klintwall 2010)

- Adults with Autism report <u>more</u> sensory sensitivity to touch, vision, sound, smell, taste and movement (Tavossoli 2010)

Sensory Processing and Integration issues

– Children with ASD demonstrate low scores on all tests of praxis compared with typically developing children (Siaperas 2011)

– 90% Motor Difficulties (Green 2010)

Neuroscience

Multisensory enriched environments, contextualised with cognitive demand facilitate neuroplasticity and thus growth , development and behaviour

Lane and Schaaf 2010

The Neuroscience of Sensory Processing

Neuroscience is the empirical study of the brain and connected nervous system. The brain is the organ that enables us to adapt to our environment—in essence, to learn.

The Royal Society (2011)

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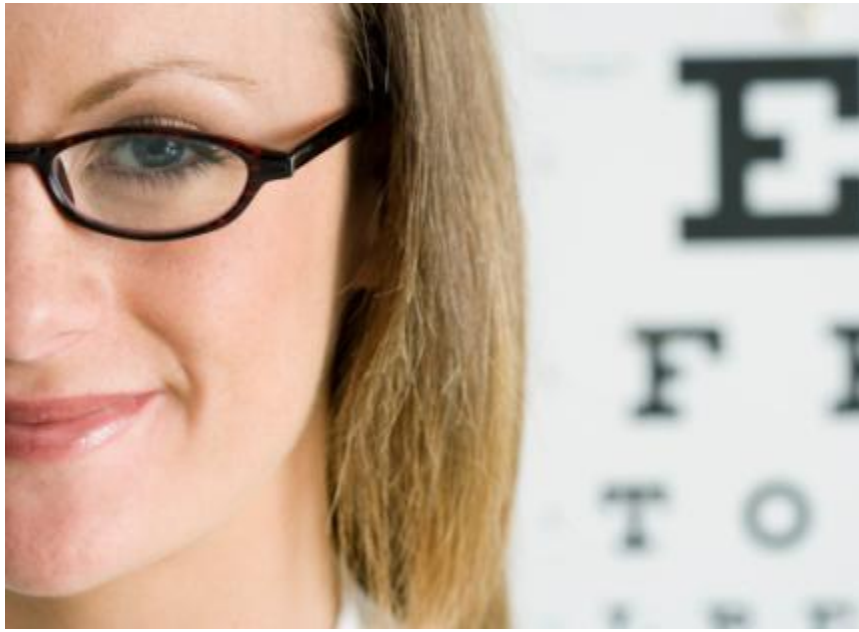
Visual System



Organ of sight is the eye.

Provides information about people and objects.

Helps us to define distance, edges and boundaries as we move through and negotiate space.

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Auditory System

Organ of hearing is the cochlea in the inner ear.

Stimulated by sound waves

Protective function – alerts us to danger

Supports communication

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Vestibular – Balance and Head Movement

Organs of balance are the otoliths and semi-circular canals on top of the cochlea.

Stimulated by movement of the head.

Gives information about movement

and rotation in all directions.

Tactile System

Organ of touch is the skin

Different kinds of nerve receptors for light, unexpected touch; deep touch; pain; temperature

Different neural pathway for touch around the head and face

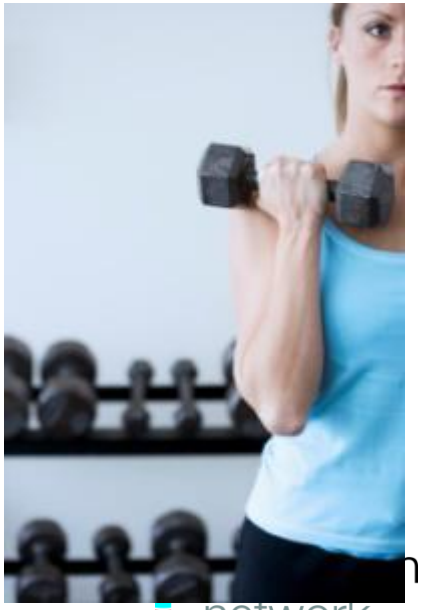
Proprioception

Organs of proprioception are the receptors in muscles and joints.

- The **muscle spindle** is the major stretch receptor within muscles.
- **Golgi tendon organs** and **joint afferents** monitor stresses and forces at the tendons and joints.

Stimulated by movement of pairs of muscles.

This system leads to body awareness.



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Gustatory and Olfactory

Organs of taste and smell are receptors located on the tongue and in the nasal structure

Smell
General alarm system e.g. fire, rot
component of flavour testing food

Part of communication ie pheromones

Taste
Protective eg poisonous food often tastes bitter

Homeostasis: balance of nutrients can be guaranteed by selective eating

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Sensory Modulation

You need to be in the ‘just right’ place to do things.

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sensory bystander

sensory seeking

High registration threshold - needs lots to have ‘AHA’ moment

Typical registration threshold

sensory sensitive

Low registration threshold - needs very little to have ‘AHA’ moment

sensory avoiding

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Posture and Praxis

Making your body do what you want

You need to be in ‘just the right place’ to do things.

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Posture and Praxis

Just Be – ing and keep in just the right place…

BUT THEN there is also

During **Get ready…**

And **Get set…**

And especially during **Go…**

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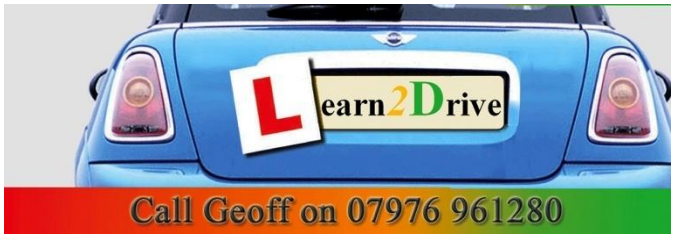
Praxis / Motor Planning

- Ideation
- Planning
- Execution



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the
‘Just Right’
Challenge

What education professionals can do to support learners with SI disorders

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Be Active : Access Sensory Integration

- Referral
- Assessment
- Consultation
- Collaboration
  - Use the Personal Plans and Sensory Diets
  - Use Sensory Passports
  - Sensory Aware Teachers have Sensory Aware Classrooms
- Safe Sensory Spaces

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Creating a Sensory-Aware Classroom

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Strategies for school work and transition…

Balls (and Bean Bags!)
Environment and Expectations

Activities
Writing
Action
Resistance
Eating

Smith 2010

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Heavy Work Organises

Video Clip

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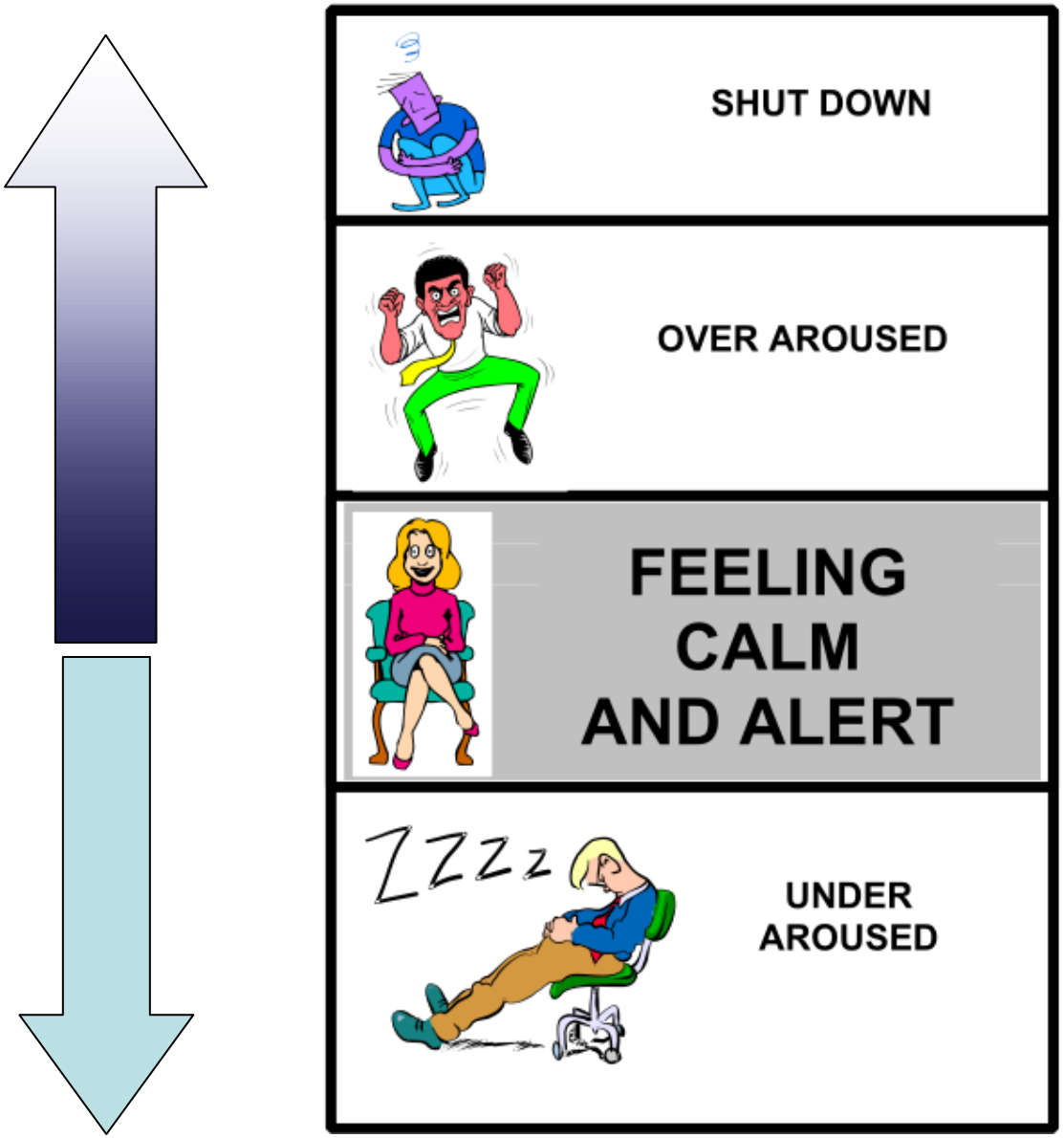
URGENT
URGENT
Shaun's Ladder
SHUT DOWN 9-10
RAGING 7-8
CALM + ALERT 4-6
SLEEPY 1-3
ASLEEP 0

SENSORY PROCESSING AND AROUSAL LEVELS



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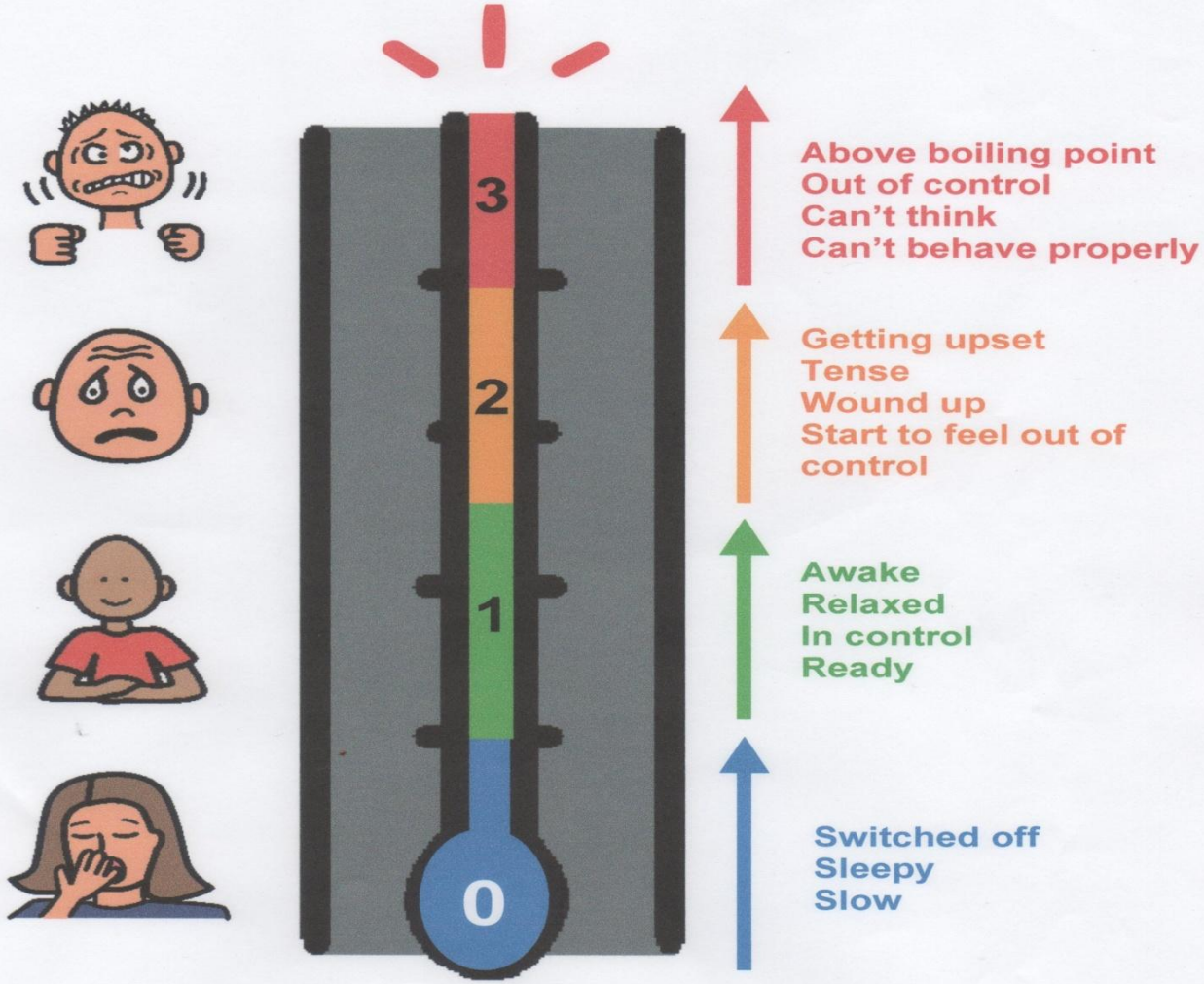
Stress Thermometer

This measures how much stress the person is feeling



Dorset HealthCare University NHS Foundation Trust

May 2011

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“The easiest step toward improving quality of life consists in simply learning to control the body and it’s senses”

Mihaly Csikszentmihalyi

For further information:

www.sensoryintegration.org.uk

Thank you for your time and attention.

Any questions?

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