



ADOPTION EDUCATION LLC

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From THE HANDBOOK OF INTERNATIONAL ADOPTION MEDICINE by Laurie C. Miller.
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SENSORY INTEGRATION DISORDER

INTRODUCTION

Children in institutional care experience many forms of sensory deprivation. Crib confinement and swaddling limit tactile experience, motor activity, vestibular and proprioceptive stimulation, and visual input. Quiet orphanage rooms reduce auditory exposures. Liquid and pureed diets diminish oral-motor stimulation.

When sensory experiences are disturbed, children may develop disorders of sensory integration (DSI). This disorder is not discussed in many general pediatric textbooks, yet has gained increasing recognition as a theoretical and practical explanation for many behavioral and developmental problems in young children. Disorders of sensory integration are discussed in books on autism and in some developmental pediatric books.

Sensory integration theory provides a logical framework for the diagnosis and treatment of some of the difficulties experienced by institutionalized and post-institutionalized children.

WHAT IS SENSORY INTEGRATION?

Sensory integration is the coordination and interpretation of visual, auditory, tactile, kinesthetic, vestibular and proprioceptive information. Sensory information is processed at four levels: registration (detection of stimuli from the body or the environment), modulation (matching arousal, attention and activity level to the demands of the environment without being distracted by irrelevant sensory input), discrimination (identification of the temporal and spatial characteristics of sensory information and recognition of their meaning), and praxis (developing and carrying out a motor plan for interaction with the environment). Difficulties with any of the stages may result in a disorder of sensory integration.

Disorders of sensory integration show a wide range of symptoms, including hyperactivity, distractibility, feeding problems, behavior problems (irritability, inability to share, inability to recognize needs of others, overly sensitive, difficulty coping with everyday stress), or low muscle tone and difficulty with coordination or motor planning, and may result in poor self-esteem. (See chart on the next page)

INTERPRETATION OF BEHAVIORS WITHIN A SENSORY-PROCESSING FRAMEWORK

Behavior	Interpretation	Comments
<p>Oral Defensiveness It was a heartrending shock to see that my newly adopted son would not put a cracker to his mouth and gagged at the sight of any food he could not drink.</p>	<p>These behaviors may all be understood as manifestations of oral defensiveness. This is a very common description in post-institutionalized children and can be explained in part by the feeding practices and lack of play opportunities. In many of the orphanages, children are only fed from a bottle until they are almost 2 years old. Pacifiers are not used. There are few toys for the children to play with and mouth. As a result, children are not used to having things in their mouths. Their mouths become overly sensitive and food and other objects produce an uncomfortable feeling.</p>	<p>It is interesting to note that premature infants who have been tube fed show a similar response when a bottle is introduced and have marked difficulty with beginning feeding. Because of this, current practice has been to provide the infant with non-nutritive sucking while being tube fed.</p>
<p>He doesn't like to eat. At age 2 ½ he couldn't tolerate a Cheerio. He still gagged on some food at issue age 4. He eats only when he is starving or else made to eat. He sucks on his fingers, coat, and shirts. He used to suck his tongue when anxious, and mouthed toys until age 5.</p>	<p>Since many children from the institutions are already poorly nourished, feeding can be a major chore and the child's refusal to eat may present major stress to the family.</p>	
<p>She screamed and cried at getting her teeth brushed or having anything of size or texture in her mouth (she spit out all food that required chewing).</p>	<p>For some children, oral defensiveness subsides with patience and slowly introducing different foods and textures. For other children for whom the problem persists, more active intervention is recommended.</p>	
<p>Tactile Defensiveness She disliked being bathed but, as with other behaviors, we felt it was because she wasn't used to it.</p>	<p>Discomfort with bathing, with having fingernails and toenails cut, and with having tags on clothing are all examples of tactile defensiveness.</p>	
<p>She does not like to be hugged or kissed--it is still not natural to her. She screeched at any attempt of a sibling to touch her. She had an aversion to children.</p>	<p>It is possible that this child is showing tactile defensiveness. Her "screeching" at siblings and "aversion to children" may reflect her awareness that light touch is "hurtful" to her; it may be her way of avoiding having this happening. Unexpected touch is more likely to produce a defensive response than is expected touch. Children are more unpredictable in their behaviors than adults.</p>	
<p>Auditory Defensiveness He was terrified of vacuum cleaners until recently. We supposed that he's remembering some archaic medical equipment from the orphanage.</p>	<p>It is possible that, rather than remembering medical equipment from the orphanage; this child was showing auditory defensiveness and was bothered by the high-pitched noise of the vacuum cleaner.</p>	
<p>Reduced Sensory Awareness My daughter was adopted at age 4 ½ from an orphanage where she lived since birth. She did not cry for 3 months, even when having stitches or blood tests.</p>	<p>Lack of response to pain has been a very common description from parents who have adopted the first institutionalized children. These examples reflect an under reaction to sensory input.</p>	<p>An alternative explanation is that in the orphanage, no one responded when the child was uncomfortable and so the child "learned" not to show a response to pain.</p>
<p>Sensory Defensiveness This is the easiest category to recognize. It occurs when certain types of normal sensory inputs are experienced as uncomfortable or threatening.</p>		

POST-ADOPTION EVALUATION OF SENSORY PROCESSING QUESTIONNAIRE

Auditory System

1. Does your child have trouble understanding what other people mean when they say something?
2. Is your child bothered by any household or ordinary sounds, such as the vacuum, hair dryer, or toilet flushing?
3. Does your child respond negatively to loud noises as in running away, crying, or holding hands over ears?
4. Does your child appear to not hear certain sounds?
5. Is your child distracted by sounds not usually noticed by other people?
6. Is your child frightened of sounds that do not usually convey alarm to other children the same age?
7. Does your child seem to under react to loud noises?
8. Does your child have difficulty interpreting the meaning of simple or common words?
9. Is your child easily distracted by irrelevant noises such as a lawn mower outside, children talking in the back of the room, crinkling paper, an air conditioner, a refrigerator, or fluorescent lights?
10. Does your child seem too sensitive to sounds?

Olfactory System

1. Does your child gag, vomit, or complain of nausea when smelling odors such as soap, perfume, or cleaning products?
2. Does your child complain that foods are too bland or refuse to eat bland foods?
3. Does your child prefer very salty foods?
4. Does your child like to taste non-food items such as glue or paint?
5. Does your child gag when anticipating an unappealing food?

Proprioception System

1. Does your child grasp objects so tightly that it is difficult to use the object?
2. Does your child grind his or her teeth?
3. Does your child seem driven to seek activities such as pushing, pulling, dragging, lifting and jumping?
4. Does your child seem unsure of how far to raise or lower his or her body during movement such as sitting down or stepping over an object?
5. Does your child grasp objects so loosely that it is difficult to use the object?
6. Does your child seem to exert too much pressure for a task, such as walking heavily, slamming doors, or pressing too hard when using pencils or crayons?
7. Does your child jump a lot?
8. Does your child have difficulties playing with animals appropriately, such as petting them with too much force?
9. Does your child have difficulty positioning himself in a chair?
10. Does your child bump or push other children?
11. Does your child seem generally weak?
12. Does your child chew on toys, clothes, or other objects more than other children do?

Tactile System

1. Does your child pull away from being touched lightly?
2. Does your child seem to lack the normal awareness of being touched?
3. Does your child react negatively to the feel of new clothes?
4. Does your child show an unusual dislike for having his or her hair combed, brushed, or styled?
5. Does your child prefer to touch rather than be touched?
6. Does your child seem driven to touch different textures?
7. Does your child refuse to wear hats, sunglasses, or other accessories?
8. Does it bother your child to have his or her finger or toe nails cut?
9. Does your child struggle against being held?
10. Does your child have a tendency to touch things constantly?
11. Does your child avoid or dislike playing with gritty things?
12. Does your child prefer certain textures of clothing or particular fabrics?
13. Does it bother your child to have his or her face touched or washed?
14. Does your child resist or dislike wearing short-sleeved shirts or short pants?
15. Does your child dislike eating messy foods with his or her hands?
16. Does your child avoid foods of certain textures?
17. Does your child mind getting his or her hands in finger paint, paste, sand, clay, mud, glue or other messy things?
18. Does it bother your child to have his or her hair cut?
19. Does your child overreact to minor injuries?
20. Does your child have an unusually high tolerance to pain?

Vestibular System

1. Does your child seem excessively fearful of movement, as in going up or down stairs or riding swings, teeter totters, slides or other playground equipment?
2. Does your child demonstrate distress when he or she is moved or riding on moving equipment?
3. Does your child have good balance?
4. Does your child balance in activities such as walking on curbs or on uneven ground?
5. Does your child like fast, spinning carnival rides, such as merry-go-rounds?
6. When your child shifts his or her body, does he or she fall out of the chair?
7. Is your child unable to catch him or herself when falling?
8. Does your child seem to not get dizzy when others usually do?
9. Does your child seem generally weak?
10. Does your child spin and whirl his or her body more than other children?
11. Does your child rock himself when stressed?
12. Does your child like to be inverted or tipped upside down or enjoy doing activities that involve inversion, such as hanging upside down or doing somersaults?
13. Was your child fearful of swinging or bouncing as an infant?
14. Compared with other children the same age, does your child seem to ride longer or harder on certain playground equipment, such as a swing or merry-go-round?
15. Does your child demonstrate distress when his or her head is in any other position than upright or vertical, such as having the head tilted backward or upside down?

Visual System

1. Does your child have trouble telling the difference between printed figures that appear similar, for example, differentiating between b and p or + and x?
2. Is your child sensitive to or bothered by light, especially bright light (blinks, squints, cries, or closes eyes)?
3. When looking at pictures, does your child focus on patterns or details instead of the main picture?
4. Does your child have difficulty keeping his or her eyes on the task or activity at hand?
5. Does your child become easily distracted by visual stimuli?
6. Does your child have trouble finding an object when it is amid a group of other things?
7. Does your child close one eye or tip his or her head back when looking at something or someone?
8. Does your child have difficulty with unusual visual environments such as a bright, colorful room or a dimly lit room?
9. Does your child have difficulty controlling eye movement when following objects like a ball with his or her eyes?
10. Does your child have difficulty naming, discriminating, or matching colors, shapes or sizes?

For Children Older Than 6 Years

1. Did your child make reversals in words or letters when writing or copying or read words backwards (such as reading saw for was) after the first grade?
2. Does your child lose his or her place on a page while reading, copying, solving problems, or performing manipulations?
3. In school, does your child have difficulty shifting gaze from the board to the paper when copying from the board?

THE EFFECT OF INSTITUTIONALIZATION

Not all professionals accept the existence of sensory integration disorder. However, sensory integration theory provides a useful construct to understand and address a wide range of problems.

Normal sensory function depends on receipt of normal sensory inputs during infancy. Children residing in orphanages often lack these experiences. The most pervasive form of sensory deprivation for children residing in orphanages is the lack of nurturing physical contact. Even in well-staffed American orphanages in the 1960s and early 1970s, children were held, "petted," and rocked only approximately 18% as much as family children. In another study, family children received 7-13 times more tactile stimulation than orphanage children.

Auditory and language exposure is greatly reduced in orphanages compared with families: during 4 hours of observation time, orphanage children were spoken to for 13.2 minutes vs. 166.2 minutes for family children. Crib confinement and swaddling thwart the child's natural instincts to explore and master successive sensorimotor tasks. Crying, thumb sucking, rocking, head banging, and other "self-stimulatory" behaviors may be viewed as the child's attempt to satisfy these needs.

Some authors suggest that sensory or perceptual deprivation rather than the lack of parental love is the chief adverse effect of institutionalization. A survey of 22 infants living in a Romanian orphanage revealed poor oculomotor control and responses to tactile deep pressure, which improved after 6 months or "enhanced caregiving." However, attempts to remediate the adverse effects of institutionalization with sensory enrichment alone are only partially successful. Clearly, a loving parent is the best provider of sensory stimulation to the infant. Sensory integration theory also emphasizes the importance of the therapist-child interactions as critical to the therapeutic process and does not see sensory input in isolation as being effective.

OTHER FACTORS CONTRIBUTING TO SENSORY INTEGRATION DISORDER

Sensory integration problems are not limited to children who have been institutionalized or physically deprived in other ways. Sensory integration difficulties may be exacerbated by other factors common among this population including prenatal toxic exposure (alcohol, drugs, nicotine) and lack of prenatal care with resultant increases in prematurity, low birth weight, and birth complications. Prenatal stress impairs sensory processing via altered regulation of stress hormones. Hereditary factors may also contribute to sensory integration disorders.

SUMMARY

Therefore, post-institutionalized children are particularly vulnerable to sensory integration problems. Amidst the excitement that accompanies the arrival of a new child, such problems may not be apparent immediately after adoption. Growth delays and medical concerns may be paramount. However, identification of sensory integration problems in new arrivals allows interventions that smooth the transition to the new adoptive home and may prevent future problems. The following list contains some questions the adoptive parents should be aware of to discuss with their pediatrician:

- Does the baby like to be held? Does she mold her body into yours comfortably (tactile)?
- Is the baby comfortable being moved (or moving herself from one position to another)? Does she seem upset when laid back for a diaper change or to be dressed? (proprioception)
- Does the baby avoid interactions with others? (adaptive motor)
- Does she initiate play? Does she touch and explore toys? Does she avoid certain types of toys (fluffy, slippery, noisy)? (adaptive motor, tactile)
- Does she mouth toys or avoid mouthing toys? (tactile)
- Does she use only her fingertips to manipulate a toy? (tactile)
- Does she tolerate walking on different textures (carpet, grass, wood floor)? (tactile)
- Does she use both hands together and work across her midline? (adaptive motor)
- Does she tolerate textured foods? Does she chew? (tactile)
- Does she 'tune out' if more than one stimulus is presented? (regulatory)
- Does she sleep through the night? Does she have trouble soothing herself at night or after being upset? (regulatory)

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