Sensory Approaches

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> “When late morning rolls around and you’re feeling a bit out of sorts, don’t worry; you’re probably just a little eleven o’clockish.”
>
> *Pooh’s Little Instruction Book*, inspired by A.A. Milne

Sensory Approaches

Early pioneers

Dr. A. Jean Ayres pioneered the sensory integration (SI) framework, now referred to as Ayres Sensory Integration® (ASI), in the field of occupational therapy in the 1960s. Her ideas brought forth a new way of viewing behavioral, emotional and developmental issues that arise in childhood. Ayres (1979) promoted that sensory input is necessary for human development and optimal neurological functioning. Research supports the hypothesis that sensory deprivation, particularly during critical periods of early development, may cause perceptual distortions and disruptions in development, problems in forming healthy attachments, and difficulties with the ability to regulate emotions and behaviors (Castler, 1968; Cermak, 2001; Cermak & Daunhauer, 1998; O'Connor & Rutter, 2000).

According to Dunn (2001), the essence of being human is embedded in the sensory events of daily life. When a person is diagnosed with a mental illness, the symptoms of their illness may influence every part of them, including their sensory and motor systems. All children with mental health issues have unique sensory experiences and needs that contribute to or detract from their abilities to participate in daily activities and to cope with stressful situations. ASI® is a theoretical frame of reference that helps treatment providers better understand how children perceive their sensory experiences and how these

perceptions influence their every day and therapeutic activities. If treatment providers understand each child's sensory needs, they can help them develop strategies to experience more success in school, in treatment, at home, and in the community.

Sensory processing refers to the neurobiological process that organizes sensory and motor information from the body and the physical environment (Miller, 2006). Effective sensory processing makes it possible to choose and focus on relevant stimuli, and for the spirit-mind-body to regulate itself (adapt) when engaging in various activities (play, school work, self-care) in different contexts (playground, classroom, home) over time. When staff members understand the importance of sensory processing and the challenges created by impaired sensory processing, they can provide sensory supportive prevention and crisis intervention strategies that are specific to each child's individual needs.

Sensory processing disorders (SPDs) include sensory modulation, sensory discrimination, and sensory-based motor disorders that can co-exist and range in level of severity (Miller, 2006). Sensory modulation is related to a person's regulatory ability, which allows him or her to switch from being attentive to inattentive, alert to falling asleep, or from being depressed to being more cheerful. A sensory modulation approach takes into account the fact that the child's spirit-body-mind experience is not separate from the physical environment (home, school or therapeutic environment). In addition, it recognizes the influence of different kinds of sensory and motor stimulation (various activities, milieu influences, therapy exchanges) on the

child, particularly when he/she has mental health problems. A more technical definition of sensory modulation states, "sensory modulation is the ability to regulate and organize responses to sensory input in a graded and adaptive manner." (Bundy, Lane & Murray, 2002)

Sensory modulation disorders or dysfunctions often appear behavioral in nature in the form of regulatory problems, such as over responsiveness (too much) or under responsiveness (too little) and fluctuations between the two. One example of a sensory modulation disorder is sensory defensiveness (over responsiveness), which refers to strong aversive or noxious responses to experiences most people find typical (Wilbarger & Wilbarger, 1991). Generally, when a person is overly sensitive to something, such as a certain smell or touch, they may avoid it by walking away from it or quickly getting rid of the source of the noxious smell. It is not surprising that sensory defensiveness often results in sensory avoidant behaviors, although this may not always be the case. Some children may be overwhelmed by stimulation but unaware of what is happening or why. Additionally, children may be unable to communicate about or regulate their experiences.

Children who have been traumatized may experience a number of developmental interruptions as a result of their experiences, including sensory processing issues. Trauma often results in sensory defensiveness, which may emerge within a particular sensory system (tactile or smell), toward particular stimuli, or globally. All of these factors affect a child's ability to regulate or modulate his/her emotions and behaviors. The child may

develop problematic patterns of behavior, he/she may have difficulty identifying his/her sensory perceptions, or he/she may struggle with understanding and managing his/her sensory experiences and needs.

In contrast to sensory defensiveness, some children may be more sensory seeking than most of their peers. Sensory seeking is normal child behavior; however, children who are strong sensory-seekers may also be risk-takers, thrill seekers, and constantly "on the go." Sensory seeking and sensory avoidance are examples of behavior patterns that may present outside of typical ranges, and are often categorized as sensory modulation patterns or disorders (depending upon the severity). When a person has difficulty with sensory modulation, it interferes to some degree with their ability to function, their development of self-esteem and positive self-image, and their development of competency in self-regulation and attachment.

There are other sensory processing disorders, including sensory discrimination disorders and sensory-based motor disorders. Sensory discrimination refers to the ability to differentiate one type of stimulus from another, such as knowing which direction a sound is coming from, and the ability to perceive the temporal (time) and spatial (space) aspects of stimuli within the environment. For example, some of what is required in the act of catching a ball is the ability to rate the speed, directionality and size of the ball as it comes toward you. Additionally, knowing where one's body begins and ends is part of the discriminatory process at work. Sensory discrimination is also involved in the development of body

awareness, which helps us understand bodily boundaries and informs body image. Brushing teeth and drinking from a cup both require sensory discrimination and coordinated sensorimotor processes. Children who are clumsy, awkward, or too forceful in their movements often have problems integrating the neurological processes involved in engaging in activities in a planned, smooth, and coordinated way. This type of problem is indicative of sensory-based motor disorders. Sensory processing disorders often co-exist, and a person may have any combination of sensory modulation, sensory discrimination, and sensory-based motor disorders.

It is important to emphasize that behaviors are not always reflective of the underlying problems. Someone who is sensory defensive may not appear to be anxious or triggered, and someone who is sensory seeking may not always appear to be constantly “on the go” or hyperactive. Behaviors can be similar to or in contrast to the underlying problem, and they may be specific to certain stimuli. Hence, it is difficult to assess sensory processing problems through the sole use observational assessments (Dunn, 2001), and it is best to refer the child to an occupational therapist for a more specialized evaluation.

Sensory assessments

Assessments of sensory processing disorders are most often conducted by occupational therapists specializing in this area. There are a number of standardized and non-standardized

sensory processing-related assessment tools that are used with children, caregivers, and teachers to obtain a comprehensive view of sensory processing issues that may be influencing the child's development, behaviors, and performance in various settings. The results of these assessments give treatment providers information that is necessary to collaboratively set priorities and integrate individualized interventions specifically targeting sensory processing issues into the child's treatment plan.

The Safety Tool is an essential element in this process, which is typically completed with the child (and caregivers when available) and with nursing and other treatment staff in most settings (Carmen et al., 1996). It is a sensory tool that is used to gather initial information about the child's triggers, early warning signs, trauma history, and his/her sensory preferences. It is also a communication tool that can help identify activities that soothe and comfort the child and can be used both to prevent a crisis and to help when the child is having difficulty. This is a critical element in the assessment process that must be incorporated into the child's activities, treatment plan, and daily programming. It is essential to collaboratively create Safety Tools that are appropriate for all age groups and developmental levels to help children identify the things that they find comforting and helpful. Please see the Safety Tool section of the *Resource Guide* for more information.

Treatment planning process

Sensory processing problems may be a primary focus in treatment or they may be secondary or tertiary depending upon the level of severity and the child's other treatment priorities. Treatment programs that support children in learning healthy self-care, self-regulation (sensory modulation) and coping strategies should use language and methods that are age-appropriate, trauma-informed and integrated across all levels of the program. One example of a sensory modulation program for children ages eight through early adolescence is *How Does Your Engine Run,* also known as the *Alert Program* (Williams & Shellenberger, 1992). This program was designed to be used in a variety of settings, such as schools, residential programs, and outpatient treatment programs. The materials that are required to implement the program are inexpensive and practical.

The *Sensory Modulation Program* was developed for older adolescents and adults, and was organized to serve as a guide to begin to employ sensory modulation concepts and strategies (Champagne, 2006, 2008). Both programs may be modified for use across age ranges and varied settings to help with the planning and implementation of sensory interventions.

Sensory approaches enhance traditional psychiatric treatment methods. They are person-centered and supportive to the individual, and they promote self-organization, development, and recovery. By incorporating sensory supportive approaches into the treatment environment (across individual and

programmatic levels), staff members can use a variety of unique strategies to help the children in their care. Programs that have incorporated a collaborative approach into the assessment of sensory processing patterns, treatment planning, and the use of individualized interventions have found that these strategies play an important role in reducing the use of S/R (Champagne & Stromberg, 2004).

The senses

Most clinicians are well aware of the five basic sensory systems: visual, tactile (touch), auditory, olfactory (smell), and gustatory (taste). There are two others that are not as well-known: proprioceptive and vestibular systems. All of the sensory areas contribute to our continuous sensory experiences and to the ongoing development of the self; however, the proprioceptive and vestibular sensory systems are considered essential for movement, balance, and body awareness and for feeling oriented and grounded in the world. Children who have moderate to severe problems with the proprioceptive and/or vestibular sensory systems may appear avoidant and/or fearful when involved in the following activities:

- Stair climbing
- Walking on different surfaces
- Riding in a car
- Riding a bicycle
- Catching a ball

- Kicking a ball
- Playing on a jungle gym
- Jumping and/or hopping activities
- Engaging in self-care tasks

Children who are avoidant or fearful of these activities should be referred for an occupational therapy evaluation to determine whether they have sensory-related disorders that need treatment.

Where to begin?

There are a variety of activities that stimulate the sensory and motor systems, such as listening to classical music (auditory) or using scented lotions (olfactory and touch pressure). The following list provides activity ideas that can be used when treatment providers want to offer different activities targeting specific sensory areas to help the child increase or decrease the amount of stimulation experienced for therapeutic purposes. Since our experiences are multi-modal, there is a great deal of overlap between the activities outlined and these lists are not all-inclusive.

Proprioception (Pressure/body awareness/ movement sense)-Engagement in active movement against resistance

- Carrying things

- Doing jumping jacks
- Doing thera-band rowing or playing tug-of-war
- Doing exercise activities or isometrics
- Using a jungle gym or climbing equipment
- Swimming
- Hiking
- Doing push-ups and sit-ups
- Playing hopscotch
- Playing wheel-barrow races
- Walking on beach sand or digging in the sand
- Performing yoga poses
- Squeezing a stress ball
- Chewing gum
- Kneading clay or bread
- Wrestling

Vestibular (movement/balance/directionality sense)

- Riding a bike
- Sitting & spinning
- Swinging
- Rocking in a rocking chair or glider
- Dancing

- Jumping on a mini-trampoline
- Sliding
- Skating or roller-blading
- Running or using a treadmill
- Riding on a see-saw
- Crawling through a crawling tunnel
- Going on amusement park rides

Visual (seeing/looking)

- Playing Simon Says games
- Using glitter wands
- Reading *Where's Waldo* or *I Spy* type posters/books
- Looking at mobiles
- Reading books
- Playing tag
- Playing pinball
- Coloring/writing
- Painting

Tactile (touch)

- Lying under a weighted blanket
- Wearing a weighted or compression vest
- Playing with *Koosh* balls or stress balls

- Playing with *Silly Putty,*/thera-putty, or *Play Dough*
- Using stuffed animals
- Using *Wikki Sticks* (plastic wax strings)
- Playing with sand and water (special tables are made for this activity)
- Reading books with different touch options
- Playing with *Slime/Smud*
- Sewing/doing craft activities
- Using clay/making pottery/making ceramics
- Gardening/planting activities
- Petting or holding a cat or dog
- Doodling
- Knitting or crocheting
- Doing puzzles

Auditory (listening and hearing - also contributes to balance)

- Listening to music
- Listening to a sound machine
- Listening to waterfall sounds
- Listening to birds chirping
- Playing musical chairs
- Listening to books on tape

- Listening to a story
- Listening to a music box
- Listening to wind chimes

Olfactory (smell)

- Using scented candles
- Using scented lotions
- Using essential oils
- Using scratch n' sniff books, stickers, or scented magic markers
- Using scented soaps
- Using flowers and plants
- Cooking or baking
- Using herbs and spices during craft or cooking activities

Gustatory (taste/oral motor)

- Eating foods with different qualities:
  - Crunchy: popcorn, chips, cereals, pretzels, carrot sticks
  - Sour: sour apples, sour pickles, lemons, sour candy
  - Sweet: tangerines, fruit snacks, roll-ups, apple sauce
  - Chewy: granola bars, dried fruits, sugar-free gum, string cheese, bagels

- Spicy: salsa, seasoned foods
- Hot: hot balls, a warm drink, oatmeal, red hots
- Cold: ice, popsicles, frozen yogurt, tangerine slices, a cold drink

- Singing
- Talking
- Sucking: sucking a thick milkshake through a straw
- Blowing: blowing bubbles, whistling, playing a harmonica

Everyone is different

What is calming for one person may not be calming for another. There are many times when calming activities are not necessary and alerting or orienting kinds of activities are more beneficial. In a study by Tschacher (1995), people who were depressed (without anxiety) responded poorly to calming techniques. The use of calming strategies may be counter-productive for some children, while others may need assistance with calming before being able to talk or concentrate. The challenge of helping children determine what is most beneficial for them at different times is part of the art and science of using sensory approaches. The following chart outlines examples of common characteristics of calming and altering stimuli. It is provided to serve as a guide, recognizing that children experience stimulation differently, and what is calming to one child may not be perceived as calming to another.

Calming	Alerting
Familiar stimulation or activities with positive associations	Novel stimulation or activities
Slow pace	Fast pace
Slow, rhythmic, linear motions	Fast, rhythmic motions going in different directions
Mild stimuli (smells, tastes, etc.)	Strong or Intense stimuli
Quiet Environment	Loud environment
Low lighting	Bright lighting
Things that one likes (stimulation, people, or activities)	Things that one dislikes (aversive stimulation, people, or activities)
Repetition	Unexpectedness
Consistency	Irregularity
Low complexity	High complexity
Warm temperatures	Cold or cooler temperatures

Although it is important to re-emphasize that what is calming for one person may be alerting for another, the next chart shows some more specific examples of items/activities that may be considered generally calming or alerting:

Calming/Relaxing (Familiar or lower demands)	**Alerting/Orienting** (Novelty or higher demands)
Decaf herbal teas	Holding ice
Chewing gum	Popsicle
Rocking in a rocking chair	Sour or fireball candies
Swinging on a swing	Sucking a lemon
Wrapping in a heavy quilt	Frozen fruit treats
Hot shower or bath	Rapid or jerky movements (dancing)
Focusing on calming scenes	Cold water or washcloth to face
Soft lighting	A cool room
Soft or slow music	Unexpected visual stimuli
Slow and evenly paced rhythms	Changing patterns of light and brightness
Calming sounds of nature (ocean)	Alerting sounds of nature (birds)
Soothing or mild scents: (oils, lotions, or candles)	Quick paced or off beat music
	Strong or aversive scents: (oils, lotions, or candles)
Deep pressure touch or hugs	
Massage: deep pressure touch	Light touch
Beanbag tapping	Yawning
Humming or singing quietly	Loud forceful handclap
Yoga	Aerobic exercise
Leisure walks	Power walks
Soft materials or textures	Rough or prickly materials or textures

It is often beneficial to help children identify the things that help them feel calm and the things that help them feel more alert. Children can then begin to think about how activities may be used to influence them positively, and when they might want to use calming strategies versus activities that make them feel more alert.

Sensory diet: prevention and crisis interventions for the daily schedule

All people use strategies throughout the day, either consciously or unconsciously, that help them remain at an optimal level of alertness to perform the tasks at hand. We continuously modulate or change how alert we feel, which is an important self-regulation skill that we develop over time. Children learn how to wake themselves up enough to be able to get ready to go to school each day, to stay attentive to teachers and school work, to play with peers, and then to slow down in preparation for bed time. Children who have difficulty with self-regulation (e.g., sensory modulation) require extra assistance to master this skill, particularly during transition periods or in times of crisis.

Wilbarger (1984), coined the term “sensory diet” in an attempt to reinforce what Ayres thought about the ongoing need for sensory nourishment. The development of a sensory diet is a sensory modulation strategy that takes this concept a step further by focusing on creating an organized daily plan or schedule that included specific kinds of stimulation and activities to support a child’s ability self-regulate (Wilbarger, 1984; Nackley, 2001). Sensory diets should include both prevention and crisis intervention strategies (Champagne, 2003, 2005). Sensory diets help people feel more organized and better able to handle transitions and stressful activities more flexibly and with less distress.

Sensory diets are often created for individuals, but it is also useful to think of sensory diets in relation to the treatment programming within the milieu. The use of a daily schedule often helps to organize sensory diet elements for different times of the day, including transition times, and it supports the different tasks each person needs to do to prepare themselves throughout each day. The following is an example of a morning routine sensory diet that may be used by an inpatient pediatric unit.

- 7:00 Wake up time & ADLs

(Use of sing-a-long throughout the transitions from one morning ADL activity to the next, use of favorite soaps, lotions, toothpastes, shower brushes, or sponges; offer sensory supportive clothing choices)

- 7:45 Breakfast

(Have the children sign up to help with each of the morning routine needs. Have each child help set up the room and move furniture as needed. Each child should gather his/her own tray and dishes. Use music that is centering to the whole group when preparing for mealtime and eating. Each child should put his/her own tray away when finished, and help clean up.)

- 8:00-8:30 Stretch, exercise, or yoga break

(Active stretching and isometric activities)

- 8:30-9:00 Recess

(Jungle gym equipment, sports games, use of an obstacle course to get to and from different program rooms, or another movement related activity to prepare for school or group work)

- 9-10:00 First group or class

(Use of therapy balls to sit on, incorporating brief group movement, isometric exercise breaks at start and/or throughout the session, sitting on own carpet square with texture of choice)

- 10-10:15 Transition to next class or group

(Move to a new room, go through an obstacle course to get to the next room)

- 10:15-11:00 Second group or class

(Isometric grounding activity for the first few minutes, use of learning activities that provide active movement learning opportunities that help to sustain attention and foster sensorimotor development [use of activities that use objects to hold, draw with, toss, hop, etc.).

- 11:00-11:30 Recess (similar to above)
- 11:30-11:45 Clean up for lunch

(Offer a choice of scented soaps or lotions, hand or nail scrub brushes)

- 12:00 Lunch (similar to breakfast)

Incorporating sensory supportive approaches into treatment

Staff members should be trained in the use of sensory-based strategies and in the integration of these strategies into individual prevention and crisis de-escalation plans. This knowledge and skill set provides staff members with tools for reducing the use of S/R. In addition, the following steps can help programs incorporate sensory supportive approaches into treatment in a safe and responsible manner:

- Conduct comprehensive individual assessments, including the evaluation of the child's sensory processing patterns by an occupational therapist or another professional qualified to offer sensory processing-related assessments (neuropsychologist)
- Provide individual and/or group treatment sessions with an occupational therapist
- Integrate the use of appropriate sensory supportive activities into everyday living, such as stress balls, climbing equipment, weighted blankets, and rocking chairs
- Provide a range of activities focusing on the sensory diet needs of the children at different times of the day and evening, such as music, yoga, visiting with animals, story-telling
- Familiarize staff members and children with a variety of activities that address needs for calming and/or active movement at different times of the day and evening

- Address individual child sensory needs as well as sensory needs of the group of children throughout the day and evening
- Create a population specific sensory diet for the entire therapeutic milieu or program
- Consider a variety of environmental modifications or enhancements

Therapeutic modalities

When considering sensory diet elements to add into each child's daily schedule and into the overall program, there are a number of therapeutic modalities that may be used. It is important to recognize the need for proper training, certifications when necessary and for developing policies and procedures for their use. Some general examples of integrative therapies include:

- Pet therapy
- Biofeedback
- Aromatherapy
- Light therapy
- Music therapy

Music therapy

Music is a powerful sensory modulation tool that is commonly used for many different therapeutic purposes. Different types of music help people in different ways, and playing soothing music in hospital and residential treatment programs may help children feel more calm (Frick & Hacker, 2001).

- Baroque Era music is generally predictable & consistent. It may help children pay attention. *Bach and Pachelbel* are good for facilitating concentration.
- Mozart's or Hayden's compositions may be stimulating to some children and can be used to stimulate the imagination. Romantic music, such as the works of *Tchaikovsky or Beethoven,* uses strong rhythms, unique sound textures, and changes in context and may stimulate (activate) the imagination.
- Ambient music generally facilitates a state of calm-alertness. It is good to use for cool down purposes after exercise, to promote a relaxing atmosphere, or for use during breath work or mindfulness activities.
- Drumming is a form of directive body music because of the strong beat and potentially upbeat rhythmical patterns. These patterns facilitate movement and body awareness.
- Upbeat and fast-paced music, movie themes (such as *Rocky*), 50's tunes, and other popular music are often stimulating and motivate children to get up and move.

For more information, literature on music therapy contains valuable information about how different qualities of music influence the nervous system. It is important to recognize the impact of the music selected for use and how it can be utilized for different treatment purposes. The American Music Therapy Association promotes research on the effects of music and music therapy.

Other sensory tools and activities that can be used to help children include:

- Engaging in physical movement five to six times daily at regular intervals
- Sitting on a therapy ball or a textured seat cushion to help stay attentive during school or groups
- Carrying stress balls to hold or squeeze when feeling fidgety or frustrated
- Wearing colored or tinted sunglasses for distraction or self-soothing
- Using a rocking chair during therapy or group meetings
- Listening to music, drinking warm tea and holding a soft stuffed animal to become sleepy at night
- Carrying stress balls around in their pockets at all times so that they can use them whenever they want. Staff members can also keep these balls handy and offer them to children when the child becomes frustrated.

There are a number of resources for developing sensory diets for specific program populations and needs. Please refer to the information at the end of this section for additional resources.

The creation and use of sensory kits

When a child chooses the sensory activities and tools that are helpful for him/her, it often helps to assist the child in creating a sensory kit that is specific to his/her treatment goals. It may be helpful to include the kit in the child's Safety Tool and sensory diet, which includes prevention and crisis intervention strategies based upon the child's needs, transition times, and daily activities. Sensory kits should be customized to meet the child's individual needs (Champagne 2008). Examples of sensory modulation kits that have been created by children and named according to the intended goals of use include: mindfulness kits, grounding kits, relaxation kits, distress tolerance kits, spirituality kits, sobriety kits, and kits to help shift how a child's "engine" is running—"my engine kit" (Alert Program).

Deep pressure modalities in occupational therapy

Brushing and joint compression

The therapeutic use of deep pressure touch modalities often provides a sense of being grounded within one's body and

within the world (Grandin, 1992; Mullen, Champagne, Krishnamurty, Dickson & Gao, 2008). Deep pressure touch modalities that are frequently used by trained occupational therapists include brushing, joint compression, beanbag tapping, and the therapeutic use of weighted or items that create feelings of pressure (vests, blankets, ankle weights). There are different brushing approaches and the use of brushing as an intervention involves more in depth training. Treatments that integrate brushing strategies apply firm pressure touch using a specifically chosen therapy brush and rapid brushing strokes to the arms, hands, back, legs and feet. There are different schools of thought regarding what types of brushes and techniques are most effective for different therapeutic purposes and protocols (Burpee, 2002; Wilbarger & Wilbarger, 1995). The protocol that involves brushing, that is the most researched and established to date, is the *Wilbarger's Deep Pressure and Proprioceptive Technique (DPPT*).

Brushing followed by the use of joint compression has been found to be effective with people experiencing mental health and trauma-related symptoms, such as, sensory defensiveness, mania, depression, and anxiety. Joint compression (deep pressure stimulation to the large joints and muscles) is typically used after brushing techniques but can be used by itself as a therapeutic activity. Exercises, playing sports, wall or chair push-ups, wheel-barrel races and isometric exercises are examples of different activities that provide joint compression (deep pressure).

Beanbag tapping

Beanbag tapping entails teaching children to use beanbags to safely apply moderate pressure in the form of tapping to the arms, legs, hands and feet. Tapping is not recommended on the head or stomach areas, due to the possibility of injury, triggering, lightheadedness, or nausea after eating. Staff members can help children make personalized beanbags for tapping using assorted fabrics (fleece, cotton), non-toxic fabric paints, dried beans and other items for stuffing (lavender buds, aromatic spray, uncooked popcorn, pillow stuffing).

Weighted & pressure modalities

Studies conducted on the skilled use of weighted vests in a variety of child populations demonstrated that their use appeared to improve the children's ability to focus and remain on task while completing school work. Studies on the use of weighted vests with older people found that it also helped people increase their physical endurance.

It is important to recognize that children may benefit from the use of weighted vests for different reasons and the use of the vests should be specifically related to the treatment goals for the individual child (Fertel-Daly, Bedell & Hinojosa, 2001; Olson & Moulton, 2004 a; Olson & Moulton, 2004 b; Vandenberg, 2001). There are specific guidelines for using weighted vests and their use should be supervised by a licensed OT. Pressure garments provide a similar sensation to weighted vests but the pressure is often more evenly distributed. Pressure garments

include special items that may be worn over or under clothing, such as compression vests, tight fitting lycra body suits or Under Armour®.

The therapeutic use of weighted blankets is becoming more popular across mental healthcare settings (Mullen, et al., 2008). Weighted blankets offer a means for children to comfort and nurture themselves during times of happiness or distress, and they may even be used to help them sleep at night. Establishing a nurturing bedtime routine may be difficult, particularly for children with trauma histories; and the use of a weighted blanket may be helpful in some cases. Although some children like to use weighted blankets every night, other children may simply need to use a weighted blanket during a stressful time, such as after a disappointing phone call or meeting, or when they are trying to go to sleep and stay asleep during a difficult night.

Research studies are currently being conducted on the safety and effectiveness of the use of weighted blankets. Until the outcome of this series of studies is published, it is advisable to follow the weighted blanket guidelines for carrying weighted blankets from one location to another (not to carry more than 10% your body weight, use a cart for blankets that are heavier) and to have the weight evenly distributed (Walker & McCormack, 2002; Champagne, 2008). The use of weighted blankets should be supervised, and never be placed over a person's head or used involuntarily. The child must be a part of the process of determining how much weight is most helpful and must be able to put the blanket on and take it off at will

(Champagne, 2006, 2008). Anyone with circulatory, respiratory (breathing), orthopedic problems (fractures, broken bones, misalignments) or open wounds should not use a weighted blanket without a doctor's assessment and recommendation (Champagne, 2006, 2008).

Weighted blankets can also be used for more sedentary purposes (in sitting or lying down positions), while weighted vests are often useful when the child is active (up and moving about). Some children may benefit from using both weighted blankets and weighted vests at different times of the day.

Environmental considerations

The physical environment of a program is an important consideration in any program's goal of becoming more sensory supportive (Champagne & Stromberg, 2004). Sensory carts and sensory rooms are examples of environmental enhancements or modifications that may be used to create a more sensory-supportive, nurturing and healing treatment environment (NETI, 2006). Multi-sensory rooms or "Snoezelen" rooms were originally created for use with people of all ages who had profound cognitive limitations. Today the use of sensory rooms has been developed to expand upon Snoezelen/multi-sensory environments, and these varied types of sensory rooms are being used in treatment programs for children, adults and older persons with mental health issues.

Sensory rooms provide a therapeutic and meaningful space to keep sensory-related tools organized and readily available

(Champagne, 2003). Staff and children appreciate having dedicated space when using sensory rooms for individual and group therapy sessions. There is no precise formula for creating a sensory room, and no two program's sensory rooms should be exactly alike. The rooms are generally filled with sensory tools and décor specific to the purpose of the room, themes of the program and the population served. These environments need to be generally appealing to the age group using it and staff must be knowledgeable and trained in the specific interventions used within the treatment space.

Some common examples of items that may be included in sensory rooms are listed below:

Weighted blankets	Colored sunglasses
A rocking chair	Bubble gum
Rain sticks and glitter wands	Skate board
A mini-trampoline	Stress balls, squeeze balls, *koosh* balls
Scented lotions and powders	Stuffed animals and bean bags
A sound machine	Slide rocker
A bold colored body sock or tunnel	A rock climbing wall
Music selections and instruments	Bubble lamp or fish tank

Please refer to the section entitled *The Importance of Physical Environment* in the *Resource Guide* for more information on developing sensory rooms and carts.

Consulting with experts

Although programs may incorporate some sensory modulation elements into daily programming on their own, it is recommended that all programs utilize a licensed occupational therapist with sensory integration or sensory processing-related expertise for assistance. The occupational therapist should conduct individual assessments to determine the specific needs of each child in the program. He/she should also plan individual and group treatment interventions based on the results of these assessments and work with inter-disciplinary staff to plan sessions that work toward meeting therapy goals. Consulting with an occupational therapist when creating policies and procedures specific to the safe use of all sensory-related interventions and equipment is also important. This investment will ensure that, at a minimum:

- Staff members and children will acquire a better understanding of the similarities and differences between sensory integration and other sensory processing-related approaches
- Staff members and children will begin to understand the specific sensory processing needs of individual children
- Staff members and children will become familiar with different sensory interventions, how to use them safely and effectively, and how to use different types of activities to address individual needs for calming or active movement at different times of the day, and evening and group needs

- Staff members will begin to understand their own learning styles and sensory preferences

If a program does not have the financial resources to contract or hire an expert, staff may begin learning more about how to incorporate sensory strategies into the program by reading some of the following books:

- *How Does Your Engine Run* (Williams & Shellenberger, 1996)
- *Sensational Kids: Hope and Help for Children with Sensory Processing Disorder* (Miller, 2006)
- *The Sensory-Sensitive Child* (Smith & Gouze, 2004)
- *The Out-of-Sync Child* (Kranowitz, 2001)
- *The Out-of-Sync Child Has Fun* (Kranowitz, 2003)
- *Too Loud, Too Bright, Too Fast, Too Tight* (Heller, 2003)
- *Thinking In Pictures* (Grandin, 1995)
- *Living Sensationally* (Dunn, 2009)
- *How To Raise A Sensory Smart Child* (Beil, 2009)
- *Sensory Modulation & Environment: Essential Elements of Occupation 3rd ed. rev* (Champagne, 2010)
- *The Sensory Connection* (Moore, 2005)

Please refer to the *Additional Resources* section at the end of the *Resource Guide* for more reading suggestions.

Implementation ideas

The following are ideas for programs that want to incorporate sensory processing-related approaches into their treatment:

- Contract with or hire a licensed occupational therapist with expertise in sensory integration to provide individual child assessments, staff training, and program consultation.
- Send staff members to workshops on sensory integration, integrative therapies, and sensory supportive program offerings that promote sensory processing and bring back ideas to the program.
- Create a work group of children and staff members to review the activity schedule, taking into account that children need both gross motor and calming activities during the day. Review the sensory and rhythmical needs of individual and groups of children and adjust the schedule as appropriate. For example, the children may need gross motor activities after school, outdoor walks before school, yoga in the evening, meditation in the morning, etc.
- Recruit a workgroup of children, staff and family members to work with a licensed occupational therapist consultant with expertise in sensory integration. Develop a plan to include some aspects of sensory modulation approaches into the program. Design a training program for all staff members, children, and families and purchase necessary materials.

A classification system

There are a number of different terms that are used to describe some of the sensory-related problems children may struggle with and strategies that may be helpful. Occupational therapists are currently working with the American Psychiatric Association in an attempt to include sensory processing disorders into the *Diagnostic Statistical Manual of Mental Disorders*. This ongoing work toward the inclusion of sensory processing disorders within the current classification systems used in mental health will help integrate sensory processing evaluation and treatment approaches across levels of care in psychiatric services. Sensory processing disorders are currently integrated into the *International Council on Developmental and Learning Disorders: Diagnostic Manual for Infancy and Early Childhood* (2005) and the *Diagnostic Classification of Mental Health and Developmental Disorders of Infancy and Early Childhood, Revised Zero to Three* (2005). For more information refer to www.icdl.com and www.zerotothree.org.

Additional resources

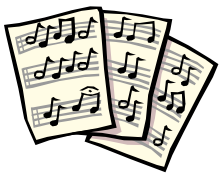
The following sample sensory modulation tools and articles are included as attachments at the end of this chapter. Feel free to photocopy them to use them in your program:

- *Exploring the Senses, What is Soothing to you?*
- *Grounding Techniques.*
- *Sensory Diet Checklist.*
- Self Rating Tool—Using Sensory Interventions.
- Integrating sensory and trauma-informed interventions: A Massachusetts state initiative, part 1.
- Integrating sensory and trauma-informed interventions: A Massachusetts state initiative, part 2.

Exploring the Senses!
What is Soothing to You?

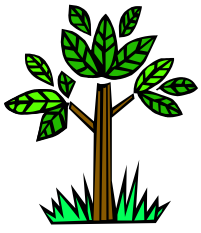
Tastes:

Sights:



Sounds:

Touch:



Smells:

Grounding Techniques

What are grounding techniques? Grounding techniques are simple active strategies to help with orienting and focusing on the present and/or to distract or self-soothe when feeling distressed.

Why do grounding techniques? Grounding techniques can be used in times of crisis and for prevention purposes within a "sensory diet". When feeling dysregulated, grounding techniques can assist emotionally, physically, cognitively and spiritually.

Grounding Techniques:

- Stomping your feet
- Yoga
- Bean bag tapping/brushing
- Sitting on a balance ball/textured cushion
- Moving furniture
- Cleaning
- Yard work
- Rocking in glider or rocker
- Blanket wrap
- Holding/chewing ice
- Eating sour balls, hot balls, lemon
- Aromatherapy
- Pottery/clay work
- Breathing exercises
- Yawning
- Music: _____
- Clapping your hands
- Using a koosh or stress ball
- Walking/ Running
- Lifting weights
- Using thera-bands
- Wearing weighted item: i.e.: vest, backpack, ankle or wrist weights
- Weighted blanket
- Jumping rope/jacks
- Stretching
- Tossing medicine ball
- Petting dog/cat/pet
- Push-ups/ wall push-ups
- Clenching fists/jaw
- Cold/warm cloth to face/neck
- Hot/cold shower
- Playing earth drums/instrument(s)
- Isometric exercises
- Cold/hot drink

Others: _____
_____
_____

Sensory Diet Checklist

The following is a checklist of things people may use or do in order to help decrease &/or to prevent distress. Please take a moment to check off those things that seem to be helpful for you! Each of these activities employs all or most of the sensory areas. However, they are categorized to help you identify some of the specific sensorimotor qualities you may want to focus on.

Movement

- o Riding a bicycle
- o Running or jogging
- o Walking/hiking
- o Aerobics
- o Dancing
- o Stretching or isometrics
- o Lifting weights
- o Yoga or Tai Chi
- o Swimming
- o Jumping on a trampoline
- o Rocking in a rocker/glider
- o Rocking yourself
- o Bean bag tapping
- o Shaking out your feet/hands
- o Playing an instrument
- o Doodling
- o Re-arranging furniture
- o Gardening
- o Yard work
- o Shopping
- o Taking a shower
- o Cleaning
- o Driving
- o Going on amusement park rides
- o Chopping wood
- o Washing/waxing the car
- o Skiing/skating
- o Building things

Others: _____

Different Types of Touch & Temperature

- o Blanket wraps
- o Getting a massage
- o Holding/chewing ice
- o Soaking in a hot bath
- o Using arts/crafts supplies
- o The feel of the sunlight
- o Pottery/clay work
- o Petting a dog, cat, or other pet
- o Holding a dog, cat or other pet
- o Planting or weeding
- o Warm/cold cloth to head/face
- o Hot/cold shower
- o Hand washing
- o Washing the dishes
- o Using a stress ball
- o Fidgeting with something
- o Twirling your own hair
- o Going barefoot
- o Getting a manicure/pedicure
- o Washing or styling your hair
- o Bean bag tapping/brushing
- o Cooking or baking
- o The feel of certain fabrics
- o Being hugged or held
- o Knitting/crocheting
- o Sewing
- o Using powders/lotions
- o Playing a musical instrument

Others: _____

♬ *Auditory/Listening*

- Enjoying the quiet
- The sound of a water fountain
- The sound of a fan
- People talking
- White noise
- Music box
- Wind chimes
- Singing
- Humming
- Whistling
- Plays/Theater
- Live concerts
- Radio shows
- Ocean sounds
- Rain
- Birds chirping
- Ticking of a clock
- A cat purring
- Using the telephone
- Use of a walkman/MP3 Player
- Listening to musical instruments
- Relaxation or meditation CDs

Others: _____

𝒞 *Vision/Looking*

Looking at:

- Photos
- The sunset or sunrise
- Snow falling
- Rain showers
- Fish in a tank
- Autumn foliage
- Art work
- A bubble lamp
- A mobile
- Waterfalls
- Cloud formations
- Stars in the sky
- Ocean waves
- Watching sports
- Movies
- Animal watching
- Window shopping
- Photography
- Reading
- Looking through different colored sunglasses
- A flower
- Water or fish swimming in a lake

Others: _____

Ōlfactory/Smelling

- Scented Candles
- Essential oils
- Cologne/perfume
- Baking/cooking
- Coffee
- Aftershave
- Freshly cut grass
- Flowers
- Tangerines/citrus fruits
- Herbs/Spices
- Chopped wood
- Smell of your pet
- Linens after being hung outside to dry
- Scented lotions
- Incense
- Herbal tea

Others: _____

👄*Gustatory/Tasting/Chewing*

- o Chewing gum
- o Crunchy foods
- o Sour foods
- o Chewing ice
- o Sucking a thick milkshake through a straw
- o Chewing on your straw
- o Yawning
- o Deep breathing
- o Biting into a lemon
- o Eating a lollipop
- o Drinking coffee/cocoa
- o Drinking herbal or regular tea
- o Drinking something carbonated
- o Listerine strips
- o Mints
- o Hot balls
- o Chewing carrot sticks
- o Spicy foods
- o Eating a popsicle
- o Blowing bubbles
- o Chocolate
- o Strong mints

Others: _____

Additional Questions:

What kind of music is calming to you? _____

What kind of music is alerting to you? _____

Do you prefer bright or dim lighting when feeling distressed? _____

Are there other things that are not listed that you think might help? If so, what?

_____

_____

After reviewing all of the activities you have checked off and listed, what are the top five things that are the most helpful when you are feeling distressed?

1. _____
2. _____
3. _____
4. _____
5. _____

Self-rating Tool: Using Sensory Interventions

Name: _____
Date, Time & Location: _____

Before use how did I feel?:

_____

0 1 2 3 4 5 6 7 8 9 10



Calm Crisis

After use how did I feel:

_____

0 1 2 3 4 5 6 7 8 9 10



Calm Crisis

What was used: _____

How it was used:

_____
_____

Reflections:

_____
_____

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Integrating Sensory and Trauma-Informed Interventions: A Massachusetts State Initiative, Part 1

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A great deal has been written about trauma, symptoms of trauma, and related clinical programs and treatment interventions, particularly over the past 2 decades. More recently, the biological impact of trauma on brain development, neurobiology, and the general physiological response has been the subject of neuroscientific research (van der Kolk, 2004, 2006). Although this research has grown, the exploration of treatments that directly address the neurophysiological disruptions of trauma are limited (Fisher, 2005; van der Kolk, 2004). Sensory-based interventions have been promoted as a promising approach to working with children and adults with trauma histories (Champagne & Stromberg, 2004; National Association of State Mental Health Program Directors [NASMHPD], 2009; Ogden & Minton, 2000). This article establishes the value and relevance of integrating sensory-based, trauma-informed interventions in the delivery of mental health services.

Acknowledging Trauma

Exposure to trauma is a significant factor in the lives of many people who enter the mental health system (NASMHPD, 2009). It is estimated up to 90% of persons with severe psychiatric disorders have experienced abuse involving violence and victimization in childhood, adulthood, or both (Felitti, Anda, & Nordenberg, 1998; Mueser et al., 2004; Rosenberg et al., 2001). Psychiatric manifestations related to trauma exposure include mood, anxiety, behavioral, identity, eating, and substance abuse disorders, many of which may be co-occurring (van der Kolk, 2001).

Posttraumatic stress disorder (PTSD) is the most clearly defined and understood trauma-related diagnosis to date (American Psychiatric Association [APA], 2000). Although there has been some improvement in the assessment of trauma, PTSD and co-occurring trauma-related disorders continue to be missed, misunderstood, and inadequately treated (Mueser, Rosenberg, Goodman, & Trumbetta, 2002; NASMHPD, 2009; Rosenberg et al., 2001). Even when PTSD is recognized, experts contend that the diagnosis is imprecise and inadequately captures the intricacies of trauma, particularly in children (Ford & Kidd, 1998), and advocate for the diagnosis that incorporates the developmental perspective—developmental trauma disorder (van der Kolk, 2005). Having proper diagnostic tools, assessments, and training to ensure the understanding of trauma prevalence and symptoms and correlation to sensory-based interventions is essential to identifying and providing client-centered services for this large segment of the mental health population (Carmen et al., 1996; NASMHPD, 2009).

The Impact of Trauma on the Body

Research has demonstrated that exposure to trauma can negatively affect the mind, body, and ability to develop healthy attachments (Hughes, 2004; Schore, 1994). Traumatic experience can usher in a cascade of sequelae that adversely affect normative functioning, socioemotional well-being, and experience of sensation (Kardiner, 1941; Saporta, 2003). The perception, effect, and response to trauma, however, are unique to each individual (NASMHPD, 2009; Olff, Langeland, & Gersons, 2005; Pine, 2003), which makes individualized interventions toward healing and recovery essential.

A recent meta-analysis indicated that PTSD compromises several neurological structures and functions (Karl et al., 2006). Specifically, PTSD adversely affects the hippocampus, which is involved in learning and memory, and multiple frontal-limbic system structures, which help regulate emotional responses to stress and fear (Karl et al., 2006). Furthermore, traumatic experience has an untoward impact on the hypothalamic-pituitary-adrenal axis, a major part of the neuroendocrine system that controls responses to stress and regulates many body processes (Bremner et al., 2003; Caffo, Forresi, & Lievers, 2005; Rasmusson & Friedman, 2002; Sala et al., 2004). Some studies suggest that traumatic exposure may be associated with other physiological abnormalities, illnesses, or deficits, including elevated thyroid hormone levels (Friedman, Wang, Jalowiec, McHugo, & McDonagh-Coyle, 2005), hypertension and heightened tachycardia rates in adulthood, respiratory abnormalities (Blechert, Michael, Grossman, Lajtman, & Wilhelm, 2007), and verbal memory deficits (Bremner, Vermetten, Afzal, & Vythilingam, 2004).

It is not surprising, therefore, that with cortical structural and functional compromise, the capacity to process and integrate sensory information and regulate emotional states is impaired (Ogden & Minton, 2000; van der Kolk, 2004). Consequently,

persons with trauma-related disorders experience a high degree of neurophysiological reactivity that significantly impedes processing and learning, demonstrating why talk therapies alone are insufficient (Ogden & Minton, 2000; van der Kolk, 2004). Hence, Luxenberg, Spinazzola, Hidalgo, Hunt, and van der Kolk (2001) recommended the following three phases of trauma treatment: (a) stabilization, (b) processing and grieving, and (c) transcendence. Sensory approaches may be used across these phases to foster safety, development, functional performance, and recovery.

Responding to Trauma

Trauma-informed care (TIC) addresses the relationship among environmental or subjective triggers, perception of danger, neurobiological activation that leads to a distressed neurophysiological state, and resulting functional and behavioral problems (Harris & Fallot, 2001; NASMHPD, 2009). From the understanding of extreme states as they relate to survival, defense mechanisms, and the stress response emerges a greater conceptual awareness of the impact of trauma on the ability to feel safe and functional. Thereby, TIC acknowledges the centrality of trauma and its profound impact on a person's perception of emotional and physical safety, medical status, sensations, behaviors, and relationships (NASMHPD, 2009). The goal of trauma-sensitive work is to help the individual restore a sense of personal control, safety, and stability through implementation of individualized strategies so that emotional distress is minimized, and a more calm, safe, and adaptive state attained (Champagne & Stromberg, 2004). In this way, the more dynamic and resilient state supports occupational engagement.

van der Kolk (1997) described a significant factor contributing to dysregulation as the experience of "overwhelming stimuli that give rise to the dissociated sensory experiences characteristic of PTSD" (p. 1). Further, he discussed the powerful reexperiencing of traumatic events and the body's reaction within a kind of timelessness, leaving the individual flooded with multi-sensory experiences as if the trauma were occurring in the present. These unwanted sounds, smells, bodily discomforts, nausea, intrusive memories, numbing, and feelings of frozenness or paralysis as well as the inability to manage states of over- or underarousal, however fragmented, are real and overwhelming. Thus, one's physical state often must be addressed before interventions targeting higher cortical processes related to cognitive appraisal and understanding occur (Fisher, 2006; Ogden & Minton, 2000; van der Kolk, 2001).

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Trauma Treatment

A number of trauma treatments and models exist. Some focal therapies, such as eye movement desensitization and reprocessing, hypnosis, and sensorimotor processing, address the body's reaction to trauma (Fisher, 2006; Lynn & Cardeña, 2007; Ogden & Minton, 2000). Traditional therapies for trauma tend to address the cognitive and emotional elements (Linehan, 1993; McCann & Pearlman, 1990; Najavits, 2006), but many do not fully address the somatically based effects. Instead, these therapies tend to be language dominant, focusing on the client's emotional feeling state. Therapies that rely on verbal processing may be insufficient in attending to the gestalt of the trauma effect and resulting attachment issues (Hughes, 2004; Ogden & Minton, 2000; van der Kolk, 2004). According to Wylie (2004), words alone "can't integrate the disorganized sensations and action patterns that form the core imprint of trauma" (p. 34). Few approaches consider "disorganized sensations" and incorporate the physical feeling state of the body into treatment. One promising and emerging practice area that transcends this fundamental limitation is sensory approaches.

Sensory Approaches

Sensory approaches can be used to target intense physical manifestations of traumatic sequellae and have been found helpful to persons with trauma histories, caregivers, and the general mental health population (Atchison, 2007; Champagne & Stromberg, 2004). Additionally, sensory approaches are being used to address attachment and other developmentally based issues faced by persons with trauma histories. These evaluation and treatment interventions offer a different therapeutic experience that goes beyond the realm of conventional trauma approaches (e.g., exposure interventions, cognitive restructuring, didactic psychoeducation, other talk-based therapies) and is an emerging evidence base from occupational therapy research (Moore & Henry, 2002; Smith, Press, Koenig, & Kinnealey, 2005). Thus, sensory approaches have become increasingly popular in general mental health practice largely because they provide experiential opportunities to help individuals recognize and regulate sensory experiences, identify sensory preferences, and begin to heal the mind through the physical sensations of the body (Champagne & Stromberg, 2004; Fisher, 2006; Ogden & Minton, 2000). In this way, individuals engage in "experiences that directly contradict the emotional helplessness and physical paralysis that accompany traumatic experiences" (van der Kolk, 2004, p. 336). Through the use of preparatory, purposeful, and occupation-based interventions, sensory approaches are used to foster feelings of safety and support development and engagement in meaningful life roles, routines, and activities.

Operationalizing Sensory Approaches

Operationalizing sensory approaches into the culture of care requires a mindful approach, including determining the purpose and intended goals of their use before implementation. In general mental health practice, sensory modulation–related interventions increasingly have been implemented. According to Miller, Reisman, McIntosh, and Simon (2001), sensory modulation is,

> The capacity to regulate and organize the degree, intensity and nature of responses to sensory input in a graded and adaptive manner. This allows the individual to achieve and maintain an optimal range of performance and to adapt to challenges in daily life. (p. 57)

Regardless of whether an individual has a specific type of sensory modulation dysfunction, sensory modulation–related interventions provide experiential opportunities that may be used collaboratively

to enhance occupational performance skills while targeting occupational performance barriers.

Guidelines exist to help operationalize sensory modulation interventions, such as *How Does Your Engine Run?* (Williams & Shellenberger, 1994) and *Sensory Modulation and Environment* (Champagne, 2008). Key components of sensory modulation programming are assessing, exploring sensory tendencies and preferences, creating sensory diets (individual and programmatic), using sensorimotor activities and modalities, modifying the physical environment, and educating caregivers. Sensory modulation programs can be used in isolation or in combination to enhance other TIC or mental health approaches (e.g., dialectical behavioral therapy, cognitive behavioral therapy, 12-step programs). The blending of sensory modulation and self-regulation concepts and the availability of implementation guidelines that take into account adaptations for context, age, cognition, sensory abilities, and other strengths and barriers is helpful when engaging in trauma-informed program development.

Massachusetts State Initiative

The national initiative to reduce the use of seclusion and restraint, coupled with the TIC and recovery movements, promotes the potential of sensory approaches and advocates for skilled, collaborative, and individualized use (NASMHPD, 2009). Many inpatient mental health programs across the state of Massachusetts use sensory approaches in an effort to provide a more nurturing, healing, and trauma-informed culture of care. Additionally, occupational therapists incorporate the use of sensory modulation interventions across a broad range of mental health service delivery areas (e.g., veterans' hospitals, the criminal justice system, school-based practice, outpatient clinics).

Since 2003, Massachusetts has contributed to NASMHPD's National Technical Assistance Center resources and received grant funding from the Substance Abuse and Mental Health Service Administration to actualize seclusion-and-restraint reduction initiatives. In 2006, the state Department of Mental Health passed a regulation requiring that all state-licensed facilities incorporate sensory approaches into care delivery. Recognizing the high prevalence of trauma and diversity of sensory processing needs, TIC and sensory modulation approaches have been strongly supported across Massachusetts's mental health care delivery systems. Part 2 of this article will outline the change process and examples of quality improvement outcomes related to the use of sensory approaches and other quality indicators. ■

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Integrating Sensory and Trauma-Informed Interventions: A Massachusetts State Initiative, Part 2

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The integration of sensory-based and trauma-informed interventions is occurring in mental health treatment settings throughout the country. Much of the effort is being fueled by a concerted national focus on reducing the use of restraint and seclusion (R/S) in hospitals; residential and correctional settings; and, more recently, public schools (LeBel, in press). Recognition of the extent of trauma within care settings and the traumatizing effects of R/S used in many of these programs has led to a specific emphasis on moving away from these practices by creating services that promote healing and wellness and give individuals the necessary supports and skills to promote self-awareness, self-regulation, occupational performance, and recovery (National Association of State Mental Health Program Directors [NASMHPD], 2003, 2009).

Historical Perspective

Successful R/S reduction efforts have occurred intermittently and in tandem with sensory interventions throughout the years in this country and others. In 1792, one of the earliest recorded efforts to humanize care and treatment in the United Kingdom was undertaken during the moral treatment movement. In 1796, Dr. William Tuke and his family opened The York Retreat, which adopted fundamental Quaker principles (LeBel, 2006; Quiroga, 1995) that led to treatment focused on kindness, trust, restoring self-esteem and control to the patients, and paying specific attention to patients' physical comforts. Unlike public asylums of the time, physical punishment was prohibited at the York Retreat and manacles and chains were not used. In 1839, Dr. John Conolly eliminated mechanical restraint use at the Hanwell Insane Asylum in 4 months time. Dr. Conolly achieved this remarkable culture and practice change by emphasizing the importance of individualized treatment, exercise, spirituality, physical comforts, good food, bathing regularly, environmental cleanliness, and occupation (Conolly, 1856/1973; LeBel, 2006).

Almost 100 years later in the United States, Boston psychiatrist Dr. Vernon Briggs adopted moral treatment and nonrestraint approaches and introduced Massachusetts's first legislation to greatly restrict R/S use (LeBel, 2008). He considered occupational therapy to be essential to good care and treatment.

Background

Currently, many states and facilities are focused on reducing the use of R/S largely because of the Substance Abuse and Mental Health Service Administration's (SAMHSA's) "A Call to Action," a national initiative to eliminate the use of these procedures in mental health settings (SAMHSA, 2003). SAMHSA made this effort a priority in 2003 after *The Hartford Courant's* scathing exposé on R/S-related deaths within treatment settings (Weiss, Altimari, Blint, & Megan, 1998). Millions of dollars were appropriated to support the development of resources, tools, curricula, and grant programs to advance practice and prevent the use of these violent procedures. One particularly helpful SAMHSA-funded resource is the curriculum on Six Core Strategies for Reducing Seclusion and Restraint Use© (NASMHPD, 2003). This curriculum has been taught to more than 4,000 mental health leaders representing 48 state and territory delegations and more than 7 countries. The six core strategies include leadership, the use of data to inform practice, workforce development, the use of R/S reduction tools, consumer roles, and debriefing techniques (NASMHPD, 2003). Thus, part of the core strategies identified in the NASMHPD curriculum is the R/S Prevention Tools module, which includes the collaborative development and implementation of both individualized crisis prevention and deescalation planning and sensory approaches (Champagne & Stromberg, 2004; NASMHPD, 2003, 2009).

As a result of this national training, sensory approaches are now emerging in mental health facilities throughout the country. As mentioned in Part 1 of this article (LeBel, Champagne, Stromberg, & Coyle, 2010), the heightened awareness of sensory processing patterns, correlations to symptoms of mental illness and trauma, and partnering with the national R/S initiative have significantly enhanced the role of occupational therapy practitioners. Sensory modulation programming is becoming increasingly used by consumers and trained interdisciplinary staff as an essential platform to promote safety and recovery from mental illness (Champagne, 2008; Champagne & Stromberg, 2004). Key components of sensory modulation programming are assessing, exploring sensory tendencies and preferences, creating sensory diets (individual and programmatic), using sensorimotor activities and modalities, modifying the physical environment, and educating caregivers (Champagne, 2006, 2008; Champagne & Stromberg, 2004; LeBel et al., 2010). Thus, sensory modulation approaches are becoming integrated into the

following collaborative processes: initial evaluation, intervention planning and implementation (individual and programmatic), crisis prevention and deescalation, policy and procedure development, and environmental enhancements.

The inclusion of the Prevention Tools module into the Six Core Strategies curriculum emanates largely from the Massachusetts R/S reduction initiative. Before SAMHSA's focus on this issue, Massachusetts was working on reducing and preventing their use statewide in all child- and adolescent-serving psychiatric inpatient and intensive residential treatment programs (LeBel, 2008; Massachusetts Department of Mental Health [MA DMH], 2010). Key to the state's work was the infusion of sensory approaches informed by occupational therapy and the allied health disciplines of nursing, recreational therapy, art therapy, and music therapy (Champagne & Stromberg, 2004). The sensory processing perspective was brought to the forefront when NASMHPD convened an experts meeting in 2003 to identify the key elements successful in R/S reduction efforts. MA DMH leaders were invited to participate, brought this knowledge and experience to the table, and helped to create the Six Core Strategies curriculum. The Massachusetts team took the lead on developing the Prevention Tools module, which is the most highly rated module in the 2-day core strategy training and consistently considered the most pragmatic and useful. Moreover, it is the strategy that most participants plan to implement first when they begin their own R/S prevention effort.

Within-state experts Tina Champagne, MEd, OTR/L, CCAP, and Jean MacLachlan, MS, OTR/L, were instrumental in statewide teaching, supporting curriculum development, and helping to create sensory-based crisis planning tools. The state also contracted Champagne and Karen Moore, OTR/L, in 2006 to provide a statewide training for occupational therapy and allied health professionals to help spearhead a sensory modulation train-the-trainer initiative (Champagne, 2010). To date, many occupational therapists are taking a leadership role in the direct delivery of sensory approaches as part of the occupational therapy services offered to mental health consumers as well as serving as consultants, advocates, and educators.

Massachusetts's focus on sensory approaches to R/S reduction and prevention extends beyond the contribution to the national curriculum developed by NASMHPD. The state initiative has incrementally expanded and intentionally imbedded this important framework into the daily practice of mental health facilities, initially focusing on the child and adolescent programs but later expanding in 2004 to all adult-serving hospitals with the support of one of SAMHSA's state incentive grants to develop alternatives to these procedures (NASMHPD, 2009). Most recently, the Massachusetts state initiative expanded even further to include an interagency initiative among the Departments of Mental Health, Children and Families, Youth Services, Early Education and Care, and Early Secondary Education and is applicable to all child and adolescent residential programs, residential schools, and public schools (LeBel, 2009).

Table 1. General Timeline: Massachusetts's Sensory Approach Development

Timeline of Sensory Approach Development Task	Year
State researches R/S issue and prevention strategies	1990–2000
State formally begins R/S prevention initiative	2001
Statewide training: Sensory 101	2002–present
Sensory rooms in state hospitals implemented	1999–present
Sensory-based crisis planning tool developed	2003–2004
Published sensory approaches to prevent R/S	2004–present
First statewide survey of sensory approaches	2005
Sensory approaches included in R/S regulations	2006
Sensory approaches included in MA DMH R/S policy	2007
Published resource guide with sensory chapters	2007 and 2008
Second statewide survey of sensory approaches	2008
Statewide training: Sensory Skills 101	2009
Sensory skills curriculum development	2010

Since inception of the statewide initiative, Massachusetts has reduced the use of R/S more than 87% in child and adolescent inpatient programs and approximately 60% in adult state hospitals (NASMHPD, 2009). Some programs have ceased using R/S, most have reduced their use, and many have greatly decreased reliance on these procedures. Because the interagency effort was just initiated in December 2009, baseline data regarding R/S use in residential and public school settings are currently under study.

Advancement of the initiative would not have been possible without a measured approach to implementing R/S reduction with sensory-based alternatives. Key tasks that have advanced the effort are identified in Table 1. After broad-based exposure training at the beginning of the initiative, resources were developed to support new learning and practice, such as a pictorial crisis prevention planning tool for youth that helps them to recognize (a) what upsets them, (b) how stress feels in their body, and (c) what sensory-based activities help them to calm down. This tool since has been modified and adopted by programs throughout the country to include child, adolescent, and adult versions (MA DMH, 2010).

Other efforts to support the development of sensory-based practices included statewide surveys of inpatient and intensive residential treatment providers to assess the extent of sensory intervention interest, implementation, and outcomes. These voluntary surveys were conducted in 2005 and 2008 and asked respondents a number of questions in the following general categories: (a) what was implemented, (b) what was the outcome, and (c) whether there was an interest or intent to implement additional sensory approaches. Of the 39 programs that responded to the initial survey in 2005, 69% indicated that they were using sensory approaches, 21% were not, and 10% were being developed. Fifty percent of the responding programs had staff training on sensory-based techniques, and 90% reported that they had access to a full-time, part-time, or consulting occupational therapist.

Sensory interventions were reported to be most commonly used for calming, self-soothing, and deescalation purposes. Implementation of these approaches ranged from individual client skill instruction, group programming, and inclusion in individual treatment plans and crisis prevention plans in which sensory

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strategies were linked to specifically identified triggers. Some of the responding programs include sensory assessments and the development of sensory interventions as part of their general evaluation process.

Responses from this initial survey indicated that many programs found sensory interventions to be beneficial to consumers who experience anxiety, depression, and dementia. Most respondents, however, indicated that sensory approaches were particularly helpful to individuals with histories of trauma, posttraumatic stress disorder, and self-injurious behavior. Initially, specific strategies for those with trauma histories were (a) ice applied to the wrists, (b) breathing techniques, and (c) weighted blankets and weighted vests. One unit dedicated to the treatment of persons with dissociative disorders identified the benefits of using frozen oranges, which are alerting and elicit a response from multiple senses (i.e., cold temperature; strong smell; refreshing citrus flavor; hard, yet pliable tactile quality).

With regard to whether sensory interventions are integrated into crisis prevention plans, 74% of the respondents answered affirmatively. The most common interventions were listening to music; wrapping in a blanket; using ice on hands and wrists; exercising or engaging in other movement; taking hot and cold showers; immersing hands in cold water; and hugging, punching, and squeezing a pillow.

Benefits reported from the use of sensory interventions included decreases in R/S use (36%), self-destructive behavior (31%), physical assaults (21%), and property damage (15%). Respondents described other benefits as follows: "Patients and staff feel more empowered in having increased options to help people in distress"; "increased awareness and effort of staff to access patient needs and [provide] more proactive treatment"; and "clear measured decrease in levels of distress...including depression, anxiety, agitation, anger, and confusion."

The second statewide survey in 2008 used a similar questionnaire to the initial survey instrument of 2005. This survey found further adoption of sensory approaches in inpatient and residential programs. All respondents (100%) indicated that they had (a) bought sensory items; (b) created new sensory interventions since the previous survey; (c) created a sensory or comfort room; (d) reduced their use of R/S; and (e) engaged consumers in actively using the sensory interventions in the treatment program. Moreover, all respondents indicated that they were teaching new staff at the time of hire about the importance of sensory approaches and teaching consumer-specific interventions during the course of their care. Now, all of the child and adolescent inpatient and intensive residential treatment programs in the state have sensory rooms and use a range of these interventions. Most of the adult inpatient programs have developed sensory or comfort rooms and sensory carts and currently are implementing a host of different sensory-based interventions.

Since the state initiative began, new regulations to prevent the use of R/S and requirements if they are used were promulgated (Commonwealth of Massachusetts [COM], 2006). These state regulations specifically call for trauma assessments to be conducted with every person admitted to a psychiatric facility, regardless of age, and the development of an individual crisis plan to support the consumer, respond to his or her unique needs, and incorporate sensory interventions into the plan of care. In addition, every facility must have a plan to reduce its use of R/S *and include sensory interventions as part of their reduction plan.* Specifically, every psychiatric facility must "develop and use sensory interventions and therapies" (COM, 2006, 104 CMR 27.12.1(e)). Moreover, facilities must consider their environment of care and when R/S occurs, to make it as "conducive as possible to facilitating early release" (COM, 2006, 104 CMR 27.12.5(c).4.), with heightened attention paid to collaboratively providing sensory-supportive interventions. These regulations, in addition to a new MA DMH policy on R/S use, mandate trauma-informed, individualized, sensory-based treatment and crisis plans (COM, 2006). In addition, a resource guide, numerous published articles, tools, and ongoing trainings on sensory processing and specific sensory modalities and how they are used in different settings continue to inform and advance the statewide effort (Champagne, 2008; Champagne & Stromberg, 2004; MA DMH, 2010). Many of these tools are available on the MA DMH Web site (MA DMH, 2010).

Conclusion

The Massachusetts R/S prevention initiative is one example of the work being done around the country and internationally to change traditional cultures of care and build an evidence base. Specific attention to and infusion of sensory approaches in tandem with occupational therapy expertise have been invaluable to the ongoing evolution of this effort, and measurable, positive benefits have been realized. According to LeBel and Goldstein (2005), additional outcomes include a comparison between fiscal years 2000 and 2003, where a Massachusetts state adolescent inpatient service's aggregate data revealed (a) a 91% decrease in the use of restraints from 3,991 episodes to 373, (b) a 92% cost reduction ($1,446,740), and (c) higher Adolescent Global Assessment of Functioning scores due to R/S reduction. For the MA DMH long-term-care facilities, given the history of the rate of increased R/S events before 1999, an estimated 34,000 restraints were avoided through 2008, with an estimated savings of more than $10 million in redirected staff time and resources. Furthermore, a significant decrease in inpatient lengths of stay, staff sick time, and staff and consumer injuries and a 99% reduction in workers' compensation claims have been reported (LeBel & Goldstein, 2005). Thus, Massachusetts has dramatically reduced its reliance on R/S procedures and replaced them with pragmatic, client-centered, sensory alternatives that support safety, health, wellness, and recovery. ■

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