

Arousal Levels and Sensory Diets

Our sensory systems affect our attention and alertness by cueing us to attend to new or important stimuli and by filtering out non-essential information. We can learn to be aware of and modify our **“arousal states.”** When the arousal level is too high (and we are anxious or overly active), we may be overwhelmed by sensory input, and need to be calmed down or helped to be less reactive. The arousal level may also be too low (and we appear tired or lethargic). At this time, we may require assistance to **“wake ourselves up.”**

The idea of a **sensory diet** is to figure out what works for each person and to incorporate it into home and school life. Schedule appropriate sensory activities into each day to be better able to deal with stressful situations knowing that necessary sensory experiences are there as a regular routine just the same as mealtimes.

There are five ways to change arousal levels:

Put something in our mouth.

Chew, suck or bite items, which may be sour, spicy, or very chewy. Children as well as adults tend to use oral activities to assist in attention and task completion. It is often helpful to think of professional athletes. Baseball players, for instance, often need to chew on something while in the field or at bat, and basketball players stick out their tongues while completing a foul shot. Many adults sip on coffee, suck on candy to assist them with task completion. Oral motor activities can significantly improve “visual-motor” abilities. It is beneficial to take this need into account, and allow a “socially acceptable” outlet for it. Sucking on hard candy, chewing on rubber tubing “chewy” or sipping on a water bottle may work in class. Snacks that are chewy or provide intense sensory input, such as tart lemonade may prove useful as well. These are all generally calming, though some intense flavors may stimulate us to a state of calm alertness.

Movement

It will be very beneficial to incorporate as much movement into routines as possible. If you see that someone having a hard time attending or sitting up, it may be a sign that movement is needed to help stimulate the nervous system. Movement stimulates the part of the brain that increases muscle tone.

- Incorporate alerting activities at the start of the day or to increase attention. Calisthenics, movement to music, running, jumping or marching in place are all good ideas. Errands and chores with heavy work are beneficial.
- Activities such as **horseback riding, swimming and drumming** involve a great deal

of movement and proprioceptive input.

- Slow or rhythmic movement, like rowing and walking, marching, swimming or jogging is calming. Add target activities whenever possible to improve eye tracking, such as throwing balls or beanbags at targets or hitting suspended balls. Tasks such as counting or “match to same” can be incorporated into games.
- Sitting on an air cushion like the “Disco Sit” provides subtle movement that improves muscle tone and attention.

Touch and Deep Pressure Activities

Deep pressure into muscles and joints provided by falling, jumping and “crashing” tends to calm and organize our bodies, much the same way as a massage does, while light touch tends to increase our alertness. Allow breaks that incorporate deep pressure into daily activities.

- **Wearing apparel, such as heavy boots, a backpack, tights or long underwear or a tight baseball cap will also provide deep pressure, and work well for some people. Weighted vests or blankets or wrist or ankle weights can be very helpful in reducing sensory defensiveness. They can be work in the classroom, gym activities, or during “down time.”** Our bodies acclimate to them after about 20 minutes, so wear them for about 20 minutes, then allow 30 minutes “time off.”
- Pushing, pulling, or carrying heavy objects, such as some books will also provide deep pressure.
- Mattresses, sofa pillows, and old futons are great resources. Climb on them, hide under them, jump and “crash” into them, or jump from one to another.
- Pulling on ropes or playing with exercise putty are two ways to provide deep pressure into the hands. Tug of war with bike inner tubes or rope is great!
- Pillow fights can really work to calm kids down when they are getting ready to lose control.
- “Crash mats” are a nice addition to a therapeutic space. They are 6 by 8-foot pillows stuffed with pieces of foam; clients often love to jump onto or hide under them.
- **Exercise putty or power putty is helpful for deep pressure into the hands.**

Look

Visual stimulation can increase or reduce arousal level. For those who tend to have low energy, bright colors can help to increase their arousal level. Use calming blues and greens or turn down the lights as appropriate.

- Television and computer are especially excitatory. Try to limit or avoid it, especially for extended periods or before bedtime.
- Turning down the lights (which dims colors and helps to reduce some visual input) may improve attention at times. Fluorescent lighting often makes attending even more difficult for sensitive people. Consider use of floor lamps or full spectrum lighting.
- **Using colored overlays for reading materials can help improve attention.**
- Hand signals can be excellent means of communicating, reducing the overall noise volume in the room. Certain movements can mean quiet down; others can be used when it seems to be a good time to make use of an individual sensory strategy.

Listen

Calming background music (such as Mozart, Vivaldi or Brahms tapes) is often helpful. Many studies have indicated that people perform better academically with classical music playing in the background. Some teachers have a listening center set-up with earphones and cassette tapes. This accommodates those who prefer music and those who do not.

Many studies have documented the powerful effects of music.

The auditory nerve connects with all the muscles in the body via the brainstem. In this way, muscle tone, balance, and flexibility can be affected by music. Don Campbell, in *The Mozart Effect*, lists some general results from listening to music, keeping in mind that the effect will vary from person to person based on their diet, posture, surroundings, and physical state.

- Slower Baroque music (Bach, Handel, Vivaldi, and Corelli) provides the listener with a sense of order, predictability and safety. It is useful for situations such as work or study.
- Gregorian Chant is useful for relaxation and quiet reflection or study.
- Mozart and Haydn's classical music is excellent for improving concentration, visual-

spatial awareness and memory. Higher frequency music (violins, flutes and higher notes) gives us information about spatial location, and is helpful for concentration.

- In general, lower frequency sounds (bass music, thunder, a herd of buffaloes) encourages our bodies to move.

Behavior Strategies

People whose sensory systems are not functioning well often have behavior problems due to overreacting to touch, seeking out touch, or frustration and anxiety caused by uncertainty with where they are in space. Many behaviors need to be dealt with using behavioral as well as sensory strategies.

- Use a quiet area as a place to calm down when you see a potential loss of control. This is not an appropriate place for a time-out following a loss of control. Learn to identify behaviors that precede a loss of control. These may be as subtle as a twitch, turning away, or a noise. Explain what you have noticed, and have a mutual plan as to “what we need to do now.” Children and adults will learn to calm themselves, either by changing the environment or activity.
- Understand that the “state” of each of our bodies is variable from day to day. Schedules may need to be shifted based on how one is responding each day, incorporate more deep pressure and movement on more challenging days.
- Be aware of environments where disruptions tend to occur. If lunch is a constant problem, a crowded, noisy cafeteria may be over-stimulating; perhaps the person could go to lunch a little earlier or later than the others could. Arguments in line can be avoided by placing a person who is oversensitive to light touch at the back or front of the line. Some people put small squares on the floor to allow each person enough space in line.
- Chart the behavior during different times of the day. Then try to analyze the information, especially noting any consistencies in performance. An individual may always have difficulty in the lunchroom or after a bus ride; they may do particularly well (or poorly) after gym or recess. Try to build in the activities that work, and build deep pressure or otherwise modify those activities that do not. Free time may be especially hard because it is unstructured; having planned activities that can be completed independently may help.
- Try to be aware of times or situations which tend to be more difficult. They may contain a sensory experience that makes it difficult for the person. For example, some people need a quiet time to regroup immediately after coming home. The transition may be hard for them—it is amazing how much more pleasant they can be after a few minutes by themselves, but they may initially need help finding out

what works for them. When at all possible, try to reinforce what you have found that works, so that they can start to incorporate the concepts by themselves. For example you can say, “When you start to get out of control, you need some time to yourself. I will help you by taking you to a quiet place. Next time, try to take a break before you lose control.”

- When considering behavioral programs, think about replacing problem behaviors with others that may fit the same sensory need, rather than attempting to eliminate behaviors. It is possible, using many of the “sensory diet” strategies listed below, to reduce or even eliminate many behaviors in the longer term, but for the short-term, think replacement.

Strategies for Transitions

Transition times are often very difficult for those with sensory-motor problems. Try to reduce the number of transitions they must make (stay in their own classroom rather than changing for lunch, for example). External structure may assist with organization, as well as help them feel organized and “together” internally.

- Try to establish a routine and realize it may take time to adjust to changes. Allow as much time as necessary to complete tasks without disruption.
- Having a daily schedule written out or illustrated with pictures is helpful and informs the person what is to happen next. Inform those who have difficulty with transitions of changes in advance if possible.
- Try to incorporate some deep pressure or movement strategies into transitional times in as subtle a way as possible (such as having the whole class do a brief song incorporating clapping or stamping prior to leaving for library).
- **Another way to build in some “heavy work” into transition times is carrying books for the teacher, marching around the class one time after recess, or pushing their chairs back to their desks in preparation for changing classes.**
- When possible, schedule more difficult activities after periods of physical exertion (recess or gym).
- A weekly or monthly calendar with activities written or illustrated with pictures works well for some.
- Role-play or explain new or challenging situations using social stories.
- Consider having a tangible item, such as a koosh ball, to hold during transitions.

Motor Planning

In order to effectively plan and carry out new activities, we need to be receiving accurate information from our body. Any difficulties in processing sensations from the environment (such as over- or under-sensitivity to touch or movement) or from the person's body (awareness of location of their body and the speed body parts are moving) will affect **motor planning**.

Following directions is often a challenge for a variety of reasons including auditory processing and motor planning difficulties. If a person appears to have difficulty planning and carrying out movements, experiment with strategies.

- Problems with body awareness can make it hard to determine the appropriate amount of pressure to use with activities. It is often helpful to improve muscle and joint awareness before beginning gym activities by giving deep pressure to the body. This can be provided by "rubbing down" arms and legs, clapping, stamping, and/or jumping prior to an activity. Morning stretches can be helpful as well.
- Give specific and concrete explanations about his performance, and very positive reinforcement, with concrete examples of what he did correctly. Be aware of voice level; loud praise is actually irritating for some.
- Before teaching an activity, analyze it carefully to ensure success. Many people are wary of attempting challenging tasks due to repeated experiences with failure.
- Break it down into its component parts.
- Explain the general approach.
- Give visual cues and strategies for successful performance.
- Provide a method for assessing his performance.

Oral Motor Recommendations

There are many techniques for oral stimulation, most of which incorporate massage, deep pressure, light touch and vibration. Be aware that applying any oral motor technique can cause individuals to over respond because of sensitivity around the mouth (just like going to the dentist can be uncomfortable for some people).

- Apply deep pressure, using either thumb or two long fingers, beginning at the jaw (near the ear), and bringing down to the chin. Repeat about five times.

- Massage and vibration can help to normalize the ability to registered tactile input. Using a small, square piece of thin rubber, massage the gums using circular movements.
- Using both thumbs, massage the muscles that form a circle around the outside of the lips.
- Have vibrating toys available to apply to the face. Try a “z-vibe” (a battery-operated vibrating device) or other small vibrating toys. Kazoos and harmonicas also provide some vibration to the mouth.
- “Scissor” your index and middle fingers, with one inside the cheek and one outside, and apply pressure while moving your fingers out of the mouth with a jerking motion. Do this to the top, middle and bottom of the cheek, angling toward the end of the mouth.
- Have food or toys such as bagels, washcloths, licorice, carrots available for biting. Gently tug on it (playing a sort of “tug or war” game) to reduce sensory defensiveness in the mouth, improve registration of the position and movement of the jaws, and encourage the development of stronger jaw muscles. Chewing on a rubber tubing “chewy” (a 6-inch piece of therapy tubing with a knot tied in it) is another means of providing deep pressure into our jaw.
- Improve the strength in and around the mouth by using a variety of straws, aquarium or therapy tubing to suck up liquids.
- Try a variety of flavors to “wake up” the mouth. Many people enjoy spicy (hot balls or Hot Tamales) or tart (lemonade, grapefruit or cranberry juice or popsicles as well as sour candies). Provide containers at the table with herbs and spices such as cinnamon, oregano, catsup or Tabasco sauce.
- Icing, using popsicles or ice chips, can be very helpful in both improving sensory registration and reducing sensory defensiveness.
- Play games with exaggerated facial expressions, especially those that require puckering and relaxing of the lips.
- Sipping from large sports bottles throughout the day is an activity allowable in most facilities.

Resources for Equipment

- Move'N'Sit cushion are available from *PDP Products* at 612-439-8865, *M.O.R.E.; Integrating the Mouth with Sensory and Postural Functions*, by Oetter, Richter, and Rick is one of many helpful resource books available through this catalog. Other sources for this type of materials:
 - Pocket Full of Therapy (800) 736-8124
 - Therapro, Inc. (800) 257-5376. Fax (508) 875-2062
 - OT Ideas (201) 895-3622

The best selection of suspended equipment and sensory toys is available from Southpaw at (800) 228-1698.

Therapy balls, theraband, and positioning devices can be obtained from:

Best Priced Products (800) 824-2939

K & L Resources, Inc. (703) 455-1503

Equipment Shop (781) 275-7681

Abilitations (800) 850-8602

- *Mealtimes* is a good catalog for oral-motor treatment (804) 361-2285. It includes toys and books, as well as video and audiotapes.

Resources for Information

- Sensory Integration International (310) 320-9986 is a resource for many books and handouts about sensory integration. Many of the same books can also be ordered through Therapro (800) 257-5376. *A Parent's Guide to Understanding Sensory Integration* is a booklet helpful for an initial introduction to sensory integration. Sensory Integration International (SSI) also publishes a quarterly newsletter with current information about theory, research and practice. It also includes a "Parent's Page" section.

The Out of Sync Child by Carol Kranowitz is the most thorough and up-to-date book available for parents and teachers about sensory integration. It has many ideas for parents and is very layperson-friendly.

- *Sensibilities: Understanding Sensory Integration* by Maryann Trott is the best brief description of sensory integration and activities that I have found. It is a 70-page booklet, and is available from Therapy Skill Builders at (800) 211-8378.
- The following references for Therapeutic Listening are available from Vital Sounds.

They can be reached at phone (608) 831-6673 or fax (608) 231-3946.

- *The Ear and Language* by Alfred Tomatis
 - *Sound Therapy Book* by Ingo Steinbach
 - *When Listening Comes Alive* by Paul Madaule
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- Other references for therapeutic listening available through local book stores include:
 - Bernard, Guy. 1993. *Hearing Equals Behavior*, New Canaan, Ct: Keats
 - Stehli, Annabel. 1991. *The Sound of a Miracle*. Avon Books. New York, New York.
 - Campbell, Don. 1997. *The Mozart Effect*. Avon Books, New York, New York