CONTINUING EDUCATION
for Occupational Therapists

EMPOWERING CHILDREN WITH SENSORY MODULATION DISORDER: The "A SECRET" Framework

PDH Academy Course #OT-1701 | 2 CE HOURS

This course is offered for 0.2 CEUs (Intermediate level; Category 1 - Domain of OT: Activity Demands; Category 2 - Occupational Therapy Process: Intervention).

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Course Abstract

This evidence-based course provides occupational therapists with a framework for intervention for children with Sensory Modulation Disorder: the A SECRET framework.

Target audience: Occupational Therapists, Occupational Therapy Assistants

NOTE: Links provided within the course material are for informational purposes only. No endorsement of processes or products is intended or implied.

Learning Objectives

By the end of this course, learners will be able to:

- ❑ Recall the rationale behind the development of A SECRET
- ❑ Differentiate between the seven elements of A SECRET, with attention to the evidence behind each
- ❑ Identify interventions that support each element of A SECRET
- ❑ Recognize how elements of A SECRET apply to specific case studies

Timed Topic Outline

I. Introduction (20 minutes)
II. Background (10 minutes)
III. The Seven Elements of A SECRET (60 minutes)
IV. The A SECRET Blueprint (5 minutes)
V. A SECRET Case Studies (15 minutes)
VI. References and Exam (10 minutes)

Delivery & Instructional Method

Distance Learning – Independent. Correspondence/internet text-based self-study, including a provider-graded multiple choice final exam. *To earn continuing education credit for this course, you must achieve a passing score of 80% on the final exam.*

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Course Author Bio and Disclosure

Doreit S. Bialer, OTD, MA, OTR, received BS and Advanced Masters degrees in Occupational Therapy from New York University and a Post-Professional Doctorate in Occupational Therapy from Rocky Mountain University in the area of Pediatric Science. Dr. Bialer holds certifications in Neurodevelopmental Therapy in both Pediatrics and Adults and in the Administrations and Interpretation of the Sensory Integration and Praxis Tests. She is also a certified Pilates Mat Instructor and holds a Personal Training Certification from Hofstra University Academy of Applied Personal Training Education (AAPTE).

Dr. Bialer is an experienced seminar leader, educational adjunct instructor, and lecturer, providing numerous clinical workshops across the country on the topics of Sensory Processing Disorder, School Based Therapy, and Therapeutic Pilates. She has presented at the National Symposiums for Sensory Processing Disorder and Autism, where she had the honor of being part of an established host of speakers including Dr. Temple Grandin and Dr. Lucy Jane Miller. She has taught both undergraduate and graduate students in occupational therapy programs at New York University, New York Institute of Technology, and at Touro College in New York; she has also been an independent provider and consultant to school districts and preschools, working as a clinician, director, and supervisor to many occupational therapists and certified occupational therapy assistants. She is the co-author, with Dr. Lucy Jane Miller, of *No Longer A SECRET; Unique Common-sense Strategies for Children with Sensory and Motor Challenges*, published by Sensory World, 2011 (Future Horizons). In addition, she is a private practitioner working in Locust Valley, New York, where her goal is to help children and families successfully function and participate in the home, school, and community.

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Introduction

Historically, the primary objective of occupational therapists working in elementary schools is to provide direct services to children – i.e., providing therapy interventions as needed for children referred for Occupational Therapy (AOTA, 2008). While this direct service remains the central goal, it has been augmented of late by therapists pursuing an additional objective: helping administrators, teachers, teachers' aides, and other school staff to better understand the occupational challenges students face, how occupational skills are diagnosed, what interventions strengthen these skills, and how the outcomes of these interventions are assessed. The occupational therapist's role – particularly within the school system – may now incorporate not just direct service, but the role of a consultant and professional development provider.

Expanding the OT's role in this manner avails school staff of the diagnostic tools, intervention strategies, and outcome assessments used in modern-day occupational therapy, in accordance with at least two elements in AOTA's Centennial Vision: "demonstrating and articulating our value to individuals, organizations, and communities" (specifically "meeting societal needs for health and well-being") and "linking education, research, and practice" (AOTA, 2007; p. 614). *The Occupational Therapy Practice Framework: Domain and Practice* (OTPF-II), "articulates occupational therapy's contribution to promoting the health and participation of people, organizations, and populations through engagement in occupation" (AOTA, 2008; p. 625). *Empowering Children With Sensory Modulation Disorder: The "A SECRET" Framework* dovetails with how the OTPF-II outlines "the domain of occupational therapy" (AOTA, 2008; p. 628), as follows:

Component of OTPF-II	Application of OTPF-II Component in Course
Performance in Areas of Occupation	The course emphasizes *education*, one of the areas of occupation highlighted in the OTPF-II. Beyond the traditional educational role played by OTs (educating clients and their families), the course presses OTs into service as professional development providers for practicing teachers.
Performance Skills	By exploring techniques for helping young children pay attention in school, the course encompasses one of the performance skills set out in the OTPF-II: *communication/interaction skills*. This reflects the course's expansion of the traditional role of the OT, by focusing not on the communication/interaction skills of the individuals taking the course, but on the skills of the students these participants teach.
Performance Patterns	The course endeavors to help OTs and teachers encourage students to get in the habit of paying attention during the routinized activities of the school day (i.e., "circle time"). As such, the course makes contact with two performance patterns in the OTPF-II, *habits* and *routines*.
Context	The OTPF-II presents several contexts in which OT services are rendered, of which three appear to be applicable to the course: 1) *cultural*, in that the course attempts to help OTs and teachers transform the culture of the classroom based on expectations of increased attention focus; 2) *social*, in that the course provides OTs and teachers with techniques (e.g., movement activities) for making the classroom's social environment less distracting and more academically productive; and 3) *physical*, in that the course provides several environmental modifications (e.g., improved lighting) designed to help students maintain attention focus.
Activity Demands	Several of the activity demands described in the OTPF-II seem relevant to the course, including *objects used and their properties* (e.g., the "chair moves" highlighted in the course), *social demands* (e.g., helping students interact in the classroom more productively as a consequence of paying attention as needed), and *required actions* (e.g., helping students to recognize situations where they need to avoid distraction and focus their attention on the tasks at hand).
Client Factors	The OTPF-II summarizes several client factors including two *global mental functions* that seem relevant to the course. The first involves "consciousness functions" that explicitly include students' level of attentional focus, the topic of the course. The second involves "energy and drive functions" that include impulse control, a key element in the course.

This course provides a matrix for understanding the child's behavior in the school environment by considering not only those psychological factors intrinsic to the child, but also the classroom activities that place demands on the child and the context in which these activities are implemented.

This approach is in keeping with an occupation-based performance model, the *Ecological Model of Human Performance*, which holds that change and motivation occur when the person, tasks, and context align to facilitate optimal task performance (Dunn, 2006): "The Ecology of Human Performance serves as a framework for considering the effect of context.

Context is described as a lens from which persons view their world. The interrelationship of person and context determines which tasks fall within the person's performance range. The Ecology of Human Performance framework provides guidelines for encompassing context in occupational therapy theory, practice, and research: Am J Occup Ther. 1994 Jul;48(7):595-607. *The ecology of human performance: a framework for considering the effect of context*. Dunn W1, Brown C, McGuigan A. (1994.)

The information in this course provides OTs – and by extension, teachers and parents – with evidence-based solutions for facilitating students' level of participation and attention during challenging tasks, with the goal of improving on-task behaviors (Mahar et al., 2006). It focuses on using the "A SECRET" clinical framework (Miller, 2006) as a tool by which occupational therapists can enable teachers and parents to recognize the many factors that influence the child's ability to succeed at his/her "occupation" – a student within the classroom – while looking at performance skills, performance patterns, context, activity demands, and client factors.

The concept of A SECRET has been introduced previously (Miller, 2006), but is presented in more detail in this course. In short, it is a clinical reasoning treatment model that provides a blueprint to help teachers and parents plan and think about upcoming events that may be challenging for the child. The goal for the child is to have him/her participate, and feel successful, in daily activities. These activities can take place in a number of environments, including home, school, and in community and social situations.

A SECRET is a problem-solving approach that requires variation, creativity, and individuality, and can help everyone involved feel more "in control" during stressful and challenging situations. It is not a recipe – it is unique to each child and his/her challenges and struggles.

It incorporates seven elements, each one contributing to the well-being of the child: each of the letters in A SECRET stands for a method of coping with a child's challenging behaviors.

A is for Attention - What is the child's attention state, and how can it be used or altered?

S is for Sensation - What sensations are the child experiencing, and how do they support or challenge the child?

E is for Emotion Regulation - What emotional state is the child in, and what contributes to it?

C is for Culture (or Conditions) - What are the routines that impact the child? Where and when do they take place?

R is for Relationship - How do relationships help or hurt the child?

E is for Environment - What in the school environment might support the child's learning needs or create additional struggles for the child dependent on their sensory, motor, and cognitive abilities?

T is for Task - What is the child being asked to do?

Bialer and Miller (2012) *No Longer A SECRET,* Future Horizons

The A SECRET framework is quite different from sensory diets, which were popularized for many years by occupational therapists and described as a carefully designed, personalized activity plan that provides the sensory input a person needs to stay focused and organized throughout the day. Many therapists and teachers still inquire about the use of sensory diets or prescriptions for children in the classroom.

But given that children behave differently day-to-day based on their wiring, their environments, emotion regulation, attention, and so many other variables, how could a single sensory diet always meet their needs? These are just some of the many other variables that must be looked at and adapted in order for the child to have success.

I have had negative experiences in using sensory diets, primarily because the children involved are passive participants: though they have been provided with either tools or activities by therapists and/or teachers, many of the students lack an awareness of why specific items are being given or done to them.

An example that comes to mind is a child I worked with: Michael, a first grader, who had sensory and motor challenges. Michael became very disorganized after unstructured gross motor activities such as recess. In an attempt to help regulate his behavior, one of the occupational therapists at the school prescribed the use of a weighted vest for Michael. Every day at 1:00, after lunch and recess, the teacher assistant would put Michael's vest on him and place appropriately weighted bags inside it, while he would passively succumb to wearing the vest for the designated wear time. One day, passing by the classroom at 12:59, I saw Michael sitting at his desk prior to the vest being put on him. Michael was in an "optimum state of arousal:" alert, sitting upright, in a ready-to-work position, on task, etc. In other words, on this particular day, the weighted vest was not needed. However, as the sensory diet prescribed, the vest was put on Michael. After 20 minutes of wear time with the vest on, Michael had his head down on the desk and was in a very low state of arousal. That day, the weighted vest did not meet his emotional or sensory need at the time it was given to him, and he had no idea – could not advocate for himself – that he did not need to use the weighted vest because he already was in an attentive state.

This example perfectly encapsulates the problems with sensory diets: many good ideas provided by therapists

to teachers, and even to parents, may not be used correctly and may be contraindicated when emotion and arousal states are misunderstood. In some cases, as above, fabricated devices may be kept on for too long a period of time; in others, they may be given to other students who did not meet the specific criteria required to need the adaptive device; in still others, the tools may be used in the wrong context… and other variables that lead to unsuccessful outcomes and essentially nullify the benefits of each sensory tool.

And yet, many of the sensory tools that are used by occupational therapists to enhance attention have a fair amount of evidence-based research behind them, and have specific criteria and implications for their use: clinical studies support the use of specific sensory-based tools that can be used with specific populations to improve on-task behavior.

Educating parents, teachers, and clinicians about the protocol, benefits, indications, contraindications, and observations that need to be made when using specific tools is an integral part of using sensory tools with children. In addition, the children themselves should be active participants in their programs, and have a basic understanding of why certain tools are being provided. (Granted, this is not always possible when dealing with children who may have limited cognitive abilities and may require and benefit from a prescribed sensory approach.)

In occupational therapy, the process of determining what the next logical intervention strategy involves critical thinking and reasoning. But in lay terms, the term problem solving is more familiar. Training someone to solve problems based on the situation involves moving beyond a static list such as a sensory diet that you turn to whenever the child is struggling. Instead, you use the *principles* you've been taught to help the child move forward successfully, heightening their self esteem and willingness to participate in activities and tasks.

In response to this need, Dr. Miller developed the A SECRET acronym to help families step up when their children feel overloaded or are melting down. And using the elements of A SECRET, OTs can help parents and teachers determine what next steps should be considered.

Background

We will begin with some information on the reasoning that goes into A SECRET, and then look at each individual element of the model.

What is Sensory Processing?

Sensory processing is the ability to organize sensation from the internal (interoceptors, proprioceptors) and external (sensory receptors) environment, interpret the sensation, and make an appropriate adaptive response in order to meet the demands of the environment.

What is Sensory Modulation?

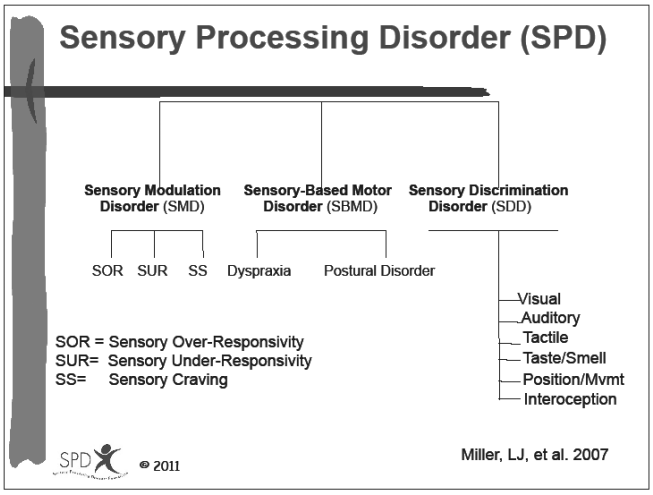
Sensory modulation refers to a complex process of receiving and perceiving sensory information and utilizing the information to produce "adaptive responses" – responses that are congruent to the specific demands of a situation. It is the automatic regulation that allows the right amount of sensory information to pass into our nervous system to enable us to survive and maintain an optimal level of alertness. When sensory modulation abilities are intact, the individual has the ability to regulate, organize and respond appropriately.

In typically-developing individuals, the nervous system has built-in filters that protect the brain from being bombarded by extraneous, irrelevant sensory input. But in the case of individuals with Sensory Modulation Disorder (SMD), the nervous system "wiring" is not intact. The filters may allow either too much or too little sensory information to pass through and overload the brain, sending erroneous warning and danger messages even to benign sensory input, creating painful, irritating and unpleasant responses affecting efficient levels of participation, inappropriate "fight or flight" responses, and increased levels of stress and cortisol in individuals.

In the presence of SMD, either too much or not enough sensory information passes up to the brain, and arousal states change in intensity. During stress and crisis, we need our arousal states to rise so we can react and respond; however, when a child is always in a high state of arousal, the brain becomes overloaded and the behaviors and responses are defensive and reactive. We often see this behavior in children who are hypersensitive to sound, for example: these children may hide under their desks when a school bell rings, or cover their ears when an announcement is made, or run and scream when in a noisy auditorium. They have difficulty modulating auditory information, and are reacting in a defensive, protective manner to what they perceive as a bombardment of adverse sensation. A child with SMD can manifest defensive behaviors in a number of the sensory systems including the tactile, vestibular (proprioceptive and interoceptors), olfactory, and gustatory senses. Depending on the specific sensory system that is hypersensitive, responses will vary from hiding under the desk, scratching away tactile input, screaming in pain, throwing up in the presence of certain foods and smells, and/or having stomach aches and changes in bowel and bladder function.

This state of over-arousal is frequently caused by poor sensory modulation: the child becomes incapacitated by trying to protect him or herself using fight or flight, withdrawal behaviors, or opposition to demands of the task.

SMD includes three subtypes, two of which we've already mentioned briefly: under-responsive and over-responsive. The third is known as sensory seeking (or sensory craving, SC).



The neurobiological mechanisms of SC are not well understood, or even well hypothesized. The child with SC appears out of control and is frequently described as obsessed, preoccupied, fixated, consumed, compulsive, uncontrollable, and/or compelled. It is as if the child is "addicted" to sensory input. There is a kind of desperate quality as the child runs to get vestibular stimulation, touches his friends in the face over and over, and smells non-food items (like doorknobs). Typically as the child receives more stimulation, he or she becomes more disorganized and distraught.

The Fuel Tank Analogy (Bialer & Miller, 2011)

To help visualize the concept of modulation, consider a fuel tank in a car: think of the sensory input that our bodies need to function as fuel for the car. The fuel flows into the fuel tank; sensory input enters the brain.

Some fuel tanks are larger and require more refined gasoline, as do some individuals who require more sensation to function well. Other cars do well with regular gasoline, as do individuals who can modulate sensation typically. Individuals with small "tanks," on the other hand, become "filled up" very quickly.

Each individual's nervous system needs different amounts of sensation to function well. In individuals with sensory under-responsivity, the gas tank is deep and requires an enormous quantity of gas in order to reach a full state: it may take more sensation to get under-responsive children to "wake up" and move. On the other hand, individuals with sensory over-responsitivity have small tanks that fill quickly: sensation causes them to reach an overload state, exhibiting discomfort and fear, or behaviors like tantrums and aggression, in situations that may seem perfectly normal and routine.

Part of the challenge, then, in working with children with sensory modulation disorder, is identifying how much and what type of sensation it takes to fill up their gas tanks and help their engines run efficiently, enabling them to attend and stay focused.

Frustrating and Challenging Tasks

It is important to remember that many children with modulation disorder find simple tasks difficult and challenging. Some examples of challenging tasks may include the following:

- Homework completion
- Transition time (in school or at home)
- Going grocery shopping
- Going to the mall
- Eating out in a restaurant
- Riding on a school bus
- Sitting through a class lesson

These common classroom and daily situations are particularly likely to result in loss of student attention (Marzano, 2007), behavior outbursts or withdrawal, and decreased willingness to participate on any level.

In my experience it is common to hear teachers discuss (and sometimes bemoan) the challenges they face when students fail to pay attention and stay focused during classroom activities. This concern is reflected in the literature in child development and early learning, which includes a considerable corpus of theory and research devoted to attention (e.g., DiCarlo et al., 2012; Dice & Schwanenflugel, 2012; Mahone & Schneider, 2012; Manz, Lehtinen, & Bracaliello, 2013; Musatti & Mayer, 2011). The general zeitgeist in this literature holds that children frequently demonstrate limited attention spans, which can be highly problematic for teachers, but well-designed educational interventions have promise to expand children's attentional focus and facilitate their learning. These techniques are seldom covered extensively in pre-service teacher-education programs, all too often leaving teachers with an insufficient base of knowledge and skills for improving students' attentional resources (Madsen & Cassidy, 2005). Professional development opportunities for educators centered on issues of attention are needed, and OTs who are well grounded in the A SECRET framework have the tools to fill that void.

The Seven Elements of A SECRET

A IS FOR ATTENTION

A Level III study by James, Miller, Schaaf, Nielson, & Schoen (2011) is one of many revealing that attentional states are highly correlated with learning outcomes – in fact, the capacity to pay attention is prerequisite to learning.

It is important to understand this element, as it may be a major deterrent and area of challenge for students: attention is the ability to remain focused on instruction or activity in the classroom. When students are not focused, they're not learning!

Our nervous system is built to automatically take in the right amount of sensory information from our environment. We have built in filters (sensory modulation) that protect the brain from being over bombarded by irrelevant sensory stimuli. The filters in the brain regulate the amount and intensity of the sensory information that the brain processes (Hebb, 1949).

Attentional problems stem from three equally-prevalent causes:

1) distraction (attention inappropriately shifted to other stimuli)
2) high emotional arousal (may be negative, as with anger, or positive, as with excitement)
3) low cortical arousal (bored or tired)

(Dunn 2000, Kimball 1999, Mulligan 2001)

Hebb (1949), one of the earliest theorists of states of arousal, presents scientific literature on performance of tasks and corresponding arousal states conducive to task completion. He states that medium arousal is optimal for performance, while too much or too little arousal hampers performance: low arousal (for instance sleepy and drowsy) leads to low performance, but if arousal levels are too high concentration deteriorates, resulting in confusion. Hebb also shows that varying states of arousal can be influenced by internal and external factors in the environment.

In a Level II study, Ruff & Capozzi (2003) examine the developmental trajectory of attention and distraction in the first four years of life. The study provides evidence that efforts to strengthen kindergarten children's attentional focus are developmentally appropriate. The study also demonstrates that visual stimuli are most distracting for the kindergarten children. Avoiding too many visual stimuli on the walls of the classroom is recommended. Visually stimulating charts are best positioned outside of the classroom.

In other words, introducing different sensory–based strategies, and adapting the environment, can alter arousal states.

It is difficult to remain in an optimum state of arousal, as the nervous system tries to adjust and modulate all incoming sensory stimuli. Over time arousal states vary. The issue of attention is rendered even more complex by the diversification of learning and processing styles. The biggest challenge for the classroom teacher is the varying degree to which sensation, emotion and attention affect the children in the classroom (Bialer & Miller, 2011). The purpose of using a variety of modalities is to help children remain in an optimum level of arousal, so they can attend, learn, and participate.

Interventions: Attention

The creation and design of the general education classroom environment can support the sensory intelligences of all learners.

To alter arousal states, environmental factors such as classroom lighting and kinesthetic movement (Carbone, 2001) need to be modified. The classroom teacher is an important factor in facilitating arousal states in the classroom. Simple actions as raising the voice level, dimming lights, facial and body gestures, playing music in the background, etc. will produce different arousal states for different children.

Stability Balls

Around the same time that fitness fans began using balance balls (also called exercise balls, stability balls or therapy balls) in their exercise regimes as a way to strengthen abdominal and back muscles, ball chairs were developed as a way to strengthen core muscles and improve posture while sitting. During the 1980s, some occupational therapists began recommending them to educators for classroom use, deeming them particularly helpful for children with special learning needs.

In 2003, a Level IV study by Schilling et. al. was published in the *American Journal of Occupational Therapy*, concluding that in students with ADHD who used therapy balls to sit on demonstrated improvements in seat behavior, legible word productivity and attention: in other words, students using ball chairs were able to sit still, focus, and write more words clearly.

The Mayo Clinic in Rochester seconded those findings in 2007 with a study on the benefits of a chairless classroom. In the Mayo study, which focused on improving learning and reducing obesity by making children more active, researchers found that the ability to move around more while sitting made the students more attentive.

A Level III study by Fedewa & Erwin (2011) provides further evidence for the effectiveness of the stability ball to enhance attention. The study attempted to determine the extent to which the use of stability balls as alternative seating improves on-task behavior in the classroom. The intervention increased participants' level of attention, decreased their level of hyperactivity, and increased their time-on-task behavior. The use of stability balls was beneficial in helping students self-regulate and remain on task, especially among students with the greatest attentional challenges.

Stability balls provide vestibular and proprioceptive sensory input, which facilitates the development of body scheme. This helps children appreciate their body in space, and thus develop personal space and respect for peers' boundaries.

Most classes only need one or two stability balls, as not all of the children need — or would benefit from — the sensory input provided by the ball. In a modification for carpet time, beach balls can be used for children who are restless and fidgety. The child's feet should be flat on the carpet to provide grounding and stability.

The beauty of this image is that it shows children who have a choice of what to sit on while they work in the classroom: many of the children opt to sit on the stability balls, while others choose to use traditional chairs or sit on the floor. In fact, you may notice that the same child who chooses a ball to sit on today, chooses a regular chair tomorrow. Choices are guided by the sensory needs and level of arousal the child is experiencing. Allowing children to make their own choices enhances self-regulation and sustained attention.

S IS FOR SENSATION

Providing meaningful sensation can be very orienting, and help the brain achieve an optimum arousal state.

The Level IV study conducted by Pfeiffer & Kinnealy, 2006, explored the relationship between sensory defensiveness and anxiety, as well as the impact of a sensory integration treatment protocol on normal adults. Fifteen adult subjects identified as having sensory defensiveness completed the Adult Sensory Questionnaire (ASQ), Adult Sensory Interview (ADULT-SI), and Beck Anxiety Inventory (BAI) at pre-test and post-test intervals to measure sensory defensiveness and anxiety. A treatment protocol was implemented which included providing insight into sensory defensiveness, regular and daily sensory input, and engagement in activities of choice providing primarily proprioceptive sensory input. Subjects engaged in an individualized self-treatment protocol for one month. Results indicated a significant correlation between anxiety and sensory defensiveness ($r = 0.62$, $p = 0.027$). The differences in pre-test and post-test mean scores of the Adult Sensory Interview ($p = 0.048$) and the Beck Anxiety Inventory ($p = 0.0453$) supported the use of a sensory treatment protocol to decrease sensory defensiveness and secondary anxiety.

Interventions: Sensation

Heavy Work

Heavy work is a term that refers to activities that provide deep pressure, vibration, and other kinds of deep proprioception to muscles and joints with slow high intensity input. Proprioception is a form of sensory input to muscles and joints that provide us with an awareness of where our bodies are in space. Children with proprioceptive difficulties may have trouble appropriately using force during activities that require graded muscle use. Motor planning and arousal regulation may be impacted by poor proprioceptive awareness. Per the study above, heavy work activities help produce states of overall calmness and organization. Examples of heavy work include carrying, lifting, pushing and squeezing; sweeping, mopping, shoveling and vacuuming are other great activities that incorporate heavy work.

When heavy work activities are provided with a natural, real context at school, the sensory inputs are more meaningful which help calm and organize the child, enabling better attention. It is important to remember that the type of heavy work, the timing of when to use a specific input, and the amount of time a child spends performing a heavy work activity needs to be taken into account.

Here, each child engages in specific movement patterns to enhance attention for classroom learning. The children are doing wall pushups, a heavy work activity that compresses muscles and joints in the body (note the posters on the wall, which are free from too much visual stimuli). The child in the chair has a theraband tied to the back of his chair and is taking a heavy work break.

During many classroom activities – including transitions, teacher instruction, carpet time (e.g., calendar, stories), free play time and unstructured physical activity (e.g. recess) – heavy work can take place, providing opportunity for regaining attention and producing optimum arousal states. In addition, daily heavy work routines can be assigned to the children in the class to provide an organizing purposeful activity. Erasing the blackboard and washing it down with a sponge is a wonderful heavy work activity and can be shared by several children in the class. On a more personal level, drinking out of a straw offers resistance to the mouth and oral motor musculature and is also considered heavy work: keeping a water bottle on the desk during instruction is a great way of having the children self regulate and stay focused in class (Kranowitz, 2005).

Weight

Use of weight helps the nervous system change levels of arousal, providing organization and calming (VanderBerg, 2001). Application of deep and maintained pressure facilitates an increase in favorable parasympathetic responses and relaxed muscle tone. Pressure stimulates the release of serotonin, producing a calming response in the nervous system. Weight or pressure reduces the debilitating effect of anxiety by reducing excessive arousal and increasing attention and awareness (Pfeiffer & Kinnealey, 2006).

Interestingly, many children who seek out opportunities to be hugged crave the deep and maintained pressure input. Weighted pillows, blankets, and toys can be used in the classroom to help calm children.

Joint Compression

Joint compression is a form of proprioception. It occurs when there is compression, push or weight bearing on a joint. It is very important for developing body awareness and body in space.

The Wilbarger Deep Pressure and Proprioceptive Technique (DPPT) was developed by Patricia Wilbarger, Med, OTR, FAOTA, an occupational therapist, a clinical psychologist, and a leading expert in sensory modulation disorders. Patricia and her daughter Julia Wilbarger use a prescriptive method of providing stimulation via a brush followed by joint compression to achieve a mind-brain-body state of organization. (Specific protocols for this technique may be found at http://www.sensory-processing-disorder.com/The_SPD_Companion-Wilbarger-Protocol.html)

A newer brushing protocol, called the Protective Response Regime (PRR) pressure touch strategy by Bonnie Hanshu, is "designed to provide deep pressure sensory input for calming and integrating influence to the brain.... When done correctly, the PRR (brushing/joint compression) should take 2-3 minutes and can be done in almost any location (http://www.developmental-delay.com/page.cfm/135)."

The following everyday examples of low cost, low-tech activities that incorporate joint compression can be incorporated into a classroom or at the home:

The Stabilizer

The Stabilizer is a low-tech piece of equipment that has been successfully used by a variety of professions to provide kinesthetic and proprioceptive input, encourage stability, and enhance postural control. When worn in a specified manner, it can also help stabilize the scapuli during fine motor activities. The child is free to engage in a variety of functional fine motor, play and self help tasks while wearing the Stabilizer, and it is appropriate for both early intervention and older children (for children beyond first grade the Stabilizer can be worn under clothing, on top of Under Armor tops, which will provide additional proprioceptive input throughout the day).

The Stabilizer gives deep touch pressure, which is organizing to most children: the sensation from the Stabilizer is similar to a person lightly pushing down on a child's shoulder, a strategy for comforting a child and gaining attention. It is comfortable, non-intrusive and provides structural supportive input through the shoulders and upper trunk. The back of the stabilizer encourages the stability by gently applying pressure on the scapuli to move them into an aligned position against the rib cage.

A Stabilizer can be easily fabricated by using an ace bandage to support the child's upper trunk. It can be placed under or over clothing and left on for as long as the child is able to sustain an upright posture; moving forward, as the child exhibits increased postural control and alignment, the wear time can be decreased.

To make a Stabilizer, place an ace bandage on the waist of the child as if you were placing an apron on them. Cross and place each side of the ace bandage on the front of the child's trunk weaving the bandage under his/her armpits, around the shoulders and toward the back. Pull the ace bandage over the scapuli crossing the ace again in the back.

Last, tuck the ace bandage under the waist band where you started and pull downward. Tie the ace bandage either in a bow or place it through a belt loop.

Children can easily learn how to use the Stabilizer and even put it on themselves.

Jacket vs. Vest

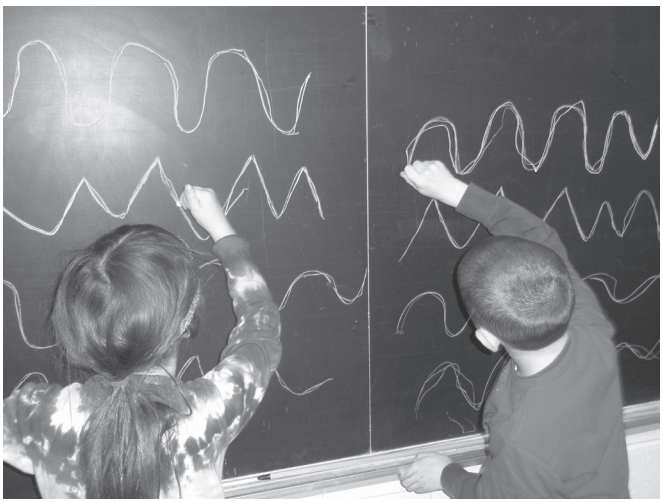
Using a jacket as a compression vest is an effective functional alternative that can easily be used in the classroom (Bialer & Miller, 2011).

The child in the photos is tying the sleeves of his jacket around his shoulders to provide calming pressure input. The back of the jacket is draped behind the chair. This modification has the properties of the weighted vest in that it provides pressure input.

Timing and Rhythmicity

Motor regulation activities that provide sensory input involving timing and rhythmicity produce higher levels of attention and learning (Schaffer, et al., 2001). The relationship between motor regulation and attentional functions suggests that technologies aimed at strengthening sequencing, timing, and rhythmicity have a role in improving attention and learning.

Depending on the activity that is requested of the children in the classroom, the beat of a metronome may enhance attention and produce a steady, more coordinated flow of movement. Using a metronome during writing, drawing and/or when introducing movement into the classroom has shown promise in increasing attention. Motor coordination also improves related to the reciprocity and timing the metronome inherently offers.



The metronome is used with the class during a drawing activity. The sensory input provides the children with rhythm and reciprocity required for focus and attention.

Functional Fidgets

"Functional fidget tools" are small objects that students manipulate during instruction or activity. They can be effective when used as a tool to help children attend and stay focused while learning (Bialer & Miller, 2011). Fidget tools keep restless fingers busy, bodies relaxed, and minds focused, are available at different shops and Web sites, and have been used by teachers and therapists to help children focus in the classroom.

A functional fidget tool has few sensory features so the child does not get as distracted when holding them. The child can finger the fidget without losing focus of their surrounding and remain attentive. Functional fidget tools are small and easily fit into the child's hand. They have few moving parts. Everyday items such as paper clips, pen tops, smooth little lava rocks, and other items can be used as functional fidgets. The perfect functional fidget varies - and some children will not want to use them.

Fidget tools can be provided when students are engaged in tasks requiring concentration, during structured classroom activities, during circle time, when introducing a new, unfamiliar academic topic, or when children need to organize and maintain an optimal level of arousal for effective learning.

Movement

A Mahar, Murphy, Rowe, Golden, Shields & Raedeke, 2006, Level I study demonstrates that physical activities and exercises have potential to increase students' on-task behavior. The study seeks to evaluate the effects of a classroom-based physical activity program on children's on-task behavior during class instruction. The observational protocol was used to assess students' on-task and off-task behavior (inter-rater reliability = 94%). Physical activity was effective for improving on-task behavior during classroom instruction. The experimental group produced an 8% improvement between the pre and post intervention that was statistically significant ($p < 0.017$) with a moderate effect size (partial eta = .60).

In other words, routinized, structured movement activities can help with attention and sensory challenges.

Maher et al, 2006 proposes a set of exercises called "energizers" that can help children be more energetic in the classroom (these exercises can be downloaded for free at www.ncpe4me/energizer.html). Maher's energizers include marching, clapping, jumping and balancing on either leg. Using a theraband as an added sensory input adds a muscle wake up and is considered part of the energizer program.

In this scenario, children are copying the moves of the classroom teacher.

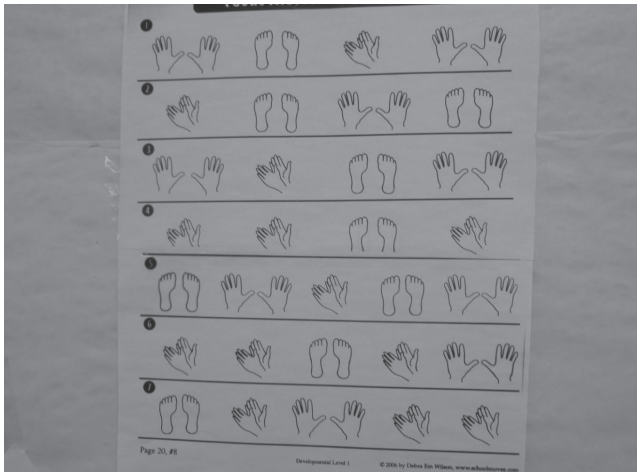
Games such as Simon Says are great ways to provide movement breaks and help children regain their attention states. Movement activities can also include other simple games like Head, Shoulders, Knees and Toes, and many others: Laurie Berkner (Laurie Berkner videos, We are the Dinosaurs, 2007) has a series of themed CDs and videos that can be found on YouTube and played in the classroom to provide the children with opportunities to move.

These ideas can be used at home as well as in the classroom.

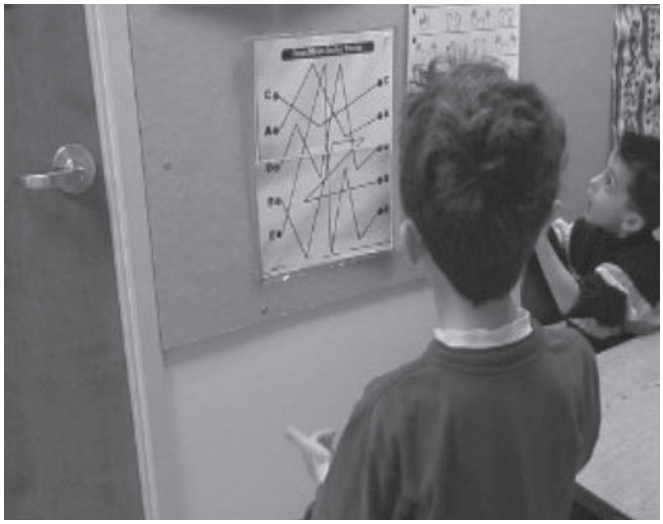
S'cool Moves

S'cool Moves is a research-based program developed by a reading specialist, Debra Em Wilson. The program uses combined strategies that increase focus, self regulation and academia. It brings together the best practices in reading theory, brain integration, and self-regulation techniques, creating a powerful solution for today's challenging teaching situations (www.schoolmoves.com).

The S'cool Moves program uses a variety of wall charts to require children to move in particular ways, engage in visual tracking, follow a sequence, and monitor their own behavior (when children monitor their own behavior, teachers have more time to teach and children have more time to learn).



As above, the children stand up and sequentially imitate the movements referenced in the poster. These movements require motor planning and attention and are great to use to wake up the nervous system when the children at a lull in their attention and arousal states. By prompting children to focus, these movements can be especially helpful prior to teacher presentation of new information (Maher et al., 2006). In addition. these activities are designed to flow seamlessly into the curricula in minutes a day: for example, Focus Moves is used before the children return to the classroom following recess and free play. The structured moves help the children to regain focus and organization prior to entering the classroom.



E IS FOR EMOTION REGULATION

Emotion regulation refers to the ability to adapt and modify behavior to maintain a balanced, calm, alert, and organized state. Coping strategies — dealing with change in routines and transitions — require emotion regulation. Everyday challenges and conflicts require that individuals respond appropriately so that they can meet the demands made by the nature of the task, environment and relationships involved.

There has been an increased interest in emotion regulation since the recent trends identified through the work of Ross A Thompson, 1990. Based on Thompson's work (*Emotion Regulation: A Theme In Search of Definition*, Monographs of the Society for research in Child Development, Volume 59, 1994 PP. 25-52), " …individuals display a variability in emotion behavior in the intensity, persistence, modulation onset and rise time, range and liability of and recovery from emotional responses. The emotion regulation process influences its quality, intensity, timing and dynamic features that impact the emotion experience. Emotional arousal can either enhance or impact adversely on effective functioning, and emotion regulation processes are important as they enlist emotion to support adaptive, organized behavioral strategies."

Functioning in the world is difficult if not impossible with poor emotion regulation. Children with Sensory Modulation Disorder often have emotion regulation difficulties, manifested by poor coping strategies and problem dealing with changes in routines. They may respond by expressing anger, hostility, aggression, inflexibility, anxiety, and depression; alternately, they may show a lack of affect and be withdrawn. When emotion regulation is impaired, a child may have difficulty attending to the environment and learning. They may exhibit hyperactivity, disorganization and distractibility.

Building a base for emotional regulation is a two-part process. First, children must learn to understand their own states of arousal and recognize when they feel dysregulated, disorganized, and out of control. Then, they must identify and learn to use the strategies that work best for them to help them achieve a peaceful, calm emotion state: self-regulation.

We all use self-regulation strategies to keep our emotions in control, to assist us to focus, and to increase our overall functioning. Behavior interventions based on self-regulation programs can be helpful when working with children who demonstrate poor emotion regulation.

Part of the challenge in building a base for emotion regulation is to build emotional investment in ideas that increase motivation for the child. Guidelines for effective emotion regulation strategies include:

1. Actively involve the child in making choices and in developing his/her own strategies for self-regulation: he or she will self-regulate more if he/she identifies the behaviors that need to be self regulated. When a child buys into the fact that the precipitating variables are contributing to his/her emotion dysregulation, the path to recovery of self-regulation has begun.
2. The child must have a well-practiced, automatic set of activities to fall back on when he/she begins to feel emotion dysregulation. Practicing and teaching a repertoire of activities is helpful so that children do not get "stuck" when they feel dysregulated: often low-stress activities like role-playing, social stories, and pretend play can help children associate and choose more appropriate behaviors during stressful situations. Charts with pictures and /or icons of activities may also help children in distress make the bridge between the emotional state and the action that needs to be taken to mediate the emotion state and return to feeling in control and balanced.
3. Children need immediate positive reinforcement when utilizing self-regulation strategies. Choosing reinforcers that are meaningful to a specific child encourages and motivates the child.

Interventions: Emotion Regulation

Calming Exercises

Sometimes teaching children how to calm themselves, using basic exercises, can help change charged emotion regulation to a more neutral state:

1. Slow deep breathing, in through your nose and out through gentle pursed lips
2. Wash your hands under cool water and continue with the slow breathing
3. Massage the inside of your palms in a circular manner, making sure to include both palms
4. Gently press in a downward motion above your top lip and hold until the count of 10
5. Interlace your fingers and squeeze the palms of your hands together as tightly as you can, repeating 5 times until the count of 6.
6. Begin massaging your ears from the bottom of the ears toward the top. This is very calming to the nervous system, particularly when a slight amount of pressure is used during the massaging process.
7. Drink cold water through a straw with slow, small repetitive sucks and swallows.
8. Use both hands and stretch as high as possible up toward the sky, holding the stretch to the count of 10.
9. Apply essential body oils at the wrists, back of neck and temples including lavender, vanilla and coconut, which are calming to most people. Olfactory (smell) sensations have a more direct route to the cortex and can sometimes quickly induce a relaxed, calm state.
10. Find a corner of the room and gently wedge your back into the corner as if you were being hugged. This also provides a quick, calming effect.

Cognitive and Behavioral Programs

Cognitive-behavioral programs are programs in which the target behavior (for example not hitting one's sister) is rewarded on a systematic basis. These methods can be very effective if used consistently at home and at school. If children are actively involved in establishing their own behavior modification programs, the programs are usually more successful.

Both the child and parents can assist in identifying specific behaviors that interfere with functioning at home, in the classroom, or in natural community settings (at school, having students participate when the team coordinates efforts can be helpful). Once behaviors are selected, alternative self-regulatory behaviors are identified. By using the alternative behaviors, the child "earns" checkmarks on a behavior chart (this often works better if he/ she can fill in the chart him/herself), and after a certain pre-determined threshold is reached, the child earns a reward.

Selecting the right reward is important. The system only works if the child has the ability to earn something he/she really wants. Most children respond best to offers of time alone with Mom or Dad on the weekend, maybe to get an ice cream or a book at the library. At school, rewards such as free play time, stickers, small toys, prizes, and other items to reinforce a child's selection of "controlled" behavior over impulsive behavior can also be effective.

Reinforcement should be provided as soon after the alternative behavior is displayed as possible. Today – with electronics on telephones, palm pilots, I-touch and the like – parents can easily access behavior charts and provide positive reinforcement in a timely manner, even if the child is at the mall, at another family's house or virtually anywhere.

C IS FOR CULTURE

Within the theoretical framework of A SECRET, culture is described the "manner in which things are typically done." Cultures – or customs, attitudes and beliefs – can exist in classrooms, in children's homes and in many other environments, helping to provide predictable structure, sets, and routines for children. Whenever anyone is willing to change a regular routine or pattern in which activities are typically scheduled – in a classroom, at home, or wherever – there will be a change in culture.

When working with children with sensory and motor challenges, a need for cultural changes may be necessary. Timing of regularly planned activities may need to be shifted in order to better suit the needs of some of the children who are struggling: for example, parents may need to change the routines at home based on the child's emotion regulation and allow him/her to have a snack, play, or listen to music before engaging in homework and other demanding tasks. The teacher may allow a child to chew gum, changing the "culture" of the school or classroom rules, in order to help the child with sensory and motor challenges. Flexibility and forward thinking are key in order to be in step with the child's needs for any cultural changes.

R IS FOR RELATIONSHIP

Relationships are the most important tool in A SECRET. Closely aligned with the element of culture, relationships involve an emotional connection between people, including parents, clinicians, siblings, and/or mentors (teachers). Once involved in a relationship with a significant person, there is typically a deep connection to him or her. Relationships in which trust and concern are built are the glue that holds the integrity of the child together. Using relationships in a meaningful manner to facilitate children's self-esteem and positive outcomes is critical in producing success.

Providing a child with SMD with chances to feel "connected" and bonded is vital. Developing opportunities for the child to share moments or events with peers or family members can help support the child through challenging moments and provide positive incentives toward reshaping behaviors and responses. These shared moments might include having special time with a sibling, parent or friend, going to a special event, sharing a snack with a classmate, having time on the playground with peers, or just simply feeling good at the dinner table with family. Many of these situations can help support the healthy relationships that are central to a child moving forward in attaining positive outcomes during challenging tasks.

E IS FOR ENVIRONMENT

Environment is defined as the milieu that make up the site-specific setting. It refers to actual physical surroundings that can be found in a specific context: for example, a classroom that is very warm, with poor or fluorescent lighting.

It is based on the work of Ken A. Graetz, who describes the psychology of learning environments by linking their physical characteristics to their emotional effects on the learner, with cognitive and behavioral consequences (2006). Previous research that relates most directly to classroom learning looked at environmental variables such as loud noises, ability to move and change postural sets to obtain adequate arousal states, sitting and position in chairs while learning, the amount of visual distractions that are present, all which produce varying levels of challenges for the student learner.

The Chellappa, Steiner, Blattner, Oelhafen, Gotz & Cajochen, 2011, Level III study provides evidence

that lighting has potential to enhance an individual's focus. The article examines the effect of blue-enriched light on melatonin suppression, alertness, and cognitive performance. Exposure to light at 6500K induced greater melatonin suppression, together with enhanced subjective alertness, well being, and visual comfort. With respect to cognitive performance, light at 6500K led to significantly faster reaction times in tasks associated with sustained attention (Psychomotor Vigilance and GO/NOGO Task), but not in tasks associated with executive function (Paced Visual Serial Addition Task). This cognitive improvement was strongly related with attenuated salivary melatonin levels, particularly for the light condition at 6500K.

The Reilly, Donkelaar, Saavedra & Woollacott, 2008, Level III study demonstrates the interaction of attentional performance with posture and movement. Physical activity was effective for improving on-task behavior during classroom instruction. The experimental group produced an 8% improvement between the pre and post intervention that was statistically significant ($p < 0.017$) with a moderate effect size (partial eta = .60).

Interventions: Environment

Changes in Position

Altering the classroom environment by allowing for frequent changes in position can help relieve children of their need for proprioception input during extended sitting activities.

Chair Moves

Chair Moves (Bialer, 2011) offers teachers solutions to attention problems caused when students are required to sit for prolonged periods of time and are not active during learning. In Chair Moves, students periodically reposition their chairs and bodies while engaging in both active tasks (e.g., art) and passive ones (e.g., listening to a story). By giving students a physical movement to perform, these moves provide a brief break from the activity at hand, while also tending to increase attentional focus on the activity.

The five chair positions incorporated in the program can all be used while the child is performing tasks in the classroom. Showing children the different positions, and encouraging them to use their preferred one, encourages focused movement and increased on-task behavior. And activities like cutting with scissors, gluing and even having a snack may be more fun when children do not feel locked into one position.

The first position of the Chair Moves program, referred to as the "Ride the Pony" position, involves turning the chair around, so the back support faces the front. The child then straddles the chair and is referred to as "Ride the Pony" position (Bialer, Miller, 2011). This position helps with arousal in that the child sits without back support and must use his or her own muscles to sit upright.

In positions 2 and 3, the child sits on the chair sideways. Turning the chair toward either side allows for more movement while engaging in activities in the classroom. The side sit position provides a sense of freedom for children who do not like being confined in a typical chair and desk position. The back of each chair provides a boundary between children who are learning about personal space. This position creates spatial boundaries and enhances postural control, essential for attention (Reilly et al. 2008). This position can be used when the class is attending to a tabletop activity or during a listening story time.

In Chair Moves position 4, the child kneels on the chair with one knee with the other foot on the floor. This is a great position for listening and attending during story time. This position should not be encouraged during fine motor activities as it not a stable position.

In Chair Moves position 5, the child kneels on the chair with both legs with the back of the chair against the thighs. This position enhances the ability to attend and can provide a stable base while engaging in manipulative play.

Alternative: Some children automatically prefer standing while completing certain tasks. Cutting and writing are typical tasks where this may be noted. The photo shows a standing desk that can be used in the classroom for those students who seek standing opportunities.

Disc 'o' Sit

The Disc 'o' Sit is a dynamic, inflatable seat cushion. The property of the Disc 'o' Sit involves weight shift and postural adjustments, which help enhance levels of arousal/attention.

The results of a Pfeiffer, et. Al., (2008), Level 1 study provide evidence that the use of the Disc 'o' Sit enhanced attention in the classroom; in addition, those children that used the Disc were significantly stronger relative to the children who did not use the Disc. Attention was significantly stronger in the treatment group relative to the control group. A statistically significant difference was found in attention to task before and after the intervention in the treatment group.

Alternative: The children can use their own jackets, sweaters or small towels in place of the seat cushion. Children can rock back and forth on their own piece of clothing providing the same sensory input as the Disc provides.

Posture

Reilly, Donkelaar, Saavedra & Woollacott (2008), in a Level III study, demonstrate the interaction of attentional performance with posture and movement. Physical activity was effective for improving on-task behavior during classroom instruction. The experimental group produced an 8% improvement between the pre and post intervention that was statistically significant ($p < 0.017$) with a moderate effect size (partial eta = .60). The results indicate that during the performance of an intentionally demanding cognitive task, attention can be facilitated with proper seating and appropriately-sized desks and chairs.

Low-tech postural adaptations exist:

This student has a slumped posture and a hard time sitting upright. In this situation, a loose-leaf binder can be used to support the pelvis, aligning it correctly in the seat and creating a more upright position. The position of the pelvis will dictate how the binder is oriented: for a pelvis that is facing down, creating a curved back, place the binder with the wide side in front.

Similarly, chairs can be adapted to create better upright posture. In this photo a box was used to create a straight back for upright posture. The box was taped onto the back of the student's chair, and

lined with a telephone book to prevent it from caving in. The box is also covered with a plain pillowcase, to avoid distraction. This student is in an upright posture and is able to engage in challenging cognitive tasks at the table.

Some children may also benefit from a little help in upright sitting when on the carpet: it is difficult to sustain a neutral pelvis on the floor. Using a small box with a cut out front acts as a booster seat and can help children sit upright. This is a great modification and can be easily made for multiple children in the class.

T IS FOR TASK

In A SECRET, the task refers to what the child is expected to do.

Tasks may involve a series of sequential steps that the child is having difficulty following due to challenges in attention or in emotion regulation; thus, they may need to be modified using the elements of A SECRET.

Think about the number of steps the child needs to take to successfully meet the demands of the task. This process involves the therapist, teacher, or parent doing an activity analysis of the task, so that it is clear what exactly the child needs to do for a successful outcome. Think about how the task may be modified to allow the child to have greater success – still meeting the demands of the task, but in a less challenging, modified way. For example, if the child has difficulty completing homework because of sloppy handwriting, you might ask the child to keyboard, or dictate their thoughts into a tape recorder and have you scribe for them.

The task demands will impact the child's behavior depending on how difficult the child perceives the task to be and whether the child has the ability to complete the task. The child's strengths and abilities are important to consider when creating modifications to the task.

The A SECRET Blueprint

The following chart (full-size version available on page 23) illustrates the A SECRET model: the seven elements are presented as both areas of challenge and as strategies to support the challenges. Each element is listed both vertically (with the header "areas of challenge") and horizontally (with the header "strategies used to help areas of challenge.")

AREAS OF CHALLENGE / *INTERVENTION STRATEGIES*	Attention	Sensation	Emotion Regulation	Culture	Relationship	Environment	Task
Attention							
Sensation							
Emotion Regulation							
Culture							
Relationship							
Environment							
Task							

The first step in using this chart is to identify which of the elements on the vertical axis are causing a challenge for the child, and in what situation or during what event the child is having difficulty. For example, it may be that the child is having difficulty *attending*, particularly during carpet time when all the students are sitting in a circle listening to a story. With the challenge and situation identified, we can then make a plan using the elements of A SECRET listed in the horizontal row of the chart: we can support the child by creating strategies that incorporate attention, sensation, emotion regulation, culture, relationship, environment, and the task.

The plan:

Sitting on the carpet can distract a child who tends to be a sensory seeker, as all the small microscopic items embedded in the carpet may attract more attention than the story. Our plan may include using a visual timer as a cue to help the student anticipate how much time is needed for the story, and as a visual aid in facilitating focus and *attention*.

During story time, the child may be given some tactile functional fidgets, as a *sensory* tool to help sustain arousal and attention. The child may be asked to pass the books around to the other students prior to story time, and then to collect the books when the reading is over. This supports *emotion regulation* and helps the child feel good about being an active part of the lesson.

The teacher is receptive and is willing to change the *culture* of having students sit on the carpet to allow the option of sitting on a stool with feet planted on the floor, which helps the child to feel grounded during the story.

The teacher may also allow the students to share books, to help support the element of *relationships* during the story.

At the end of the story, the teacher may have the children work in pairs, as part of a buddy system, or on a Disc 'o' Sit; in addition to further building relationships, this adaptation enhances the classroom *environment* to support attention and learning. Finally, the teacher may have the child with attention difficulties answer 2 out of 4 questions about the story, or allow the child to verbalize answers rather than writing them down, modifying the post-story *task* so it is more easily attainable.

A SECRET Case Study

In the following scenario, I will describe Lenny, a bright kindergarten-age youngster who attends a mainstreamed class. Lenny has an Individual Education Plan (IEP) with an Other Health Impairment classification, and receives occupational therapy services. His frequency of service is 2xs per week individually for 30-minute sessions. Lenny's teachers receive occupational therapy consultation in addition to behavior intervention by the psychologist on the team.

Lenny has Sensory Modulation Disorder and very easily becomes over-aroused. He is the child with the small gas tank: any additional sensory stimuli creates overflow. He has a difficult time with transitions, and throws himself to the floor, kicks and screams, tantrums, and spirals out of control.

Lenny's behavioral responses in the classroom become problematic, and a major disruption to himself and to his peers. Following many team meetings, a collaboration to use A SECRET framework was recommended. The objective in using the framework was to help Lenny work through ***his poor emotion regulation, the identified challenged element, particularly noted during transitions***.

A SECRET Framework for Lenny

A= Attention

The first part of using A SECRET with Lenny was aimed at enhancing his level of awareness of the different states of emotions he was experiencing throughout his day. We used basic exercises to calm and help Lenny remain in check. The students in the class carried out the exercises in the morning and again after recess. The exercises done by the entire class helped Lenny focus and stay attentive as he moved into his morning of routines and classroom tasks.

Using a visual schedule for a child with difficulty with emotion regulation decreases the amount of anticipation and anxiety of upcoming or changing activities. Lenny's day was mapped out using picture cards that listed the events for the day.

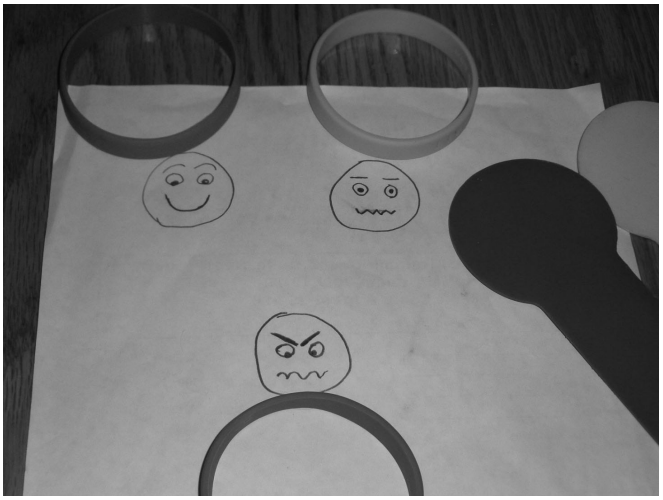
S = Sensation

Lenny loved holding the door open for classmates, carrying books for his teacher, wiping off the blackboard, sweeping under his desk, and washing his desk off with a sponge. All of these activities are considered "Heavy Work" and provide compression to the muscles and joints for a calming overall tone.

In addition, Lenny wore the Stabilizer during tabletop activities and also was allowed to wear his backpack.

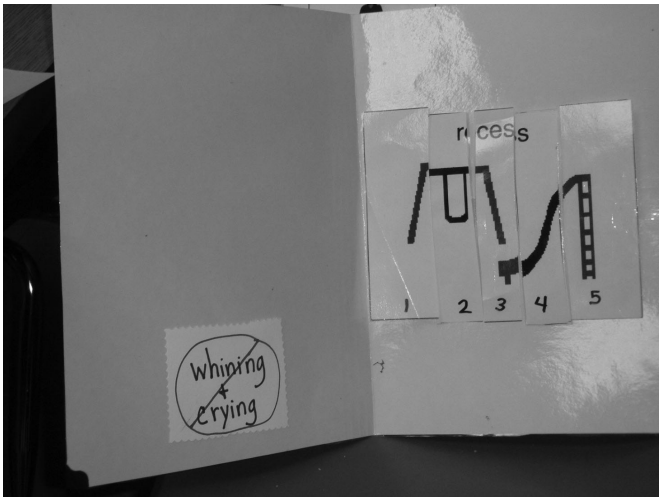
E = Emotion Regulation

Lenny excelled when using colored bracelets to indicate his states of emotion regulation. The green bracelet indicates a green light or a positive state – feeling good about oneself. The yellow bracelet indicates that there is a change occurring in the emotional state – perhaps something is upsetting, or is creating anxiety or fear. The red bracelet indicates the feeling that an emotional state is escalating out of control. In other words, the green bracelet represents the ideal state, the yellow bracelet represents the "caution, I'm losing it" state and the red bracelet is the "I've had it" state.



Using a cognitive technique like bracelets helps the child realize how emotions can change and impact behavior, and can assist the child in moving from an automatic "fight or flight" response to a cognitively mediated response, providing more control. The child's active involvement in this process is empowering and promotes a stronger internal awareness of emotion regulation. (The best time to explain this "game" is when a child is in a "green" state.)

Lenny started his day wearing a green rubber bracelet. During the course of the day, when he changed to a yellow bracelet, it would remind him to use his learned self-regulation tools (he had many activities on a key chain that he could choose from to help him move away from a dysregulated state).



In creating a behavioral chart, the teacher informed me that there were five activities that the class needed to complete in the mornings prior to lunch and recess. We also found that the playground equipment motivated Lenny during recess. This became the theme for the positive reinforcement behavior chart for Lenny. He would receive a piece of a puzzle of a slide after each of the five activities, which were completed without whining. When he had earned five puzzle pieces, he had enough pieces to complete the slide and earned extra time on the playground. His self-regulation abilities were reinforced and he felt better about himself because "he was the boss of his behavior."

C = Culture

Lenny's teachers, peers and parents were very on board with using A SECRET to help him transition and succeed in the classroom.

Foods and textures can be a great low-tech way to enhance arousal and alertness among children with sensory modulation issues. Although many foods are chosen for their important nutrients, some should be considered simply for the abilities to help change arousal states. Crunchy foods such as pretzels, chips, hard cookies, and vegetable sticks are typically alerting and arousing. Chewy foods are thought to increase organization. Food combinations may help alert and organize children, particularly for those children that have poor sensory modulation.

In Lenny's case, the teacher was willing to change the culture of the classroom and have the children share and eat snacks a bit more frequently throughout the day.

R = Relationship

The increased snack time discussed above also brought in elements of R (Relationship) as Lenny could sit next to his peers, share snacks and have many opportunities to build relationships during this period.

Lenny's parents also rewarded his successes and good days with tons of hugs, kisses, and special reading time before bedtime.

E = Environment

Lenny's teachers allowed him to use a ball chair in place of a chair when performing activities that were more challenging for him, and also introduced Chair Moves to the class to enable movement during lessons in a controlled and regulated manner

In addition, Lenny learned to use his environments to help self-regulate, sometimes finding a corner in the room that he would place himself in to help calm himself. The corner provided a "hug sensation" that Lenny learned to obtain without disrupting the other students and or the teacher.

T = Task

Lenny took charge of accounting for and making the changes in his activity chart as the day progressed. He could anticipate upcoming transitions and felt more comfortable when they were pending. A SECRET framework empowered Lenny and supported his emotion regulation by using elements and strategies that comforted his inner states.

Elements of Support	Attention	Sensation	Emotion Regulation	Culture	Relationships	Environment	Task
Area of Challenge							
	Strategies used						
Emotion Regulation	-Basic Exercises -Visual schedule	-Heavy work -Stabilizer	-Colored bracelets Behavior chart	Shared snacks	Hugs and Kisses from Parents Extra Reading time	Ball chair Chair Moves	Making changes in schedule

Using A SECRET framework with Lenny

This chart reiterates the blueprint that was used with Lenny when putting together the plan to help him with emotion regulation during his challenging task of transitioning.

A SECRET Case Study

A SECRET can also be successfully combined with specific therapeutic methodologies to augment success.

One of my referrals was a 10-year-old boy, Eddie, who was very sensitive to sound, with school and social phobias.

Everything he heard was perceived as painful. He could not tolerate being in a classroom without wearing earplugs. He was challenged by his auditory defensiveness which impeded his school and social success. His mom couldn't take him to the mall; he rarely had friends over and avoided extracurricular activities.

We used the iLs Focus' Sensory Motor Program combined with the Concentration/Attention Program, and incorporated the A SECRET framework to deal with the emotion dysregulation he experienced every day at school.

Elements of **attention** were combined with **sensation** (via the iLs).

The element of **emotion regulation** included using behavior charts and rewards to encourage Eddie in his efforts to cope with background sound. In terms of **culture**, the teacher allowed the iLs to be used in the classroom during in-seat work. As far as **relationships**, one of Eddie's earned rewards was extra time in free play with his peers building and engaging in constructional tasks (which he found to be quiet and comforting). As for **environment**, the teacher allowed Eddie to use a rocking chair for added sensory comfort throughout the day as opposed to sitting on the floor or in his chair. Finally, the teacher modified some of Eddie's **tasks** to make them more manageable for him: he was allowed to sit in the back of the auditorium during loud assemblies, for example, and given advance notice when a fire drill and/or a loud announcement was about to occur.

Conclusion

We've considered the elements of A SECRET - attention, sensation, emotion regulation, relationships, environment, and task – in light of both evidence-based information, and tools and strategies that can be used in support of each.

There are many scenarios in which children are challenged by everyday routines. Identifying what a particular child's challenge is and in what scenario(s) is occurs, and using A SECRET to create an individualized plan for that child, that these children overcome challenges, achieve positive experiences, and see themselves as successful and empowered.

This is life changing for the child, his/her family members and his/her peers.

iLs

While a full discussion of iLs is beyond the scope of this course, "iLs is a complementary approach to brain fitness which can be integrated into a broad variety of educational, therapeutic and self-improvement programs. In the same way we can train our bodies to become stronger and healthier, iLs trains the brain to process sensory, cognitive and emotional information more effectively. Directly connected to the cochlea of the inner ear, the vestibular system is primarily responsible for balance and coordination, but also has a strong impact on sensory modulation and emotional regulation. Once the vestibular system is functioning well, children are better able to participate in higher brain functions such as reading, writing and expressive language. iLs provides specific and comprehensive stimulation to the vestibular system through bone conduction delivered via headphones, balance board activities and body movement exercises.

"Summary: This study explores the effects of iLs on individualized parent goals for children with sensory processing impairments. The 40-session iLs program was implemented at home and in clinic over a 3-month period. Important and clinically meaningful gains were achieved by all participants in both home and educationally-related goals. Individualized goal achievement was supported by gains in standardized measures of behavior and adaptive functioning. Changes in physiological arousal (measured by EDA – electrodermal activity) suggest the iLs program is impacting underlying regulation mechanisms that may be contributing to the observed behavioral changes. Behavioral changes included increased relaxation, fewer meltdowns and a generally calmer disposition for participants whose arousal decreased."

A Pilot Study of Integrated Listening Systems for Children with Sensory Processing Problems Sarah A. Shoen, PhD, OTR, Lucy J. Miller, PhD, OTR, and Jillian Sullivan, PhD , October 12, 2015.

AREAS OF CHALLENGE / *INTERVENTION STRATEGIES*	**Attention**	**Sensation**	**Emotion Regulation**	**Culture**	**Relationship**	**Environment**	**Task**
Attention							
Sensation							
Emotion Regulation							
Culture							
Relationship							
Environment							
Task							

REFERENCES:

Ahn, R.R., Miller, L.J., Milberger, S., & McIntosh, D.N. (2004). Prevalence of parents' perspective of sensory processing disorders among kindergarten children. *American Journal of Occupational Therapy*, 58, 287-293.

American Occupational Therapy Association (2007). American occupational therapy association's centennial vision and executive summary. *American Journal of Occupational Therapy*, 61, 613-614.

American Occupational Therapy Association (2008). Occupational therapy practice framework: Domain and process (2nd ed.). *American Journal of Occupational Therapy*, 62, 625-676.

Aston, J. (1987). *Brain disorders and psychotropic drugs*. New York: Oxford University Press.

Ayres, A. J. (1975). Sensorimotor foundations of academic ability. In W.M. Cruickshank & D.P. Hallahan (Eds.), *Perception and Learning Disabilities*, 2, 301-358. Syracuse, N.Y.: Syracuse University Press.

Barkley, R. (1997). Attention deficit/hyperactivity disorder, self-regulation, and time: Toward a more comprehensive theory. *Journal of Developmental and Behavioral Pediatrics*, 18, 271-279.

Bartholomew, J.B. & Jowers, E. M. (2011). Physically active academic lessons in elementary children. *Preventive Medicine, 52, (Suppl.)*, S51- S54.

Blanche, E.L. (2002). *Observations based on sensory integration theory*. Torrance, CA: Pediatric Therapy Network.

Bialer, D. (Photographer). (2014). Rolled towel on chair [Photograph].

Bialer, D. (Photographer). (2014). Two images of the Disc 'O' Sit [Photograph].

Bialer, D. (Photographer). (2014). Student holding Disc 'O' Sit [Photograph].

Bialer, D. (Photographer). (2013). Child in classroom with weighted pillow [Photograph].

Bialer, D. (Photographer). (2013). Chair modification to improve posture [Photograph].

Bialer, D. (Photographer). (2013). Two images of chair modifications to improve posture [Photograph].

Bialer, D. (Photographer). (2013). Elementary classroom [Photograph].

Bialer, D. (Photographer). (2012). Two images of boy using a sweatshirt to make a compression vest [Photograph].

Bialer, D., Miller, L. J. (2011). No longer a secret: Unique and common sense strategies for children with sensory and motor challenges. Arlington, Texas: Future Horizons.

Bialer, D. (Photographer). (2010). Student using Chair Moves in all four positions [Photographs].

Bialer, D. (Photographer). (2010). Student holding fidget tool [Photograph].

Carbone, E. (2001). Arranging the classroom with an eye (and ear) to students with ADHD. *Teaching Exceptional Children*, 34(2), 72-80.

Champagne, T. (2006). *Sensory modulation and environment: Essential elements of occupation (2nd Ed)*. Southampton, MA: Champagne Conferences & Consultation.

Cheatum, B.A. & Hammond, A.A. (2000). *Physical activities for improving children's learning and behavior: A guide to sensory motor activities*. Champaign, Il., Human Kinetics.

Chellappa, S.L., Steiner, R., Blattner, P., Oelhafen, P., Götz, T., & Cajochen, C. (2011). Non-visual effects of light on melatonin, alertness and cognitive performance: Can blue-enriched light keep us alert? *PLoS One 6*(1): e16429. Published online 2011 January 26. Doi: 10.1371/journal.pone.0016429 PMCID: PMC3027693.

Cohen, C.W. (1998). *The attention zone: A parent guide to attention deficit hyperactivity disorder*. Washington, D.C.: Taylor & Francis.

DiCarlo, C., Pierce, S., Baumgartner, J., Harris, M., & Ota, C. (2012). Whole-group instruction practices and children's attention: A preliminary report. *Journal of Research In Childhood Education, 26*, 154-168.

Dice, J. L., & Schwanenflugel, P. (2012). A structural model of the effects of preschool attention on kindergarten literacy. *Reading And Writing: An Interdisciplinary Journal, 25*, 2205-2222.

Dunn, W. (2007). Supporting children to participate successfully in everyday life by using sensory processing knowledge. *Infants & Young Children, 20*, 84–101.

Dunn, W. (2000). Habit: What's the brain got to do with it? Occupational Therapy of Research, 20, 6s- 20s.

Dunn, W. (1997). Impact of sensory processing abilities on the daily lives of young children and their families: A conceptual model. *Applied Developmental Theory, 9*, 12-22.

Dunn, W., Brown, C., & McGuigan, H. (1994). The ecology of human performance: A framework for considering the effect of the context. *American Journal of Occupational Therapy, 48*, 595- 607.

Farber, S.D. (1982). *Neurorehabilitation: A multisensory approach*. Philadelphia: Saunders.

Fedewa, A.L., Erwin, H.E. (2011). Stability balls and students with attention and hyperactivity concerns: Implications for on-task and in-seat behavior. American Journal of Occupational Therapy 65, 393-399.

Fertel-Daly, D., Bedell, G., Hinojosa., J. (2001). Effects of a weighted vest on attention to task and self stimulatory behavior. *American Journal of Occupational Therapy 55*, 629-640.

Gallagher, W. (1990). Touch balance: A tribute to the forgotten senses. *American Health*, January-February 1990.

Gainetdinov, R, R., Wetsel, W. C., Jones, S. R., Levin, E.D., Jaber, M., & Caton, M.G. (1999). Role of serotonin in the paradoxical calming effect of psychostimulation on hyperactivity. *Science, 283*, 397-401.

Google Images (Photographer). (2014). Blue light filter [Photograph]. Retrieved from https://www.google.com/search?site=imghp&tbm=isch&source=hp&biw=1280&bih=630&q=blue+light+filter&oq=blue+light+filter&gs_l=img.3..0l2j0i24l8.1795.5865.0.6670.17.11.0.6.6.0.258.961.10j0j1.11.0....0...1ac.1.37.img..0.17.997.Ki7X7NXwX3c#facrc=_&imgdii=_&imgrc=rgI5mAW_96dkgM%253A%3Bkl3gkTtqViYegM%3Bhttp%253A%252F%252Fecx.images-amazon.com%252Fimages%252FI%252F413y1MqLaxL.jpg%3Bhttp%253A%252F%252Fwww.amazon.com%252FEducational-Insights-Classroom-Light-Filters%252Fdp%252FB001YT3G5C%3B450%3B450

Google Images (Photographer). (2014). Children sitting on stability balls in classroom [Photograph]. Retrieved from https://www.google.com/search?site=imghp&tbm=isch&source=hp&biw=1280&bih=630&q=class+sitting+on+therapy+balls&oq=class+sitting+on+therapy+balls&gs_l=img.3...347656.355039.1.355278.30.15.0.15.0.0.114.1028.14j1.15.0....0...1ac.1.37.img..23.32.1429.7yreL09FWzo#q=children+sitting+on+stability+balls&tbm=isch&facrc=_&imgdii=_&imgrc=9Yd7Tqusfl5aOM%253A%3BGEBQTQcFIThvMM%3Bhttp%253A%252F%252Fmedia.commercialappeal.com%252Fmedia%252Fimg%252Fphotos%252F2010%252F08%252F22%252Fa23balls1_t607.jpeg%3Bhttp%253A%252F%252Fwww.commercialappeal.com%252Fnews%252F2010%252Faug%252F23%252Ffitness-centers-donation-keeps-southaven-second%252F%3B607%3B405

Google Images (Photographer). (2014). Child with multiple stability balls [Photograph]. Retrieved from https://www.google.com/search?site=imghp&tbm=isch&source=hp&biw=1280&bih=630&q=different+sized+therapy+balls&oq=different+sized+therapy+balls&gs_l=img.3...2145.9277.0.9739.29.11.0.18.7.0.89.811.11.11.0....0...1ac.1.37.img..12.17.769.qt0SvVTZYQM#facrc=_&imgdii=_&imgrc=7f6X9E10qemflM%253A%3Bj6GTg7TsgPkpNM%3Bhttp%253A%252F%252Fthumbs2.ebaystatic.com%252Fd%252Fl225%252Fm%252FmfdsglsOJl2HbOMxE5A-XPw.jpg%3Bhttp%253A%252F%252Fwww.ebay.com%252Fbhp%252Fexercise-stability-ball%3B225%3B225

Google Images (Photographer). (2014). Child with weighted blanket and weighted lap pillow [Photograph]. Retrieved from https://www.google.com/search?site=imghp&tbm=isch&source=hp&biw=1280&bih=630&q=weighted+lap+pillows&oq=weighted+lap+pillows&gs_l=img.3...30282.34163.2.34425.13.7.2.4.6.0.79.438.7.7.0....0...1ac.1.37.img..14.44.2454.bOp735DuBm4#facrc=_&imgrc=ySIuVMSVLJ4OfM%253A%3BfxUBxZr6YeWEzM%3Bhttp%253A%252F%252Fwww.especialneeds.com%252Fimages%252FD%252FlapLanderWeightedPillows-main.jpg%3Bhttp%253A%252F%252Fwww.especialneeds.com%252Flap-lander-weighted-pillow.html%3B400%3B29

Google Images (Photographer). (2014). Proper posture at desk [Photograph]. Retrieved from http://montessorimum.com/?m=20070925

Google Image (Photographer). (2010). Proper sitting posture. [Photograph]. Retrieved from http://montessorimum.com/?m=20070925

Google Images (Photographer). (2014). Two images of children following teacher prompts [Photograph]. Retrieved from https://www.google.com/search?site=imghp&tbm=isch&source=hp&biw=1280&bih=630&q=picture+of+children+playing+simon+says&oq=picture+of+children+playing+simon+says&gs_l=img.3...28457.38082.2.38330.38.23.0.15.15.0.180.1787.20j3.23.0....0...1ac.1.37.img..12.60.3713.KJX4moktMWI#facrc=_&imgdii=_&imgrc=BiiOf6_xTVhr_M%253A%3B5nJ2OvVKLgVKBM%3Bhttp%253A%252F%252Frenrutkram.files.wordpress.com%252F2010%252F06%252Fimage_preview.jpg%3Bhttp%253A%252F%252Frenrutkram.com%252F2010%252F06%252F26%252Flessons-from-a-childrens-game-simon-says-edition%252F%3B400%3B300

Google Images (Photographer). (2014). Proper posture [Photograph]. Retreived from http://my.clevelandclinic.org/healthy_living/back_health/hic_posture_for_a_healthy_back.aspx

Google Image (Photographer). (2014). Three images of inattentive children in the classroom [Photograph]. Retrieved from https://www.google.com/search?site=imghp&tbm=isch&source=hp&biw=1280&bih=630&q=inattentive+children+pics&oq=inattentive+children+pics&gs_l=img.3...1776.8303.0.8519.25.10.0.15.15.0.85.650.10.10.0....0...1ac.1.37.img..6.19.539.1xThlyMIHFc#facrc=_&imgdii=_&imgrc=mf3mbxF3-WyWiM%253A%3Bg64I1NkKoN_zrM%3Bhttp%253A%252F%252Fcourseweb.lis.illinois.edu%252F~torrise2%252FBipolarFactSheet%252Fbipolar_image_11.jpg%3Bhttp%253A%252F%252Fcourseweb.lis.illinois.edu%252F~torrise2%252FBipolarFactSheet%252FBipolarBrochure.html%3B426%3B282

Google Images (Photographer). (2012). Fidget tools [Photograph]. Retrieved from http://www.homeschoolsupport.net/wp-content/uploads/2012/03/fidgets.jpg

Grandin, T., & Scariano, M.M. (1986). *Emergence: Labeled autistic*. Novato, CA: Arena Press.

Greenspan, S.I. & Wieder, S. (1999). A functional developmental approach to autism spectrum disorders. *Journal of the Association for Persons with Severe Handicaps, 24*, 147-161.

Hannaford, C. (2005). *Smart moves: Why learning is not all in your head.* Second Edition: Great River Books.

James, K., Miller, L.J., Schaaf, R., Nielson, D. M., & Schoen, S. (2011). Phenotypes within sensory modulation dysfunction. *Comprehensive Psychiatry*, 52, 715-724.

Kibbe, D.L., Hackett, J., Gurley, M., McFarland, A., Schubert, K.G., Schultz, A., & Harris, S. (2011). Ten years of TAKE 10 !: Integrating physical activity with academic concepts in elementary school classrooms. *Preventative Medicine, 52* (Suppl.), S43-S50.

Kimball, J. (1999). Sensory integration frame of reference: Postulates regarding change and application to practice. In P. Kramer & J. Hinojosa (Eds)., *Frames of Reference for Pediatric Occupational Therapy* (2nd edition., pp 169-204). Philadelphia: Lippincort Williams & Williams.

Kranowitz, C. (2005). *The out of sync child: Recognizing and coping with sensory processing disorder.* New York: Skylight Press/Perigee.

Kuhlman, K.K. & Schweinhart, L.J. (1999). *Timing in child development*. Ypsilanti, MI: High/Scope Educational Research Foundation.

Linton, S.L, Helsing, A.L., Halme, T., Akerstedt, K. (1994). The effects of ergonomically designed school furniture on pupils' attitudes, symptoms, and behavior. *Applied Ergonomics, 25*, 299–304.

Madsen, K. & Cassidy, J.W. (2005). The effect of focus of attention and teaching experience on perceptions of teaching effectiveness and student learning. *Journal of Research in Music Education, 53*, 222-233.

Mahar, M. T., Murphy, S. K., Rowe, D. A., Golden, J,. Shields,T.A., & Raedeke, T.D. (2006). Effects of a classroom-based program on physical activity and on-task behavior. *Official Journal of the American College of Sports Medicine, 38*, 2086-2094.

Mahone, E.M., Schneider, H.E. (2012). Assessment of attention in preschoolers. *Neuropsychological Review, 4*, 361-383.

Manz, P. H., Lehtinen, J., & Bracaliello, C. (2013). A case for increasing empirical attention to Head Start's home-based program: An exploration of routine collaborative goal setting. *School Community Journal, 23,* 131-144.

Marzano, R. J. (2007). Using action research and local models of instruction. *Journal of Personnel Evaluation in Education, 20*, 117-128.

McCreery. J., & Hill, T. (2005). Illuminating the classroom environment. *School Planning and Management, 44* (2), 1-3.

Mulligan, S. (2001). Classroom strategies used by teachers of students with attention deficit hyperactivitiy disorder. *Physical & Occupational Therapy in Pediatrics, 20*, 25-44.

Musatti, T., & Mayer, S. (2011). Sharing attention and activities among toddlers: The spatial dimension of the setting and the educator's role. *European Early Childhood Education Research Journal, 19*, 207-221.

Northeast Energy Efficiency Partnerships. (2002). *Classroom lighting know how*. Retrieved December 10, 2008, from www. Designlights.org/downloads-guide.pdf.

Pfeiffer, B. Henry, A. Miller, S. & Witherell, S. (2008). The effectiveness of the Disc 'O' Sit cushions on attention to task in second grade students with attention difficulties. *American Journal of Occupational Therapy, 62*, 274-281.

Reck, S. G. & Hund, A.M., (2010). Sustained attention and age predict inhibitory control during early childhood. *Experimental Child Psychology, 108*, 504-512.

Reilly, D.R., Donkelaar, P.V., Saavedra, S. & Woollacoff, M.H. (2008). Interaction between the development of postural control and the executive function of attention. *Journal of Motor Behavior, 40*, 90-102.

Ruff, H.A., & Capozzoli, M.C. (2003). Development of attention and distractibility in the first four years of life. *Developmental Psychology, 39*, 877-890.

Shaffer, R.J., Jacokes, L.E., Cassily, J. F., Greenspan, S.I., Tuchman, P.J., & Stemmer, Jr. (2001). Effect of interactive metronome: Training of children with attention deficit hyperactive disorder. *American Journal of Occupational Therapy, 55*, 155-162.

Schilling, D. L, Washington, K., Billingsley, F.F., & Deitz, J. (2003). Classroom seating in children with attention deficit hyperactive disorder: Therapy balls vs. chairs. *American Journal of Occupational Therapy, 57*, 534-541.

Tomporowski, P.D., Davis, C.L., Miller, P.H., & Naglieri, J.A. (2006). Exercise and children's intelligence, cognition and academic achievement. *Educational Psychology Review, 20*, 111-131.

VandenBerg, N.L. (2001). The use of weighted vest to increase on-task behavior in children with attention difficulties. *American Journal of Occupational Therapy, 55*, 621-628.

Vercruyssen, M. & Simonton, K. (1994). Effects of posture on mental performance: We think faster on our feet than on our seat. In R. Lueder and K. Noro (Eds.), *Hard facts about soft machines: The ergonomics of seatin*g. New York, NY: Taylor & Francis.

Wade, M and Jones, G. (1997). The role of vision and spatial orientation in the maintaince of posture. *Journal of American Phyiscal Therapy Association, 77*, 619-628.

Wilbarger, J. & Wilbarger, P. (2002). Wilbarger approach to treating sensory defensiveness and clinical application of the sensory diet. In Bundy, A.C., Murray, E.A., & Lane, S. (Eds.). *Sensory Integration: Theory and Practice* (2nd Ed). Philadelphia, PA: F.A. Davis. Doi: 1012490/01. mss.000023539.16685.a3

Williams, M.S., Shellenberger,S., (1996). *How does your engine run?* Albuquerque, New Mexico: Therapy Works, Inc.

Wilson, D. (Photographer). (2011). S'cool Moves wall chart [Photograph]. Retrieved from www. S'coolmoves.com

Wilson, D. & Heiniger- White, M, M. (2008). S'cool Moves for learning. Shasta, CA: Integrated Learner Press.

Empowering Children With Sensory Modulation Disorder: The "A Secret" Framework
(2 CE Hours)

1. **One of the problems with sensory diets is that _____.**
   a. The children involved are active participants
   b. Ideas provided by therapists will never be misused or contraindicated when emotion and arousal states are misunderstood.
   c. Children behave differently day-to-day based on their wiring, their environments, emotion regulation, attention, and many other variables
   d. The students involved are aware of why specific items are being given or done to them

2. **When _____ abilities are intact, the individual has the ability to regulate, organize and respond appropriately to sensory information.**
   a. Fight or flight
   b. Critical thinking
   c. Environmental
   d. Sensory modulation

3. **In the case of Sensory Modulation Disorder, when a child is _____, the brain becomes overloaded and the behaviors and responses are defensive and reactive.**
   a. Always in a high state of arousal
   b. Filtering out extraneous, irrelevant sensory input
   c. Maintaining an optimal level of alertness
   d. Producing responses that are congruent to the specific demands of a situation

4. **A Level III study by _____ is one of many revealing that attentional states are highly correlated with learning outcomes – in fact, the capacity to pay attention is prerequisite to learning.**
   a. Ruff & Capozzi (2003)
   b. Hebb (1949)
   c. Bialer & Miller (2001)
   d. James, Miller, Schaaf, Nielson, & Schoen (2011)

5. **Evidence for the use of stability balls in the classroom to enhance attention was provided by a Level IV study by Schilling et al (2003), the Mayo Clinic in Rochester (2007), and _____.**
   a. A Level II study by Ruff & Capozzi (2003)
   b. A Level III study by Fedewa & Erwin (2011)
   c. A Level III study by James, Miller, Schaaf, Nielson, & Schoen (2011)
   d. None of the above

6. **The Level IV study conducted by Pfeiffer & Kinnealy, 2006, explored the relationship between sensory defensiveness and _____, as well as the impact of a sensory integration treatment protocol on normal adults.**
   a. Anxiety
   b. Self-regulation
   c. Organization
   d. Procrastination

7. **_____ is a term that refers to activities that provide deep pressure, vibration, and other kinds of deep proprioception to muscles and joints with slow high intensity input.**
   a. S'cool Moves
   b. Functional Fidgets
   c. Heavy work
   d. Rhythmicity

8. **_____ is an example of a low cost, low-tech activity that incorporates joint compression.**
   a. The stability ball
   b. A Functional Fidget
   c. The use of a metronome
   d. The Stabilizer

9. **_____ are small objects that students manipulate during instruction or activity. They can be effective when used as a tool to help children attend and stay focused while learning (Bialer & Miller, 2011).**
   a. Functional Fidgets
   b. Stabilizers
   c. S'cool Moves
   d. Visual Trackers

10. **_____ refers to the ability to adapt and modify behavior to maintain a balanced, calm, alert, and organized state.**
    a. Emotion regulation
    b. Sensitivity
    c. Outlook control
    d. Input awareness

11. **Guidelines for effective emotion regulation strategies include all of these EXCEPT: _____.**
    a. The child must have a well-practiced, automatic set of activities to fall back on when he/she begins to feel emotion dysregulation
    b. Children do not need to be emotionally invested in their self-regulation strategies
    c. Children need immediate positive reinforcement when utilizing self-regulation strategies
    d. Actively involve the child in making choices and in developing his/her own strategies for self-regulation

12 **_____ are programs in which the target behavior (for example not hitting one's sister) is rewarded on a systematic basis.**
    a. Calming exercises
    b. Dysregulatory strategies
    c. Automatic activities
    d. Cognitive-behavioral programs

13. **Whenever anyone is willing to change a regular routine or pattern in which activities are typically scheduled, there will be a change in _____.**
    a. Behavior
    b. Regulation
    c. Culture
    d. Organization

14. **Closely aligned with the element of culture, relationships involve _____.**
    a. An emotional connection between people
    b. Instruction and obedience
    c. Orientation
    d. Growth and change

15. **Ken A. Graetz (2006) describes the psychology of _____ by linking their physical characteristics to their emotional effects on the learner, with cognitive and behavioral consequences.**
    a. Interventions
    b. Routine tasks
    c. Learning environments
    d. Self-regulation activities

16. **In _____, students periodically reposition their chairs and bodies while engaging in both active tasks (e.g., art) and passive ones (e.g., listening to a story).**
    a. Functional Fidgets
    b. Chair Moves
    c. S'cool Moves
    d. Disc 'o' Sit

17. **The results of Reilly, Donkelaar, Saavedra & Woollacott's Level III study (2008) indicate that, during the performance of an intentionally demanding cognitive task, attention can be facilitated with _____.**
    a. Adequate supervision
    b. Proper seating and appropriately-sized desks and chairs
    c. Visually distracting charts
    d. Restricted lower-body movement

18. **Allowing a child with sloppy handwriting to complete homework on a keyboard instead is an example of modifying _____.**
    a. A task
    b. Dysregulation
    c. Sensory input
    d. Arousal states

19. **Concerning the case study involving Lenny, "We also found that the playground equipment motivated Lenny during recess. This became the theme for the positive reinforcement behavior chart for Lenny," is an example of which element of A SECRET?**
    a. Attention
    b. Relationship
    c. Sensation
    d. Emotion Regulation

20. **Concerning the case study involving Eddie, "The teacher allowed Eddie to use a rocking chair for added sensory comfort throughout the day as opposed to sitting on the floor or in his chair," is an example of which element of A SECRET?**
    a. Attention
    b. Task
    c. Environment
    d. Relationship

ANSWER SHEET

First Name: _____ Last Name: _____ Date: _____

Address: _____ City: _____

State: _____ ZIP: _____ Country _____

Phone: _____ Email: _____

NCBOT #: _____

Other: License/certification # and issuing state/organization _____

Clinical Fellow: Supervisor name and NCBOT account # _____

Graduate Student: University name and expected graduation date _____

** See instructions on the cover page to submit your exams and pay for your course.

By submitting this final exam for grading, I hereby certify that I have spent the required time to study this course material and that I have personally completed each module/session of instruction.

Empowering Children with Sensory Modulation Disorder: The "A Secret" Framework Final Exam

1. Ⓐ Ⓑ Ⓒ Ⓓ	5. Ⓐ Ⓑ Ⓒ Ⓓ	9. Ⓐ Ⓑ Ⓒ Ⓓ	13. Ⓐ Ⓑ Ⓒ Ⓓ	17. Ⓐ Ⓑ Ⓒ Ⓓ
2. Ⓐ Ⓑ Ⓒ Ⓓ	6. Ⓐ Ⓑ Ⓒ Ⓓ	10. Ⓐ Ⓑ Ⓒ Ⓓ	14. Ⓐ Ⓑ Ⓒ Ⓓ	18. Ⓐ Ⓑ Ⓒ Ⓓ
3. Ⓐ Ⓑ Ⓒ Ⓓ	7. Ⓐ Ⓑ Ⓒ Ⓓ	11. Ⓐ Ⓑ Ⓒ Ⓓ	15. Ⓐ Ⓑ Ⓒ Ⓓ	19. Ⓐ Ⓑ Ⓒ Ⓓ
4. Ⓐ Ⓑ Ⓒ Ⓓ	8. Ⓐ Ⓑ Ⓒ Ⓓ	12. Ⓐ Ⓑ Ⓒ Ⓓ	16. Ⓐ Ⓑ Ⓒ Ⓓ	20. Ⓐ Ⓑ Ⓒ Ⓓ

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EMPOWERING CHILDREN WITH SENSORY MODULATION DISORDER: THE "A SECRET" FRAMEWORK

(2 CE HOURS)

COURSE EVALUATION

Learner Name: _____ Completion Date: _____

❑ PT ❑ PTA ❑ OT ❑ OTA ❑ SLP ❑ SLPA Other: _____

	Disagree				Agree	
Orientation was thorough and clear	1	2	3	4	5	
Instructional personnel disclosures were readily available and clearly stated	1	2	3	4	5	
Learning objectives were clearly stated	1	2	3	4	5	
Completion requirements were clearly stated	1	2	3	4	5	
Content was well-organized	1	2	3	4	5	
Content was informative	1	2	3	4	5	
Content reflected stated learning objectives	1	2	3	4	5	
Exam assessed stated learning objectives	1	2	3	4	5	
Exam was graded promptly	1	2	3	4	5	
Satisfied with learning experience	1	2	3	4	5	
Satisfied with customer service (if applicable)	1	2	3	4	5	n/a

What suggestions do you have to improve this program, if any?

_____

_____

What educational needs do you currently have?

_____

_____

What other courses or topics are of interest to you?

_____

_____