Developing Neurological Processing, Cognitive, Social and Behavioral Skills through Dance

By Maria & Lily Sargent

Authors

Maria Sargent Maria Sargent has been active for over 30 years in general and special education, brain research, and behavior and arts intervention. A full professor at Ashland University in Ashland, Ohio, the presenter is known for cross-disciplinary work training professionals in medicine, psychology, the arts, and the legal sector, in addition to the expected audience of educators. Her work history has spanned a wide variety of ages and populations, including: *Behavioral Intervention Coordinator*/Cuyahoga County Board of Mental Health; *Research Coordinator and Team Leader*/Akron Children's Hospital's Family Child Learning Center; *Director of the Behavior and Parenting Resource Center*/multiple state, national and international locations; and *Behavior Intervention and Curriculum Design Consultant* for grades pre-k through 12th.

Previous projects include multiple, multi-million dollar grants designed to enhance educational and behavioral outcomes for children at-risk and work with various state departments (education and mental health) to develop guidelines for professionals wishing to improve programs for students and their families. She has also served as a consultant for numerous dance intervention programs including Reach Out and Dance®, Rosie O'Donnell's original Broadway Kids® program in New York, and as board member and board president for ArtSparks®, a dance intervention program operating in many school districts, Head Starts, library programs, and agencies across northeast Ohio. She is currently finalizing work on a book titled, *Introduction to Early Childhood Education: A Neurological Approach*, which will soon be published by Brookes Publishing.

Lily Sargent is a professional dancer who accepted her first contract as a Trainee with Cleveland Ballet during the summer of 2017, right after her high school graduation. During her professional dance career, she has had the opportunity to perform many traditional ballets, like *Swan Lake* and *Nutcracker*, and many works from famous choreographers, both past and present, like George Balanchine's *Serenade* and Margo Sappington's *Alice* (in Wonderland). Lily continues her professional dance life as an Artistic Associate with Cleveland Ballet and the Manager of the newly established Academy of Ballet, the training school for the Cleveland Ballet Company in Cleveland, Ohio.

Lily continued her academic education with 1.5 years of American Sign Language Courses and then a four-year online college program for a degree in Bachelors of Science in American Sign Language Interpretation. She graduated with her college degree in December of 2023.

Lily was born with a very rare, genetic microdeletion that causes a gradual loss of visual, auditory, sensory, and motor-processing skills between the ages of five and ten. The

condition then reverses, and the children slowly return to typical developmental levels, with isolated areas of giftedness. At her worst point in the deterioration process, Lily was in trifocals, wore hearing aids, lost control of body movements and balance, and could not learn academic material, resulting in her retention during fourth grade. She underwent extensive therapy during the recovery period and eventually returned to full health. Because of her love of ballet, her mother, Maria Sargent, modified her therapies and embedded them into dance experiences.

Lily finished her academic education on the high honor roll, is a gifted artist, and is currently using her personal experiences with physical, occupational, sensory integration, vision, vestibular integration, and speech therapies as well as her trainer certifications in BOSU®, Progressing Ballet Technique® methods, professional dance experiences, and ASL degree to help with the creation of dance education and intervention programs for children.

Lily experienced life as a student with very severe disabilities for several years and knows well the impact of processing disorders, sensory isolation, repeated failure, and "being different". She is hoping to use the information gathered during her journey back to health to assist and inspire other dancers and students facing their own learning challenges.

Overview

We know that a dance education provides many added benefits to students, but it is often difficult for professionals to convey this information to families. Because we have difficulty communicating the benefits of dance, many families do not view it as worth the time or expense, or they see it as only being worthwhile if the child has considerable talent or an interest in pursuing a dance-related job in the future. How many children are missing out on something that could enrich their development, regardless of where their lives may take them!

It is time that we begin to fully articulate the benefits of a dance education and highlight it in our promotional materials. Whether you are merely curious about how these skills are already targeted in your program or are interested in using these concepts as part of your marketing campaign and/or special intervention programs, I urge you to begin to share this information with your families. YOU know the benefits of dance intuitively…now it is time for the public to fully recognize them as well. Here are a few concepts that you may wish to highlight:

- Children learn best through their senses and movement. Because of this, many students will find it easier to learn difficult skills such as impulse control, wait time, anger management, etc. in a dance studio than at school.

- Music is a powerful memory aid. That is why you can remember tons of song lyrics but forget a five-item grocery list the minute you walk out the door. The musical score "chunks" the memory into one piece, so it is easier to recall. We can use the power of music when we teach skills through dance. The skills taught to a musical score will be remembered more completely and intensely.

- Many children put-down memory through physical or visual modes and may struggle with the auditory world of school. For these children, dance will help them put skills into memory and excel, maybe for the first time in their lives. Just the experience of "being good at something" can change a life. Understanding the power of this Memory Buffer shift can be especially important for children experiencing processing disorders in one or more of their senses.

- The children who need assistance with behavior and related skills (i.e. impulse control, attention, wait time, etc.) often experience so much school failure that attempts to teach these skills in that setting will also fail. They have given up on school and refuse to cooperate with the learning process. It is within the world of dance that they may first begin to understand and learn these concepts. It is a

motivating world that they enjoy and is often much more successful than academic work. This alone will fuel their interest and development.

- Dance impacts the ability to understand symbolism and create. For many children with difficult lives, the ability to understand a different (more successful) future many fall in the realm of "created reality". In other words, they do not see or directly experience people in their daily lives who are setting goals, achieving success, managing failure or anger, etc. If they do not have the ability to <u>imagine</u> something different, they will never be able to create a future that is not already part of their daily experience. So, do not underestimate the development of creativity----it may be a child's ticket to a future that is totally different from the neighborhood they see around them!

The intent of this manual is NOT to provide a comprehensive set of lessons for any condition or skill; it is merely designed to give already highly-competent dance professionals the tools they may need to think in a slightly different way. Armed with this limited information, we know you will be able to take it from there and develop wonderful ways to enhance your own practice. We look forward to any additions and/or corrections you may offer us in return. Together we will help these students ☺

Set-Up of Manual

Casual Understanding of How Skills are Already Embedded in Dance Classes

The "yellow" section is for dance professionals who would like to understand how their dance classes already target various skills but who do not plan on systematically including them as part of their curriculum. Just knowing how you already include these concepts will enhance your teaching. If you eventually decide to target small pieces here and there, take a look at the pink section. You will probably see that this type of "systematic targeting" will change little in your practice. That is why dance education is so powerful---you already are teaching a great deal of this in the context of your lessons!

Used Systematically in an Established Dance Curriculum and/or Program

The "pink" section is for dance professionals who would like to systematically develop these skills over time. This really will not change your practice, but it does require you to become aware of the sequences so you can include them repeatedly in your classes…you can decide how often and in which context. The main thing to understand is the activities shown in the yellow section and the pink are similar. This is because a dance education already targets these skills by default. The power, though, is in recognizing WHAT you are teaching so you can strengthen the skills over time. Like any dance step or exercise, it is the developmental exposure at higher and higher levels or repetition over time that is the key to mastery. These skills are the same… Yes, they can be taught casually, but if they are *targeted*, they will be learned completely and well. Definitely worth the time and effort involved.

Use for Systematic and Intensive Dance Intervention

The "blue" section is for dance professionals who are running dance intervention programs for children with processing disorders, disabilities and/or behavioral challenges. The most important thing to understand is how many "typically developing children" have processing issues that are not identified by the educational or medical sector! In other words, definitely use this content to enhance your programs for children with established needs, but some of our greatest benefits (and personal joys) have come from assisting those awkward, out-of-sorts children who do not have any identified problems but are clearly struggling. You can get a quick snapshot of these hidden disorders in the next section. Know that the lesson sequences to establish skills (for example-how to redirect a child's vestibular balance from visual cues to the inner ear, etc.) have been constructed but are not included here. Just contact us at www.Neuro-Teach.com website if you need or want that level of information, and we will be happy to share what we have!

General Definitions

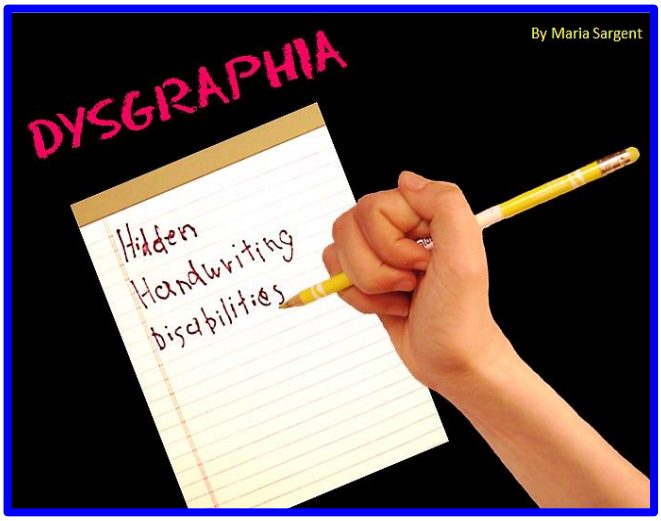
The instructional manuals illustrated below can be found in PDF and/or video form at www.NeuroTeachResources.com All materials at this website are provided free of charge.

Central Auditory Processing Disorder

People with this disorder cannot hear speech when there is competing sound (i.e. music, wind, fan blowing, people sniffling, etc.). The problem may range from the speech sounding "fuzzy or mumbled" to having it totally dropping out and not being perceived at all. Because this disorder is not typically picked up by the normal hearing exam (traditional "respond to the tone" test), many children go undetected and/or are misdiagnosed at ADD or ADHD. It is not unusual for students in my undergraduate and graduate Bio-Med courses to first realize the problems they have had all their lives stem from CAPD--- quite sad if you think about it! See the pictured manual for more information about this condition.

Dysgraphia

This extremely hidden problem ranks in my experience as the number one processing disorder that causes school failure. What is sad is the fact that many children with dysgraphia are often exceptionally bright and may even be gifted. Unfortunately, the most common and severe form of this condition, typically referred to as Dyslexic Dysgraphia, is rarely recognized. These children have very sloppy handwriting, misspellings, and usually some degree of hand pain. The condition is so disruptive because when the child attempts to write, the neurological processes associated with the physical act of writing block memory retrieval. In other words, they know the information but will be unable to transfer it to paper; it just disappears from memory while they are writing. The frustration they experience is so severe that many give up academically or become a behavior problem. This is a VERY common condition that absolutely every teacher and parent should know about! See this manual to begin spreading the word and help identify these children…

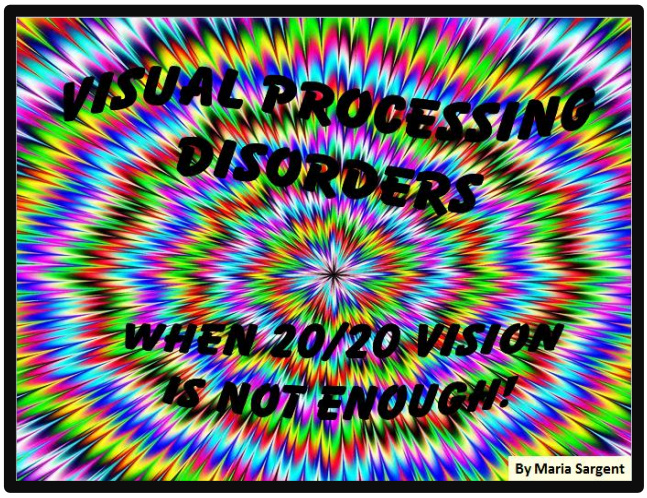


Sensory Processing Disorders

Sensory disorders are often associated with autism and other related problems, but many do not realize that otherwise typically-developing students who appear disorganized, hyperactive, and/or clumsy may actually be suffering from sensory disorders as well. Problems can range from children not being able to soften movements (i.e. always hyper-extending arms and legs due to an inability to stabilize their core or control their balance) to children who cannot relax at night enough to sleep (i.e. due to the sensation of spinning or falling when vestibular stimulation is reduced). A common form is seen in children who cannot stand still (i.e. this is often due to an itching or tingling sensation in arms, back and legs when movement is stopped). In other words, many of these students are miserable (…think of how you feel when wind blows across a severe burn), and then add the burden of being scolded for hyperactivity that cannot be controlled. These children can be helped, though, that is, once someone understands what is going on. Please see this manual for additional information on the basic categories of this disorder.

Visual Processing Disorders

We assume that if we show something to a student that they see exactly what we have shown, but that is not always the case. There are too many visual processing conditions to detail here, but all involve visual images that become distorted, appear "separated", or lose "pieces" during the brain processing task. Since these children have never seen the world in a different way, they typically do not mention any of these problems to adults, and will struggle in silence. Throw in the fact that many of these conditions are not identified by the traditional 20/20 vision exam, and you can see how we misdiagnose so many children who have visual processing problems. There is so much to learn about this topic…please see this manual to get started!



Concepts Covered

BASIC COGNITIVE SKILLS

SENSORY PROCESSING

AUDITORY PROCESSING

PROPRIOCEPTIVE SKILLS (AWARENESS OF BODY IN SPACE)

VESTIBULAR SKILLS (BALANCE)

VISUAL PROCESSING

SOCIAL & LIFE SKILLS

CHOICE-MAKING

GOAL SETTING & PERSEVERANCE

BEHAVIORAL SKILLS

ACADEMIC INTEGRATION (EXAMPLES)

Demo Pages

Using "Muscle-Memory"

Neuro-Concept: Ability to recall movements physically and duplicate them without looking (Enhances: overall memory process, repeated accuracy without correction, helps bypass weak visual or auditory skills, etc.)

Dance-Concept: Ability to remember and execute details of simple and complex movements (Enhances: ability to remember corrections, stage placement accuracy, ability to maintain positions without viewing others or using mirror, etc.)

Casual Inclusion in Dance Class

1. Have students visualize and/or mark details of dance curriculum, thinking about the body positions and muscle movements required. (*younger*- sitting tall, standing still, etc.; *older*- basic stances, simple steps, simple barre sequences; *oldest*- pattern details of movements, complex steps, and eventually complex movements and dances)
2. When there is a natural stopping point in an interaction, have the students "check" the stance, step, center position, etc. you are working on. Adjust item or muscle targeted for the needs of the individual student or class as desired.
3. Practice particularly difficult concepts either laying down or in slow motion/fragmented sequences

Targeted as Systematic Part of Dance Curriculum

- Target exercise #1 (above) by having the students list and demonstrate the muscle control learned for that item. Some students may benefit by singing or reciting these concepts silently to themselves until they are fully learned and automatic.
- For exercise #2, consider using pieces of masking tape or natural cues (i.e. lines in floor) to check positions. Slight touches as reminders are most effective when silent (silent cues trigger "self-talk" in the student's mind, and this, in turn, greatly enhances memory for that correction).
- Encourage students to find their own personal cue method. Some may prefer visual/picture methods, others simple chants/songs, reminder words, holding objects for finger placement, etc. Their choice of cues may make no logical sense to you, but that is OK as long as it works for them ☺

Dance Intervention

- Children may need sensory feedback to fully understand. In other words, they need to SEE the problem. Examples include: pieces of pipe cleaner bent along spine—then students step away to see curves; use of a mirror/pictures/video to show details of problems, executing barre movements outside in dirt or sand so they can see the arc being created by their foot, etc, etc, etc…
- Children may need to have steps broken down into smaller pieces with extensive visual cues. Simply using video and freeze-framing along the way works wonders but also consider using cards with a strip of Velcro and small pictures showing each part of the movement in sequence, etc.
- Muscle-memory is limited when *overall* memory is poor. If you suspect this problem, use simple memory games to see the length of sequences possible and adjust teaching as needed. Move slowly and consider using silent singing and chants since these can enhance memory put-down for many students. Also, consider the use of memory games outside of dance to really combat the problem.

Opening Side Vision

Neuro-Concept: Ability to use peripheral vision (Enhances: smooth movement, social awareness, visual processing, athletic skills, environmental awareness, etc)

Dance-Concept: Ability to understand body location in relation to others and in space (Enhances: group performances, cueing without losing stage presence, ability to spot while turning, precise placement on stage, etc.)

Casual Inclusion in Dance Class

1. Have students face front at the barre and give the signal to start exercises from a centrally-located **side** position by moving hand or some other action that can easily be seen. (*Easier level*- start music at same time; *Harder level*- have student show "ready" position in this manner before music begins)
2. Have students judge and/or adjust space in relation to others in group dance while keeping their face to the front. (*Easier level* - only deal with dancers to either side **or** in front; *Harder level*- know location in multiple directions and/or while moving in and out of formations)
3. Have students move across room in three lines, maintaining equal space between lines while keeping their focus to the front

Targeted as Systematic Part of Dance Curriculum

- Target exercise #1 (above) as part of the preparation-ready stance for most barre exercises
- Make sure positions in center or for dances are cued with tape then target exercise #2 by stopping and checking accuracy of position at random intervals during dance segments
- Begin to target exercise #3 by using some type of cue to manage movement across floor (i.e. line between tiles, masking tape line, etc.). Earlier levels of exercise should target simple movement straight across floor. Later/advanced levels can include advanced skills such as having students change to a different line without looking at floor or other dancers at your command or cue (make sure to use only a few dancers when you try this level the first few times….for obvious reasons.

Dance Intervention

- While any of the above exercises may be used, you may need to work on body position while laying down or standing still before dealing with movement, especially in relation to objects or other people. Please see *Appendix A* for examples of lessons at this lower level.
- Adjust location of visual cues to the student's current range. You can get an idea of their current level of peripheral vision by having them face front, and then have them extend their own pointer fingers out on each side of their body. Once they are in position, have them bring their fingers forward until they can see them without turning their head. See *Appendix A* for additional details.
- Students with visual processing problems may find it difficult or even painful to move their eyes, especially when attempting to use side vision. Be aware of pain and fatigue and adjust accordingly.

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Appendix A

Opening Side Vision (Additional Information)

Detecting Problems with Basic Body Position

As noted in the activities for this skill, children requiring the dance intervention level may have serious proprioceptive problems (i.e. sensory problems). If you are unfamiliar with these conditions, please see the Sensory Integration manual (pictured at right) at www.Neuro-Teach.com for information. It is also a very well-known problem, so there is a great deal of information to be found just through a general internet search.

In short, a proprioceptive problem may mean that the children are unable to determine their body position in space, so something as seemingly simple as standing straight at the barre, on a certain spot, or keeping their body and face pointed forward may be beyond them. In addition, using side vision may become impossible not because their eyes are unable to perform the skill, but because they cannot discern *the direction they must face*.

How can you tell if there is a problem this severe? Well, a simple way to tell is to play a quick body positioning game while the child is lying on the floor. Place a masking tape line on the floor or use a natural line made by the tile, seam in the floor covering, etc and ask the child to lay perfectly straight along it (i.e. legs straight and arms extend over the head) and then see if they are successful. For some children this alone will be a struggle…and would give you a natural starting point for your work.

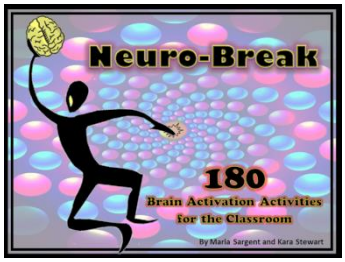
Others, well, they will get this starting position correct, but any deviation from that point will cause issues. To see if this level of demand is a problem, just ask the child to move off the vertical plane, described above, and then back into position. A few variations to try include:

1. Curl up to the front (i.e. pull knees and arms to chest and then extend back to the straight line)
2. Roll to one side (do both right and left…some may have problems on only one side)
3. Curl into a "C" shape (go off the line only with arms and legs then return to that straight line)

If the child is having problems with this level, you will again need to start with these basic proprioceptive skills prior to working on side vision. If you need assistance, any physical therapist, or movement therapist, special educator can help. You may also contact us for ideas…

Detecting Range of Side Vision (peripheral vision)

A second issue that may cause problems with this skill is an unusually narrow range of side vision. Many children with movement or visual problems develop this narrowed range (i.e. tunnel vision) because they over-focus on frontward movement, and over time, they either lose their ability to perceive objects to the side or become inattentive to them. So, if you see a child struggling with this set of activities, it may be because they have this narrowed range. To get an idea of their skill, just have the child stretch out their arms to the side with the pointer finger extended and see if they continue to see their fingers while facing front (90° to each side). If not, have them slowly move their fingers forward and let you know when they *can* see them. Note this general range and make sure you are standing within that range when running these activities. Children with an unusually narrow range should also be referred to an optometrist for further evaluation.



Additional vision-related activities for the younger child can be found at the Neuro-Teach website in this publication (under the *Arts Tab*). Look at the very last page for a listing of vision activities that might be useful.