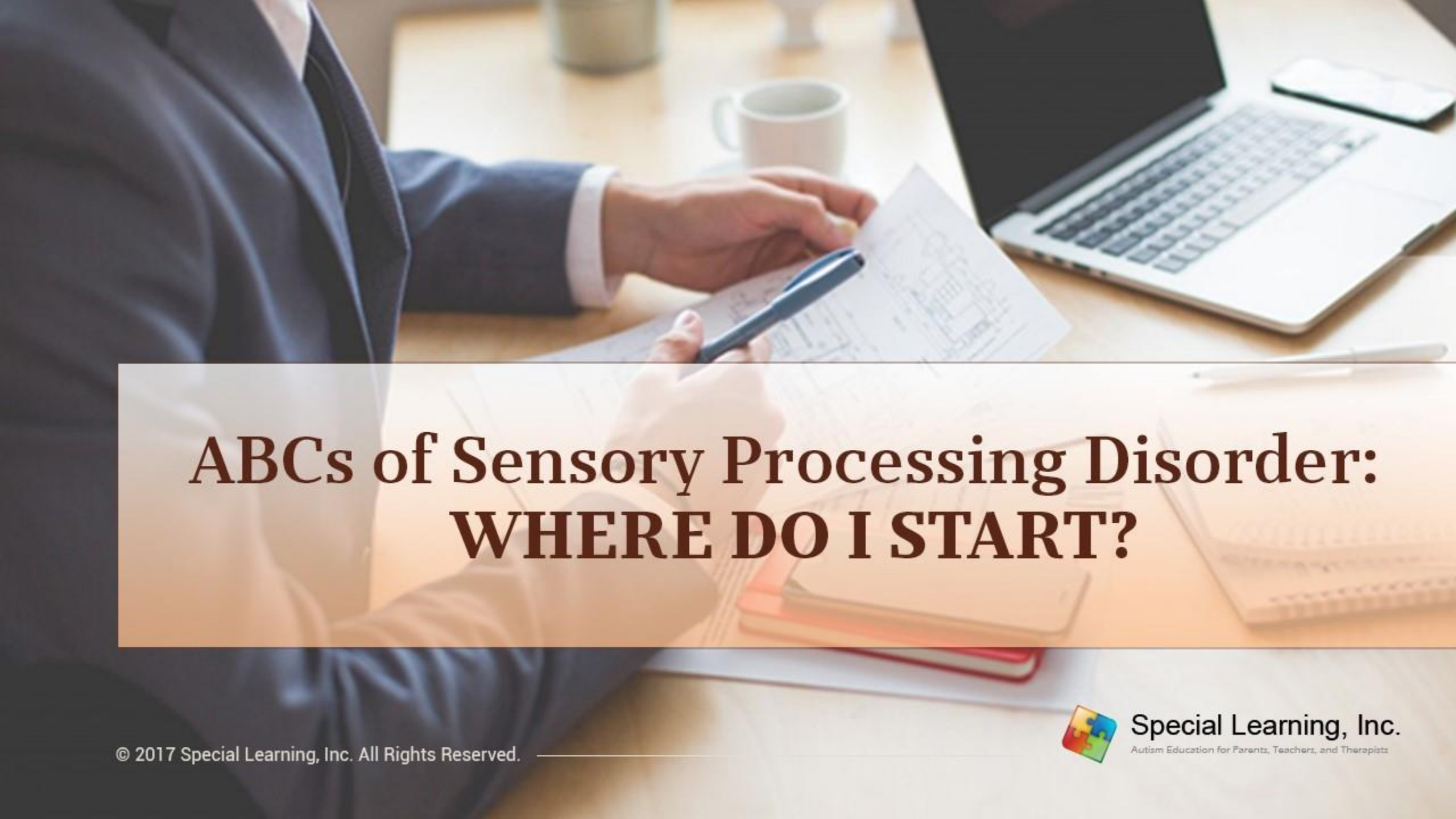

ABCs of Sensory Processing Disorder: WHERE DO I START?

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Speaker: Angela Sallerson Bio

Angela is originally from Rochester, NY and currently lives On Maui, Hawaii. She is a 1972 graduate of the Occupational Therapy program at the State University of New York at Buffalo. She has focused her study of practice on Sensory Integration and Sensory processing. She is SIPT certified and is a Senior Ready Approach therapist (Hanschu).

Her mentor, Bonnie Hanschu, OTR made profound differences in the way she looks at her clients, treats her clients and educates her families in regards to sensory processing difficulties. This includes the developmentally delayed adult, children who experience significant behavioral and developmental difficulties and the autistic individual who continues to have behavioral difficulties despite their intensive behavioral services.

Angela works for a small not for profit organization, Imua Family Services in Maui, HI. She currently works with children 3-6 who are having behavioral difficulties which are impacting their educational program. She worked with the 0-3 population for 20 years. She has found that there are a lot of high functioning children with Autism that go undiagnosed due to the profound lack of understanding of this type of disorder and the range of abilities that these people can have.

She has dedicated her life to educating herself in regards to Autism and Sensory Processing.

Speaker: Amanda Fishley Bio

Amanda Fishley, MA, BCBA, COBA is a Board Certified Behavior Analyst and Certified Ohio Behavior Analyst. She has experience working with children, adolescents and adults in variety of settings including school, home and mental health facilities. In each of these environments, she worked closely with parents, teachers, and paraprofessionals to develop and oversee implementation of behavior intervention plans. She has extensive experience mentoring and providing supervision to RBTs, BCBA candidates and behavior analysts.

As an Associate Director of Clinical Solutions for Special Learning, she is responsible for creating and presenting educational materials and promoting Special Learning's mission to positively impact the special needs community.

She received her Master's degree in Special Education/ABA from The Ohio State University. She has been working with in the field of ABA for over ten years.

Housekeeping

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Important Notes About Presentation

- The information provided is presented from an Occupational Therapy perspective.
- The perspective and approaches vary from behavior analysis.
- The importance of the two professions collaborating will be presented.

Objectives

- Guidelines on how to recognize and address sensory related challenges
- Differentiate four sensory processing problems
- Identify and learn practical, effective strategies to use in home, school and center-based settings
- Learn the basic framework of collaboration between OTRs and BCBAs

Important Acronyms

- ABA: Applied Behavior Analysis
- BACB: Behavior Analyst Certification Board
- RBT: Registered Behavior Technician
- BCaBA: Board Certified Assistant Behavior Analyst
- BCBA: Board Certified Behavior Analyst
- BCBA-D: Board Certified Behavior Analyst Doctoral level
- OT: Occupational Therapist
- OTD: Occupational Therapist Doctorate
- OTR/L: Occupational Therapist, Registered, Licensed
- COTA: Certified Occupational Therapist Assistant

Sensory Processing Differences in Autism

- One study (Ahn, Miller, Milberger, McIntosh, 2004) shows that at least 1 in 20 children's daily life is affected by SPD.
- Tomchek and Dunn (2007) found 95% of their sample size of individual with autism demonstrated some degree of sensory processing dysfunction
- Most kids with autism have sensory issues:
  - Many children with Autism present with modulation issues and cannot stay in calm alert, they bounce from low to high states of arousal which makes them disorganized and unable to interact with others.
  - Many children with Autism present with sensory sensitivities so do not do well in group situations where other children may bump into them or touch them.
  - Many children with Autism do not register sensation very well and are sensory seekers. They like to crash into people or things, fall down, move furniture, twirl around, flap their hands and other self-stimulating activities.
  - Other children do not filter out unwanted sensation and get overwhelmed with too much sensation.

Sensory Processing

- *Sensory processing* is how the brain takes in sensation from the world. When sensory processing is not working efficiently, this causes the brain to become disorganized effects our ability to stay in sync with what is going on around us.
  - The brain needs to take in sensation.
  - There is a need to regulate our state of arousal.
  - There is a need to adjust our internal states so we stay in sync and are able to respond to our environment and activities going on in the environment. (L.Barker)

Causes of Sensory Processing Difficulties

- The causes of sensory processing difficulties, per Hanschu are:
  - Disordered brain chemicals in the limbic system (emotion center)
  - Disordered brain chemicals in the brainstem (filter)
  - Lack of circuitry to get the right amount of sensation to the right part of the brain for processing

Primary Sensations

Vestibular Sensations- The vestibular system is in the inner ear. There are three semicircular canals which track angular movement. It gives us subjective awareness of body position and movement in space, gives us antigravity postural tone (to pull ourselves up against gravity) and equilibrium responses to stay upright in midline. This system also stabilizes eyes in space during head movement necessary for reading and writing. This system puts me in my space. I call this system the bus driver.

Primary Sensations

Proprioceptive Sensations- The proprioceptive system registers active movement of muscles and joints; any joint movement/joint input activates this system. It lets us know where our body parts are in space in relation to each other, gives us a good body map, it is a “me” sensation (with touch input).

Primary Sensations

Tactile Sensations- This is the largest sensory organ in the body and has a powerful effect on emotions. It directly influences the chemistry in the emotion center. Light touch is alerting for threats. In the framework of the Ready Approach, deep pressure touch is the sensation we use. It is a ME sensation and gives us our body boundaries. Along with proprioception it is the basis for our body image.

Evaluating Sensory Processing Issues

Sensory Processing Issues Assessed by an OT

- **Sensory Defensiveness:** definition- can happen at any time in one's life- it is disordered brain chemistry in the emotional memory and protective response systems.
- **Red Flags:**
  - Exaggerated avoidance of specific sensations
  - Touch, sounds, smells, movement
  - Unpredictable episodes of dramatic behavior
  - Fight/Flight brain chemistry
  - Person can become aggressive, run away, and can appear hyper vigilant

Defensiveness can be mild, moderate and severe and can change from day to day.

Treatment is pressure touch and joint compressions followed by heavy work activities.

Sensory Processing Issues Assessed by an OT

- **Sensory Modulation:** The brain chemistry for our arousal. This is about our ability to stay in sync with the situational demands of our day. From awake/alert to – asleep and all of the states in between. Optimal arousal is; awake, alert and focused. We often know by 2 if this will be a problem.
- **Red Flags**

➢ Self stims (hand flapping, finger flicking, rocking, humming)
➢ Difficulty with transitions
➢ Upset with change
➢ Hyperactivity
➢ Distractibility
➢ Shutdown – seems easy and passive, but is the worst modulation issue

Sensory Processing Issues Assessed by an OT

- Predictable outbursts
- Perseveration
- Echolalia
- Difficulty going to sleep and staying asleep or sleeps at inappropriate times

Treatment is slow linear swinging followed by joint compressions. This helps to adjust the chemistry in the Brain Stem part of the brain which filters the sensation allowing what is needed and keeping out the rest.

Sensory Processing Issues Assessed by an OT

- **Sensory Registration:** Definition-this is a problem with circuitry. In the framework of the Ready Approach it is about under registration of proprioceptive and vestibular input. Not enough circuitry to give the sensation to the brain that it needs- happens by 2 years old.

- **Red Flags**
  - Delayed responses
  - Low antigravity tone
  - Looks to see or loses what the body parts are doing
  - Under registration of movement
  - Poor control of force
  - Difficulty manipulating objects, poor tactile discrimination
  - Auditory language processing problems

Sensory Processing Issues Assessed by an OT

Treatment for poor registration is giving clean clear input of the sensation. Swinging is for vestibular and would be given front to back, front to back, stop, side to side, stop, side to side, stop, orbital with child facing the person swinging them around 2 times, stop then repeat another time. Once the swinging is complete, apply joint compressions to elbows or knees. Proprioceptive input would be heavy work, carrying, lifting, pushing, pulling, digging, etc. Anything against gravity. Heavy work is always good to help calm the nervous system. It is what sustains the therapy. We do not use touch sensation. That is handled through the treatment of defensiveness.

Sensory Assessments Used by OTs

SPM-P WPS standardized sensory assessment
Child Sensory Profile-2 Pearson standardized sensory assessment
Diana Henry, OTR also has evaluation tools.

These are standardized questionnaires that cluster and classify behaviors so that the OT can analyze them carefully and then create a plan of treatment for the person.
We look at sensitivities, avoidance, and seeking behaviors. These behaviors show us what the child is having issues with and then we would put together a plan for each individual child.

Assessments Used by OTs

Licensed Occupational Therapists using these assessments must be trained in sensory processing theories in order to be able to interpret the assessment. A simple score is not adequate to provide the information to drive the treatment program for each individual.

Common Tools Recommended by an OT

- Pressure vests - provide pressure touch and joint compressions- can be used during seat work. They can cause overheating of the child so give breaks as necessary.
- Things to blow on- different types of whistles that help to increase the oxygenation of the brain through inhalation and exhalation
- Swings- a toddler swing for young children hung in a garage, your home or doorway, platform swings, tire swings rope swings. NO SPINNING
- There are many types of trampolines but remember outside trampolines are not always allowed by insurance companies and can be **overly exciting** to the wrong child.

Common Tools Recommended by an OT

- Things to climb on and jump off of - pillows, steps, sturdy boards on cement blocks, beds onto pillows, falling onto the bed, crashing onto pillows.
- Things to carry, push, pull- water bottles, wagons with water bottles or phone books inside, phone books wrapped in contact paper, bean bags made of various weights, folded towels. Try to embed this work into the child's daily life so they can help around the house doing heavy work. Heavy work is the best activity. The Ready Approach likes to look at the Flow of The Day to encourage these heavy work activities into the natural flow of the day.

Common Tools Recommended by an OT

Caregivers who are providing the sensory input to these children via the Ready Approach need to be aware that you can give too much and over stimulate the child. When you are doing the swinging we never spin the child. We use a front to back two times and stop quickly, side to side 2 times then stop quickly, orbital movement which has the swing going around with the child facing you 2 times each way then stop quickly. Jumping is very stimulating so an overstimulated child would not be offered jumping.

A child who is over stimulated may be running around, have a big grin on their face, big eyes, maybe sweating and totally disorganized. Slow linear back and forth swinging helps this as well as pressure touch and joint compressions.

When To Use These Tools?

- ABA providers can use these tools as needed but when appropriate.
- Some kids do better when sitting on something moving, some kids need the pressure vest on during the trials and it can be removed during play time.
- It is best to discuss these items with the BCBA or with the RBT after the sensory assessment has been completed and the Occupational Therapist can watch the child during the trials to see how the various things are working.
- The swinging (if trained) and heavy work can be done before the trials begin for the day.
- The BCBA can take data on specific behaviors these tools are addressing to assess their effectiveness.

OTs and BCBAs Collaborating

What does OT and ABA have in common?

- Both work closely with the autism population
- The desire to want to improve socially significant deficits
- Both address a wide variety of behaviors
- Create meaningful change for the individuals we serve
- Have a higher professional educational background
- A commitment to using scientific, evidence-based interventions

More on “Sensory Behavior”

- OTs and behavior analysts may present different methods to address behavior, but both can contribute to improving the behavior
  - “Sensory” behaviors are typically behaviors that are automatically maintained from a behavioral perspective
- Instead of asking “is it sensory” or “is it behavioral?”, find out:
  - What is the client doing?
  - Why is he/she doing that? (the function)
  - What changes can I make to the environment to decrease/eliminate this behavior?
  - What behaviors do I need to teach the client? (replacement behaviors)

Behavioral Approach to “Sensory Behaviors”

- Behavior Analyst will conduct assessments to determine the function, or the maintaining variables
- Focus is on what can be observed, explained, and measured
- Social reinforcers should first be ruled out
- Manipulating antecedents and consequences

Behavioral Approach to “Sensory Behaviors”

- Examples of interventions:
  - teaching student to request
  - differential reinforcement
  - satiate MO
  - general environmental enrichment/changes
  - response blocking
  - matched stimulation
- OTs can help identify alternative behaviors that are appropriate and provide the same input

Using Sensory Items as Reinforcers

- Sensory items that are used as reinforcers should be provided contingently
  - For example, if a student enjoys sensory activities such as swinging, staff working with the student should be cognizant of when these are provided, such as during work time or earned time
- Staff should not bribe the student with sensory reinforcers (or any reinforcer). This means these shouldn't be presented/discussed during problem behavior
- How to properly use sensory items may be written into a plan so everyone providing treatment to the student is consistent

Classifications of Sensory Reinforcers

- Visual
- Auditory
- Tactile
- Kinetic

Examples of Visual Reinforcers

- Pinwheel
- Gears
- Top
- Blocks
- Dominoes
- Legos
- Computer
- iPad
- Trains
- Mirror
- Picture books

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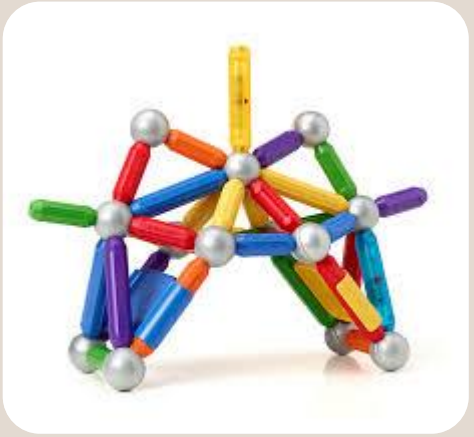
Examples of Auditory Reinforcers

- Music
- Musical instruments
- Games or videos that produce sound
- Books that produce sound
- Recording of self (e.g., making idiosyncratic noises)
- Microphone
- Kazoo
- Bells
- Clapping

Examples of Tactile (Touch) Reinforcers

- Sand
- Playdoh
- Finger paint
- Shaving cream
- Textured/rubbery toys
- Pom Poms
- Magnets
- Ball pit
- Tickling
- Water play



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Examples of Kinetic (Movement) Reinforcers

- Swing
- Balance beam
- Scooter board
- Bicycle
- Bowling
- Air Hockey
- Tug-o-war
- Being thrown in the air

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Collaboration between OT and BCBA

- To date, has been limited
- Conflicts have arisen over:
  - Evidence-based interventions
  - Behavior interventions
  - Scope of practice
- Parents can find themselves mediating two different perspectives and they and the client are the center of the conflict

BCBAs and OTs Working Together

Strengths of a BCBA (and what they can contribute to Occupational Therapists)

- Determining function of behavior(s)
- Data collection and analysis
- Successful at behavior change procedures by utilizing reinforcement and shaping behaviors
- The ability to analyze and modify the environment to change behavior
- 20+ years of literature/research treating automatic maintained behaviors is a strength of behavior analysis

BCBAs and OTs Working Together

Strengths of an OT (and what they can contribute to BCBAs)

- Neurodevelopmental and biological knowledge
- Training in ABA so the therapist knows how the BCBA thinks.
- Training in Sensory Processing evaluation and treatment.
- The ability to know when it is sensory and when it might not be sensory by doing a good assessment of what is happening in the child's life with the BCBA or parent.
- OTs can also help the BCBA with the child's fine motor development.
- Self-Help skills are often delayed and the OT can help with task analysis backwards chaining and other activities that may help the child learn these tasks.
- Printing is a skill that requires a good tripod grasp, the OT can help with activities that will help the child's pencil grasp improve.

What Does It Mean to Collaborate?

- Sharing information across professions
- The act of working together to improve outcomes
- Respecting the knowledge, perspectives, and contributions of other professions

***Reasons to collaborate*:**

- Again, leads to improved outcomes
- A team approach: increasing communication among members of the team working toward the same goals and outcomes for that student

Additional Benefits of Collaboration

- Interdisciplinary collaboration improves consumer outcomes across all domains of Occupational Therapy (Watling, Scheibel, & Alexander, 2014).
- Examples of successful collaborative partnerships include: Speech Language Pathologists, Teachers, Education Administrators, Psychologists, Psychiatrists, and Physical Therapists.
- Working with other disciplines expands one's professional view and helps to provide the best holistic and most comprehensive treatment for clients

Watling, R., Scheibel G., & Alexander, K.C. (2014)

Barriers to OTs and BCBAs Collaborating

Watling, Scheibel, & Alexander (2014) outline these barriers:

- There are philosophical differences between the professions
- Different practice models
- Misunderstandings of other profession
- Differing approaches to evidence-based service

Additional barriers include:

- Environmental
- Communication

Breaking The Barriers

- Share leadership
  - Remember the goals of the client
- Emphasize the value of helping the client
- Be willing to share what you know
  - Communicate your recommendations and expertise
- Know the evidence for each profession
- Develop professionalism

BCBA and OT Working Together

- Be familiar with the professional's strategies before making a recommendation
  - You want to be comfortable with their practice and doing your research can be helpful
- If working with the client, both should be part of the treatment team
  - Making decisions and implementation of treatment
- Communicate clients' needs on a regular basis and ideas to collaborate
  - Find the best way to communicate

Case Scenarios #1

Scenario 1:

Dylan's teacher requested assistance because Dylan is licking his fingers with what nearly seems like all day. He licks his fingers during instruction, during unstructured time, recess, and other times throughout the day.

What steps should be taken?

Case Scenario #1

Board Certified Behavior Analyst's role:

- The BCBA will write a behavior definition and create a data sheet to begin tracking data. Observations of student and interviews with teacher may be necessary.
- Conduct a functional behavior assessment to determine the function. Once the function is determined, an intervention will be developed.
- In this case, the behavior was automatically maintained and Differential Reinforcement of Other Behavior (DRO) was utilized.
- A consult with an OT to determine appropriate replacement/compatible behavior was sought before implementing the intervention.

Case Scenario #1

Occupational Therapist's role:

- Get a good idea of what is happening at home with the family and any illnesses the child may have had or has.
- Complete a sensory assessment.
- Score and interpret the sensory assessment.
- Discuss the findings with the BCBA and RBT in a team meeting.
- Plan a strategy with the team of what sensory input might help the child and meet with the RBT and the child to implement and train the RBT in this program within the parameters set by the BCBA.
- If working, per the RBT, continue and then fade the sensory input to see if still necessary. If there are issues at home, have a discussion with the family to see if the family issues can be helped to reduce the stress on the child. Continue to monitor the child until the licking behaviors have subsided.

Case Scenarios #2

Scenario 2:

A student is frequently observed holding his ears. He holds his ears during loud situations but also when working on tasks. The student presses really hard on his ears and has since developed issues related to the pressing, such as an ear drum bursting.

What steps should be taken?

Case Scenario #2

Board Certified Behavior Analyst's role:

- The BCBA will write a behavior definition and create a data sheet to begin tracking data. Observations of student and interviews with teacher may be necessary.
- Conduct a functional behavior assessment to determine the function. Once the function is determined, an intervention will be developed.
- This behavior appeared to have multiple functions, including escape from aversive sounds, escape from verbal instruction, and automatically maintained. The BCBA will consult with an OT before developing an intervention to decrease the behavior so an appropriate, compatible behavior can be taught prior.

Case Scenario #2

Occupational Therapist's Role:

- A sensory assessment will be completed by the OT.
- A health survey will be done for this child due to questionable health issues. This can be done with or through the pediatrician to rule out yeast infections etc or dietary sensitivities.
- Headphones can be used with the child if the child can tolerate it and if it is truly a sensitivity to sounds.
- Children with extreme self injurious behaviors need to be checked very carefully for health issues. Sensory issues may be present but the health issues may be causing the behaviors which lead the therapist to think it is a sensory issue. This child had his eardrum burst so this therapist thinks that he had a severe ear infection which caused him pain and led to the covering of his ears.

Resources

http://amymcginnis.com/: Contains information on ABA and OT and includes free downloads, such as Potential Reinforcer Profile

The Ready Approach, Bonnie Hanschu, OTR, Laura Barker, OTR/L

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- Mind and Brain,J LeDoux and W. Hirst
- Neurotransmitter Revolution: Serotonin, Social Behaviour, R. Masters M. McGuire
- Shadow Syndromes, J. Ratey
- Articles written by Bonnie Hanschu, OTR
- A variety of books on Autism by D. Williams and Temple Grandin

Thank You!

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