





**Perspectives on Deafness With Autism:
Changing How We Think**

Deafness with Autism:
A School Age Communication Perspective



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Learning Objectives

- List components of a thorough case history review and list unique assessment strategies to use during evaluations in order to write appropriate intervention goals.
- List unique intervention strategies that can be used to meet success during therapy sessions.
- Describe the importance of interdisciplinary referral, evaluation, and collaboration to meet the needs of children with deafness and ASD.



Autism Spectrum Disorder

- Autism spectrum disorder is marked by:
 - Extreme unresponsiveness to other people – deficits in social-emotional reciprocity
 - Severe communication deficits
 - Highly rigid and repetitive behaviors, interests, and activities
- Symptoms must be present in multiple settings
- Symptoms appear early in life, before age 3
- Symptoms must cause clinically significant impairment in social, occupational, or other areas of functioning

rehAB Incidence and Prevalence of ASD

- According to the CDC, approximately 1 out of 68 children in the US have ASD
- Males have a greater likelihood than do females of developing ASD
 - Ratio is as high as 5:1 (1 in 42 boys; 1 in 189 girls)
- Over 2 million individuals in the US are affected by ASD

Surveillance Year	Birth Year	Number of ADDM Sites Reporting	Prevalence per 1,000 Children (mean)	This is about 1 in # children...
2000	1992	6	8.7 8.0-9.9	1 in 150
2002	1994	14	8.6 7.8-9.6	1 in 150
2004	1996	8	8.0 6.4-9.6	1 in 125
2006	1998	11	9.0 8.1-9.9	1 in 110
2008	2000	14	11.3 10.7-12.0	1 in 88
2010	2002	11	14.7 13.4-16.0	1 in 68

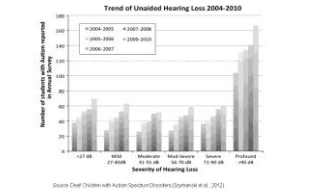
ADDM Network (2008)

- 10 per 1000 (DSM-5) compared to 11.3 (DSM-IV-TR)

Data obtained for the CDC website (<http://www.cdc.gov/ncehd/autism/data.html>)
Maenner et al. (2014). *JAMA Psychiatry*, 71, 292-300.

rehAB Hearing Loss & ASD Comorbidity

- Data from the 2004-2010 Annual Survey of DHH Children and Youth
- 37,828 deaf and hard of hearing children
- 39.9% of all deaf children had an additional disability
- Significant difference in the severity of hearing loss for children with ASD
- Disproportionate number of profoundly deaf children having a co-existing diagnoses of ASD (35.4%)



Szymanski et al. (2012) *J Autism Dev Disord*, 42, 2027-2037

rehAB Incidence and Prevalence of ASD and Hearing Loss

- **Autism**
 - According to the CDC, about 1 out of 68 children in the US
 - Males have a greater likelihood than do females of developing ASD
 - Ratio is as high as 5:1 (1 in 42 boys; 1 in 189 girls)
 - Over 2 million individuals in the US are affected by ASD
- **Autism & Hearing Loss**
 - 1-6% of children who are deaf also have ASD
 - Rosenhall et al., 1999
 - 1.6% unilateral
 - 7.9% mild to moderate
 - 3.5% profound
 - Gallaudet Research Institute (2009)
 - 1 in 59 children with hearing loss receive services for ASD
 - Jure et al., 1991 - 5.3 %
 - Levy et al., 2010 - 1.7%





Hearing Loss and ASD Comorbidity

- With the implementation of newborn hearing screening in the United States, the age of diagnosis of hearing loss has decreased
- With up to 40% of children with hearing loss exhibiting an additional disability, early identification of autism in this population is crucial as language development can be significantly impacted
- Making an additional diagnosed of autism in a child who is deaf can be challenging as the complexities of determining whether the delays in communication abilities are the result of the hearing loss or a comorbid diagnosis of autism.

Jareen Meitzen-Derr et al. (2014) International J of Ped Oto. 48, 112-118



Hearing Loss and ASD Comorbidity

Although there is a scarcity of literature regarding this population, Meitzen-Derr et al. (2014) reported:

- 2008 report by CDC reported average age of diagnosis of autism in children with normal hearing to be 48 months
- Delayed diagnosis of autism in children with hearing loss, with this study reporting the average age of diagnosis to be 66.5 months
- Children with more profound hearing loss and cochlear implants were diagnosed sooner than children with lesser degrees of hearing loss

Jareen Meitzen-Derr et al. (2014) International J of Ped Oto. 48, 112-118



Communication Assessment

Review of case history information prior to the evaluation session:

- Medical history, inclusive of pregnancy and birth history
- Hearing history and amplification
 - Tactile defensiveness
 - Increased perception of loudness
- Vision testing/screening
- Previous evaluations, including additional diagnosis
- Educational history



Communication Assessment

- Developmental Milestones
 - Special attention to social and emotional development:
 - Relationships
 - Eye contact
 - Physical contact
 - Interacting with other children
 - Initiation of play activities
 - Use of objects symbolically
 - Development of pretend play



Communication Assessment

- Developmental Milestones
 - Special attention to communication development:
 - Use of non-verbal communication strategies
 - Gestures, pointing
 - Joint attention
 - Initiation of communication
 - Communication of feelings
 - Use of social language
 - Initiation of communication
 - Taking turns in a conversation
 - Ending a conversation



Communication Assessment

- Developmental Milestones
 - Special attention to behavior:
 - Strong reactions to changes in routine
 - Fixated on objects / interests
 - Tantrums / self injuring behavior
 - Self-stimulating behavior
 - Avoidance of or preference to certain textures, smells, lights, sensations



Communication Assessment

Considerations for assessment:

- Information from multiple sources and settings
- Role of observation in the assessment process
- Role of criterion referenced evaluation measures
- Role of standardized evaluation measures
 - Flexibility
 - Consideration of listening age vs. chronological age



Communication Assessment

Areas of assessment:

- Language comprehension and expression
 - PLS-5, CELF-5, EOWPVT, ROWPVT
- Listening
 - IT-MAIS
 - Cottage Acquisition Scales for Listening, Language, and Speech
 - Functional Auditory Performance Indicators (FAPI)



Communication Assessment

- Social language assessment for the child who is pre-verbal or nonverbal:
 - Do, Watch, Listen, Say by Kathleen Quill, 2000
 - Social skills (general play, behavior)
 - Solitary play (use of objects, scripts, creative play)
 - Social play (parallel play, turn-taking, cooperative play)
 - Group skills (attending, waiting, following directions)
 - Community social skills (shopping, safety, recreation)
 - The Social Play Record by Chris White, 2006



Communication Assessment

- Communicative Intent – does the child want to communicate? Communication Temptations (Weatherby and Prizant)
- Functional observations
 - Does the child understand cause and effect?
 - Does the child initiate communication?
 - What form does the child's communication take?
 - What is the function of the child's communication?



Communication Assessment

- Social language skills for the child who is verbal: standardized tests
 - **Children's Communication Checklist-2** Psycorp: Harcourt Assessment
 - Ages 4:0 through 16:11
 - Identification of pragmatic language assessment, may be useful to identify children who need additional evaluation for ASD
 - Measure used with teachers and caregivers that assesses: language content, language form, pragmatics, behavior



Communication Assessment

- **Comprehensive Assessment of Spoken Language**
 - Ages 3:0 through 21:11
 - Pragmatic judgment subtest
 - Supralinguistic subtest (abstract language)
- **Test of Problem Solving** (LinguaSystems)
 - **TOPS:3** Ages 6:0 through 11:11
 - **TOPS:2 Adolescent** Ages 12:0 through 17:11
- **Social Language Development Test** (LinguaSystems)
 - Ages 6:0 through 17:11
 - Examines social language skills needed to take another's perspective, predict consequences, use social grace to get along with peers



Communication Assessment

- Social language skills for the child who is verbal: informal checklists and rating scales
 - **The Social Play Record** Chris White
 - *Social Thinking Dynamic Assessment Protocol: **Thinking About You, Thinking About Me – 2nd Edition*** by Michelle Winner, 2008
 - Ages 8 years and above
 - Assessment of higher level social thinking skills and enhancing perspective taking of others
 - Evaluator tools for analyzing each area and tools for remediation



Communication Assessment

- Discussing your concerns with the family
- Documenting your concerns from the evaluation
- Discussing the child’s strengths as well as areas of need
- Suggesting referrals to additional professionals



Therapy and Interventions





Three core symptoms of ASD are:

- 1. Deficits in social interactions
- 2. *Communication impairments*
- 3. Restricted or repetitive behaviors



What is Communication?





Setting the Stage for Therapy

- Dynamic assessment
- Determine rate of growth:
 - Auditory skills
 - Communication skills





Prognosis for Language Development

- Many parents of children with autism have been told that if their child isn't speaking by age 4 or 5, he/she isn't likely to ever do so
- Current study published in *Pediatrics* (2013)
 - Children with ASD who present with severe language delays at 4 years can be expected to make notable language gains
 - 535 children, ages 8 to 17, diagnosed with ASD and with severe language delays at age 4
 - 47% became fluent speakers
 - 70% could speak in simple phrases
 - Children who developed language had higher IQs and lower social impairment
 - Stereotyped behavior/repetitive interests and sensory interests were not associated with delayed speech acquisition

Wodka, E., Mathy, P., & Kalb, L. (2013). Predictors of phrase and fluent speech in children with autism and severe language delay. *Pediatrics*, 131, 1128-1134.



Prognosis for Language Development

Primary predictors of language development in children with ASD:

- Non-verbal intelligence scores
- Social engagement
- Repetitive/stereo-typically /abnormal sensory behaviors are not predictors

Non-Verbal Intelligence:

- Children within 1 SD of the mean (IQ \geq 85) attained language earlier than those below the -1 SD mark (borderline to low average range)
- Children with borderline to low average range are at similar risk as those whose levels are consistent with intellectual disability

Wodka, E., Mathy, P., & Kalb, L. (2013). Predictors of phrase and fluent speech in children with autism and severe language delay. *Pediatrics*, 131, 1128-1134.



Intervention Implications

- Consider non-verbal intelligence
- Consider social communication
- Development of social cognition strategies/theory of mind/perspective taking
- Expect progress at a slower pace for lower functioning children (lower non-verbal, more impaired social functioning)
- Developmental language progress



Prognosis for Auditory Development

- Meinsen-Derr, J., Wiley, S., et al., 2014
 - 24 children with dual diagnosis
 - Children completed comprehensive autism evaluation, including ADOS
 - Mean age of hearing loss diagnosis: 14 months
 - Mean age of autism diagnosis: 66.5 months
 - 41 months between ASD and hearing loss diagnosis
 - 67% had severe-profound hearing loss
 - 58% had received a cochlear implant
 - 38% used speech as their mode of communication
 - 33% of children who had a CI used some form of augmentative communication (PECS system)

Meinsen-Derr et al. (2014). Autism spectrum disorders in 24 children who are deaf or hard of hearing. *International Journal of Pediatric Otorhinolaryngology*, 78, 112-188.



Intervention Implications

- Outcomes with cochlear implants are variable
- Not all achieve speech perception/spoken language
- Adapt 'typical goals' to include visual support systems
- Build a communication program that supports use of sound and speech
- Establish **functional** auditory goals
- Focus on connecting with environmental sounds
- Recognizing familiar voices



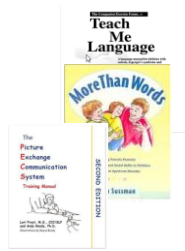
Timelines and Goal Planning

- Differ significantly from typically developing children or children with only one diagnosis
- Functional goals based on assessment
- Cross disciplinary planning and co-treatment



Communication Goals

- Non-verbal communication skills
 - Joint attention
 - Emotions
 - Body language, gestures, posture
 - Point of view
- Social communication skills
 - Initiation of communication
 - Topical conversational skills
 - Maintaining conversations
 - Pragmatics
- Grammar & Syntax
 - Academic language based concepts
 - Understanding of abstract ideas, as they relate to communication
- Vocabulary
- Auditory skill development





Intervention Strategies

- Deaf and hard of hearing children and ASD children have communication impairments
- Language interventions - must go beyond amplification and speech-language therapy
- Language interactions require adaptations to make communication and socialization accessible
- Evidence based practices (EBP) for children with deafness and ASD don't exist
- Borrow EBP's from the field of autism

Jones Bock, S., Borders, C. and Michalak, N. (2013). Core Strategies for Supporting Children with a Dual Diagnosis of ASD and Deafness. *TASN Autism and Tertiary Behavior Supports*, 1-4. Retrieved from <http://www.TASNBehaviorSupports.com>



Intervention Strategies

- 5 Core Strategies** for a child with dual diagnosis:
1. Conduct a functional behavior assessment (FBA) to identify the communicative intent of a child's behavior- what is the child trying to tell you?
 2. Teach functional communication- communicate in a socially acceptable way; emphasis of communication is on the function NOT the form (oral versus sign)
 3. Identify effective reinforcers – anything that increases a positive behavior, think outside the box
 4. Use visual strategies and environmental supports – children with deafness and ASD understand the world through their eyes
 5. Provide choice making opportunities

Jones Bock, S., Borders, C. and Michalak, N. (2013). Core Strategies for Supporting Children with a Dual Diagnosis of ASD and Deafness. *TASN Autism and Tertiary Behavior Supports*, 1-4. Retrieved from <http://www.TASNBehaviorSupports.com>



Functional Behavior Assessment

- Identify the communicative intent behind the behavior
- Plan interventions that match communicative intent of the behavior



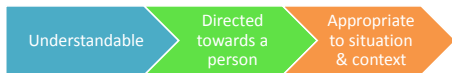
Functional Communication

- Forms of behavior used to express wants, needs, feelings and preferences that others can understand
- Allows a child to express self without resorting to a problem behavior or communication breakdown

Chambers, L. (2011, March 8). Introduction to PECS picture exchange communication system. *Kansas Technical Assistance Network Autism and Tertiary Behavior Supports*. Recorded webinar retrieved from <http://www.kansasced.com/webinarsarchive.php>



Functional Communication





Examining the Functionality of Communication

SETT Framework (Zabala, 2010)

- Student
- Environment
- Task
- Tools

Fisher, C. (2014, March). A framework for augmentative and alternative communication... *Kansas Technical Assistance Network Autism and Tertiary Behavior Supports*, 1-2. Retrieved from <http://www.TASNBehaviorSupports.com>



Student

- Abilities
- Needs
- Motivation



Environment

- Who?
- What?
- Where?



Task

- Successful and active communication with others
- What are the specific communication requirements?



Tool

- Matching the right communication tool
- Consider multi-modality
- Model the communication system
- Use the system across environments
- Use across tasks
- Meaningful



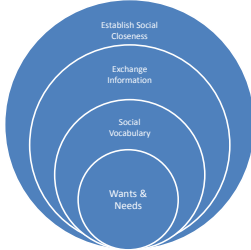
Assessing Reinforcers

- Observe and ask what is motivating
- Child specific motivators
- Think outside the box
- Tangible and edible
- Activities
- Re-assess frequently





Communication



Goetz, J. and Chambers, L. (2011, October 8). It's all about the interaction: Strategies for pragmatic organization of communication systems part 1. *Kansas Technical Assistance Network Autism and Tertiary Behavior Supports*. Recorded webinar retrieved from <http://www.kansasad.com/webinararchive.php>



Learning to Listen

The Developmental Model

- DETECTION of sound
- DISCRIMINATION BETWEEN SOUNDS
- IDENTIFICATION OF SOUNDS
- COMPREHENSION OF auditory information
- No matter the age!!!



What does therapy look like?

- Think outside “the norm”
- May require supports with visual, tactile or augmented communication
- Move away from the therapy room or table
- Ask family to bring items from home
- Picture schedules
- Experience books
 - Picture Exchange Communication System (PECS)
 - Other Augmentative Communication





IEP Goals and Collaboration

- Collaborate with family and team to identify goals together
- Include functional communication goals
- Include functional auditory goals
- Assessment of auditory skills and speech and language skills to assist in setting appropriate goals.
- Routine programming of child's device for optimal sound
- Assess child's educational setting for acoustic environment and integration of auditory input
- Provide inservice to school professionals as needed/requested



- Parents and school professionals should be clear about what expectations they have for performance
 - ✓ Communication Mode
 - ✓ Classroom Setting
 - ✓ Support Services
- These expectations should be documented clearly within the child's IEP



Write down something new that you learned from today's presentation.