Dually Diagnosed: An Interdisciplinary Approach to Autism and Hearing Loss

Amy Szarkowski, PhD
Susan Wiley, MD
LEND AuD Workshop
May 2023

Who is REALLY an expert in ASD + DHH?
Perhaps by sharing perspectives, we can all understand a bit better

Psychologist

Developmental Behavioral Pediatrician

Deaf individual with Autism

Audiologists

Topics for Today’s Talk

Arriving at a “dual diagnosis”

“Red flags” - recognizing ASD in DHH children

Learning from a person with lived experience

Implications for Audiologists
Arriving at a ‘dual diagnosis’

Why it is important

- Can complicate communication development
- Confusing diagnostic process
- Misdiagnosis can greatly impact outcomes
Contextualizing ASD in Children with Reduced Hearing

Not responding to sound may be a symptom of ASD rather than a failure of technology or the child’s hearing.
Confirmatory Diagnosis of ASD in DHH Occurs at Older Ages

Table 2  Age of Diagnosis of Autism Spectrum Disorder in Children Who are Deaf and Hard of Hearing

<table>
<thead>
<tr>
<th>Age Range</th>
<th>Mean (y)</th>
<th>Median (y)</th>
<th>Mode (y)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial or provisional diagnosis</td>
<td>4.5</td>
<td>3.6</td>
<td>3.6</td>
</tr>
<tr>
<td>Subsequent or confirmatory diagnosis</td>
<td>6.35</td>
<td>5</td>
<td>5.6</td>
</tr>
</tbody>
</table>

Szarkowski, Flynn & Clark (2014) – Dually Diagnosed, retrospective study

Age of Diagnosis for ASD and Hearing Loss

Median 53.5 months  Median 78 months

Imagine for a moment

- Testing for ASD – no gesture allowed
- Child is not responding to their name – why?
- Eye contact with a Deaf child
- Other health concerns (etiologies of reduced hearing)

Understanding DHH & ASD

Higher ASD Rates in DHH children (or maybe not...)

Severity of DHH & ASD dx = Mixed results

DHH children are later to be diagnosed (esp. mild HL)

Delayed dx → delayed intervention → poorer outcomes

ASD + DHH → complicates language development
Diagnostic Challenges

Lack of standardized assessment tools for Deaf/HH

Providers - trained in DHH or ASD, not many trained in both

Amy Szarkowski

Susan Wiley

Aaron Shields

Deborah Mood

Christine Yoshinaga-Itano
What We Know (& lots that we don’t)

Atypical Preverbal Communication

- Reduced eye contact
- Lack of pointing
- Poor orientation for communication
- Reduced joint attention
Looking Out for Language

DIFFERENCES

DELAYS

INSUFFICIENT EARLY LANGUAGE ACCESS

“LANGUAGE DEPRIVATION”

Language features of ASD in ASL

Features similar to oral language but may present differently in visual language

- Palm reversals
- Pronoun avoidance vs. pronoun reversal
- Echolalia
- Persistent use of individual’s own gestures rather than formally instructed/used sign vs. neologisms (e.g. “red” vs. “ketchup”)
- Failure to use appropriate sign space
- Mixed results regarding use of facial aspects of sign language and impact of ASD
Social Difficulties

- Failure to initiate/respond to peers when communication taken into consideration
- Failure to recognize Deaf cultural norms, etc.

- Not attributable to life experience
- Not a result of reduced access to communication partners.
Red Flags

Differentiating ASD, DHH & ASD + DHH

Delving deeper to understand the “symptoms” and the presentation
## Deficits in Social Reciprocity

<table>
<thead>
<tr>
<th>ASD</th>
<th>Typical DHH</th>
<th>ASD &amp; DHH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atypical social approach</td>
<td>Approp. Social smile &amp; eye contact</td>
<td>Reduced/absent social smile; limited eye contact</td>
</tr>
<tr>
<td>Difficulties with reciprocal conversations</td>
<td>Give/show, gesture, vocalize; approp. Joint attention</td>
<td>Limited give/show behaviors; reduced joint attention; difficulty engaging at their language level</td>
</tr>
<tr>
<td>Reduced sharing of affect /interests/ enjoyment and limitations in social interaction</td>
<td>Imitates motor/vocal output &amp;/or signs</td>
<td>Reduced sharing of affect; difficulty comprehending facial/signed emotion cues</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not respond to name or culturally approp. attention-getting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Difficulty understanding others’ needs, feelings</td>
</tr>
</tbody>
</table>

## Communication Challenges

<table>
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<tr>
<th>ASD</th>
<th>Typical DHH</th>
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<tbody>
<tr>
<td>Poorly integrated verbal/nonverbal behavior</td>
<td>Well integrated gestures/eye contact/vocalizations</td>
<td>Poorly integrated sign and spoken language (if utilizing total communication)</td>
</tr>
<tr>
<td>Limited facial expressions/gestures</td>
<td>Wide range of facial expressions; use of ASL facial grammatical markers</td>
<td>Limited gestures, lack of pointing; Limited range or poorly coordinate facial expression</td>
</tr>
<tr>
<td>Poor understanding of nonverbal cues</td>
<td>Will learn incidentally with visual/auditory access, the sequence of learning language will follow typical developmental norms</td>
<td>Poor understanding/use of integrated ASL facial grammatical features</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Limited spontaneous language use of words within child’s repertoire for social interaction</td>
</tr>
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</table>
### Social Relationships

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<tr>
<th>ASD</th>
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<th>ASD &amp; DHH</th>
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<tbody>
<tr>
<td>Difficulties building relationships appropriate to developmental level</td>
<td>Interested in people and able to develop age-appropriate relationships when communication is accessible</td>
<td>Reduced shared enjoyment; Difficulty making and sustaining friendships even when communication is accessible</td>
</tr>
<tr>
<td>Difficulty with imaginative play</td>
<td>Imaginative play follows typical developmental course (commensurate with language and nonverbal IQ)</td>
<td>Delayed symbolic play skills, inconsistent with nonverbal IQ; play - unimaginative &amp; rigid</td>
</tr>
<tr>
<td>Difficulty making friends or limited interest in people</td>
<td>May prefer to control conversation or play if having troubles following changes in conversation based on language level or in challenging listening environments</td>
<td>Unusual social overtures toward others (e.g. backing into parents, grunting at peers, hitting peers to initiate contact)</td>
</tr>
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</table>

### Stereotyped/Repetitive Movements

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<tr>
<th>ASD</th>
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</thead>
<tbody>
<tr>
<td>Stereotyped repetitive speech (repetitive language, idiosyncratic phrases)</td>
<td>Usually typical; esp. with well-established communication system and ave nonverbal IQ</td>
<td>Idiosyncratic gestures (e.g. persistent use of made up gesture, distinct from home sign, when formal sign taught/used)</td>
</tr>
<tr>
<td>Echolalia</td>
<td>Echolalia can occur as a typical developmental pattern, but should be for a brief period of time</td>
<td>Echolalia in sign or spoken language</td>
</tr>
<tr>
<td>Repetitive use of objects</td>
<td>Use of objects linked to communication &amp; vocabulary</td>
<td>Highly repetitive play with objects</td>
</tr>
</tbody>
</table>
Rigid & Repetitive Behaviors

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<th>ASD</th>
<th>Typical DHH</th>
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<tbody>
<tr>
<td>Excessive resistance to change</td>
<td>If communication is solid &amp; child understands, will often change routines. Resistance issues can be present – perhaps due to comprehension issues.</td>
<td>Significant upset when routines are disrupted.</td>
</tr>
<tr>
<td>Excessive resistance to change</td>
<td>May struggle with transitions if language level doesn’t yet support understanding first-then concept.</td>
<td>Resistant to change, transitions are difficult (these difficulties are beyond that anticipated by language level).</td>
</tr>
</tbody>
</table>

Restricted Interests

<table>
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<tr>
<td>Preoccupation with a particular object or topic</td>
<td>Usually not demonstrated or very brief; able to move to new toys, objects. Interest can be shaped by lived experience.</td>
<td>Repeated play with toy or object (often with unintended purpose).</td>
</tr>
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</table>
## Sensitivity

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<td>Unusual sensory interests (visual inspection, smelling objects), fascination with lights/spinning objects</td>
<td>May have some atypical sensory responses</td>
<td>May show sensitivity to wearing amplification May show limited response to amplification (seem to be more deaf than you would expect based on their audiogram or amplified responses)</td>
</tr>
<tr>
<td>Indifference or oversensitivity to pain/heat/cold</td>
<td>Hyper- and hypo-sensitivities More typically differences with vestibular functioning</td>
<td>Hypo and hyper-sensitivities</td>
</tr>
</tbody>
</table>

## Other Diagnostic Considerations

**Learning/Communication:**
- Intellectual Disability
- Communication Disorders

**Behavioral Conditions:**
- ADHD
- Anxiety disorder
- Obsessive compulsive disorder
- Sensory integration difficulties

**Medical Condition:**
- Tourette’s Syndrome
- Epilepsy
- Landau-Kleffner and other epileptiform language disorders (rare)
- Peripheral vision cuts
- Benign stereotypies
<table>
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<tr>
<th>Communication considerations</th>
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<tbody>
<tr>
<td>Multifaceted approach to language is warranted</td>
</tr>
<tr>
<td>Language must be accessible to children who are D/HH</td>
</tr>
<tr>
<td>Child’s means of accessing language (receptive language) may differ from most reliable means of using language (expressive language)</td>
</tr>
<tr>
<td>Targeting core symptoms of ASD (e.g., responsiveness to CI → may be ASD, not failure of CI; problems with ASL → poor motor in ASD)</td>
</tr>
</tbody>
</table>

Learning from Luke

...and his mom, Candace
Considerations for Supports

Language Considerations
Features of ASD may impact language acquisition
- Joint attention deficits
- Reduced eye contact
- Motor imitation
Sensory Sensitivities Can Lead to Device Resistance

Alternative & Augmentative Communication Devices
ASD & DHH or DHH & ASD: Prioritizing ‘diagnoses’

- Child’s needs
- Rules & regulations for placement/services
- Communication access
- Open heartedness of professionals

Hearing Loss in Children with ASD

Appraising the need for audiological assessment before autism spectrum disorder referral

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*Data authors contributed equally as co-first authors.
**RESEARCH ARTICLE**

Audiometric Profiles in Autism Spectrum Disorders: Does Subclinical Hearing Loss Impact Communication?

Carly Demopoulos and Jeffrey David Lewine

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**Audiological Screening Findings Across Groups**

<table>
<thead>
<tr>
<th>Test</th>
<th>Control</th>
<th>ASD</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>16</td>
<td>54</td>
</tr>
<tr>
<td>% Abnormal</td>
<td>0%</td>
<td>9%</td>
</tr>
<tr>
<td>Chi-Square</td>
<td>1.60</td>
<td>5.25*</td>
</tr>
</tbody>
</table>

Figure 1. Rates and \( \chi^2 \) values for normal versus abnormal findings on audiological screening measures in participants diagnosed with ASD and controls. The rightmost chart marked “Any Measure” indicates the rates of normal versus abnormal findings on at least one of the audiological screening measures.

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**AJA**

**Clinical Focus**

Using Visual Supports to Facilitate Audiological Testing for Children With Autism Spectrum Disorder

Haley M. McTee, Deborah Mood, Tammy Fredrickson, Amy Thrasher, and Angela Yarnell Bonino

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https://osf.io/b23ux/
Sound Sensitivity in ASD

Hyperacusis
“Loud noises feel like a dentist’s drill hitting a nerve.”

Phonophobis – fear of sounds

Misophonia – learned, emotional reaction to sound

What People with ASD Want Audiologists to Know

- Info in advance
- How IRL will differ from prep materials
- Tactile defensiveness
- Knowledge “in the moment” depends...
- Be aware of uneven language development (e.g., verbally expressive, difficulty with instructions)
- Escape routes
- Favorite topics – wrap up

Stiegler & Davis, 2010

Cloppert & Williams, 2005