# Educational considerations for deaf autistic children

Deborah Mood, Ph.D.
University of Colorado Anschutz, Department of Pediatrics
Developmental Pediatrics
Deborah.Mood@cuanschutz.edu

JFK Partners
UNIVERSITY OF COLORADO
ANSCHUTZ MEDICAL CAMPUS

Developmental Pediatrics
UNIVERSITY OF COLORADO ANSCHUTZ MEDICAL CAMPUS

Children's Hospital Colorado

# Disclosures

- I am a hearing neurotypical clinician/researcher
- Employed by University of Colorado/Denver
- NIH/NIDCD funding

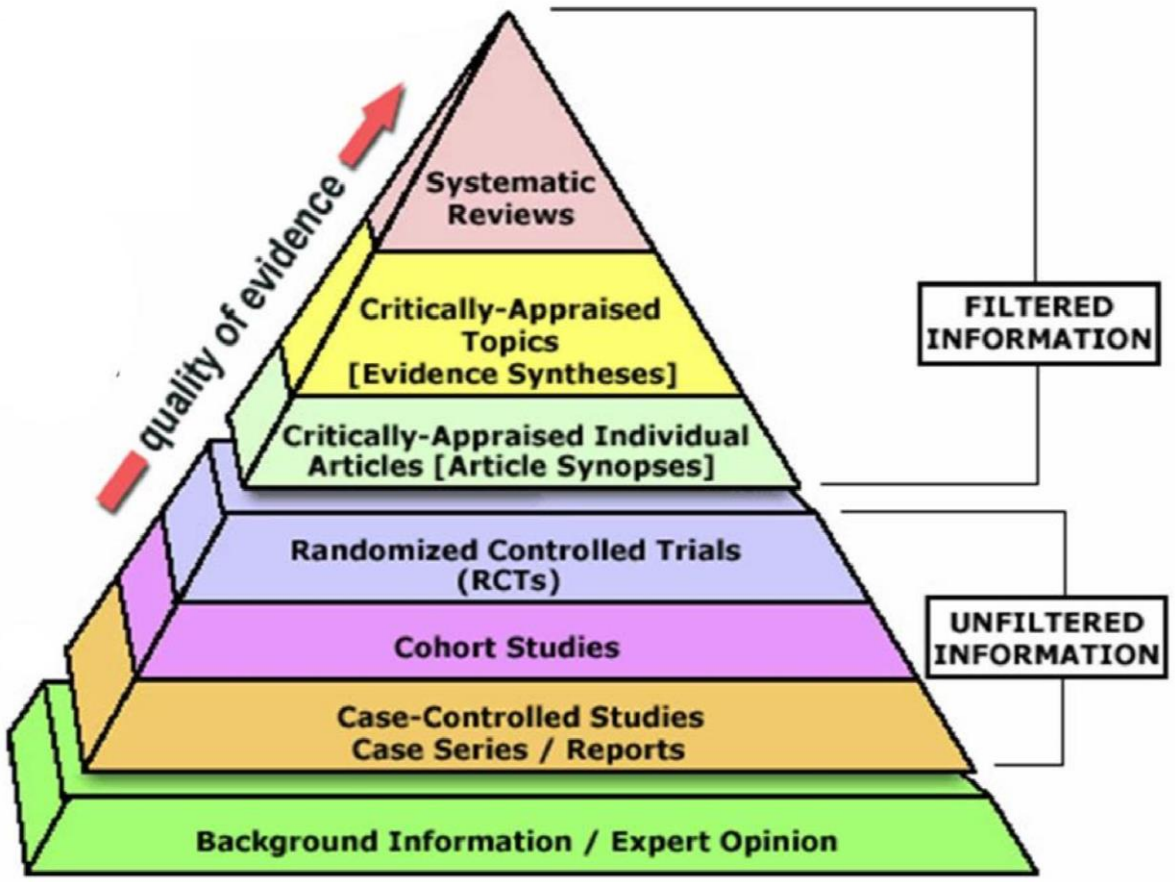
# Objectives

- Summarize how symptoms of ASD can impact language development of D/HH children
- Identify at least two educational strategies for supporting D/HH autistic children in the classroom
- Identify at least 3 considerations when developing inclusive educational programming

# Notes about terminology


Young et al., 2019

# Evidence based intervention with children typically excluded from research



# Existing research focus

- Language
- Banda, Griffin-Shirley,Okungu, Ogot & Meeks (2014)
- Maladranski & Okalidou (2007)
  - Use of PECS
- Shield & Meier (2012)
  - Seat next to student to support ASL acquisition when child has palm orientation difficulties
- Kwon et al. (2023)
  - Use of social stories to teach social language with DHH/ASD

- Behavior
- Easterbrooks & Handley (2005)
  - Reduce self stimulatory behavior using ABA principles
  - Mace et al (2011) – use of ABA principles (e.g., use of alternate choice, reinforcement) to decrease negative behavior
  - Vernon & Rhodes (2009)- use of ABA
  - Borders & Bock (2014)- FBA

# Characteristics of ASD language features in sign and speech

*SHIELD (2014), SEMINARS IN SPEECH & LANGUAGE*

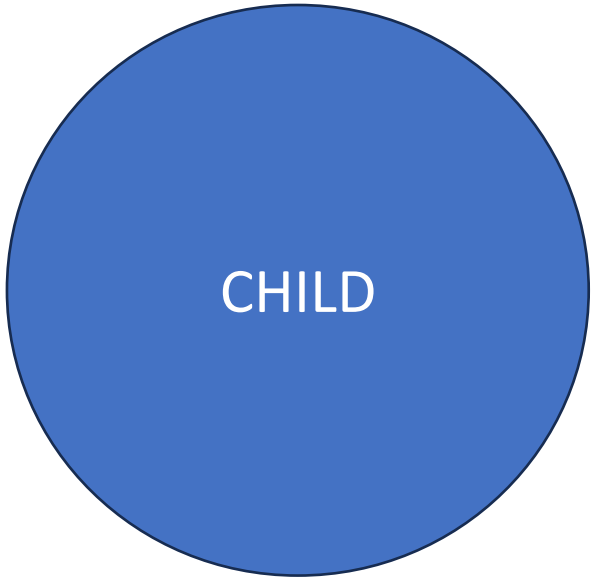
| Similarities | Differences |
|---|---|
| Jargon | Pronoun reversal (speech only?) |
| Echolalia | Palm reversals (sign only)* |
| Pronoun avoidance/Use of names | Facial grammar - impaired?* |
| Lack of expressive language<br>Deficits in receptive language | Spatial grammar - classifiers, agreement verbs |
| Idiosyncratic language | |
| Pragmatic deficits | |

# Language

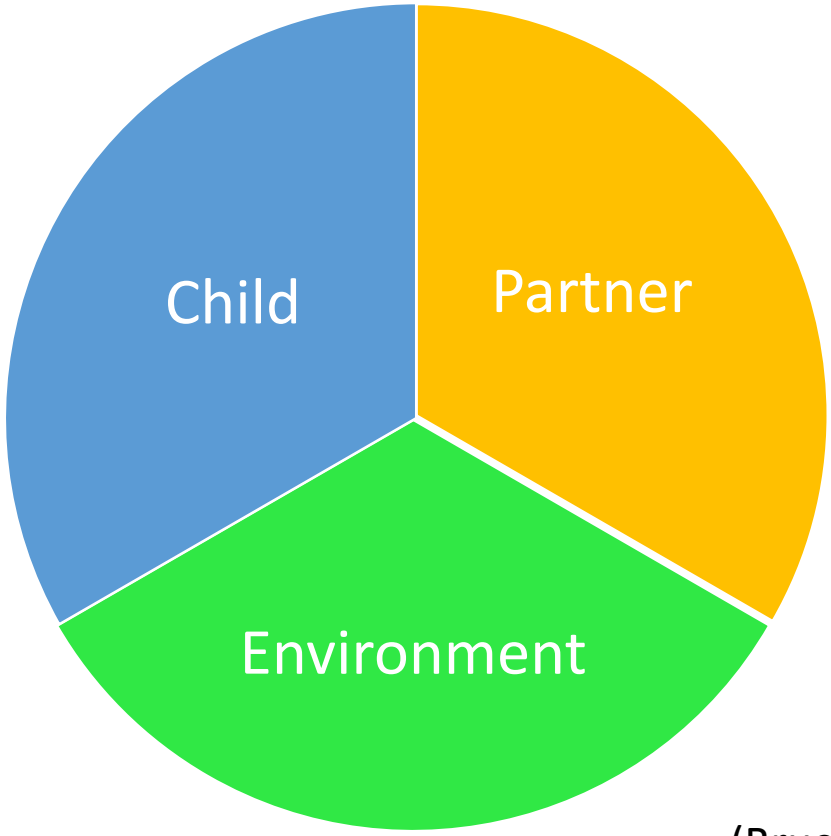
- Although not a “core symptom”, language deficits go hand-in-hand with ASD
  - True for D/HH as well as hearing
- Shield study of Deaf of Deaf children with ASD (Shield et al, 2015)
  - About 1/3 had minimally expressive sign
  - On average, receptive ASL skills were significantly below peers
- Suggests that exposure to sign in and of itself is unlikely to be a “silver bullet” in the case of ASD even though often used as an intervention for hearing children with ASD
- May need alternative communication strategies such as AAC

# Communication considerations

**Traditional approaches**

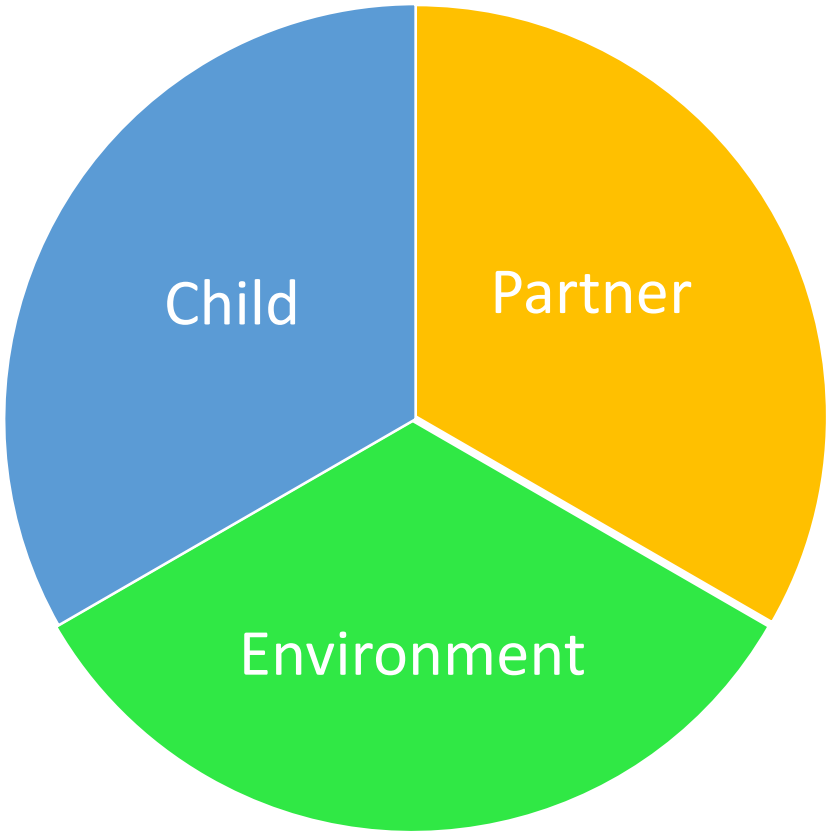



**Rethinking communication with children with complex needs**

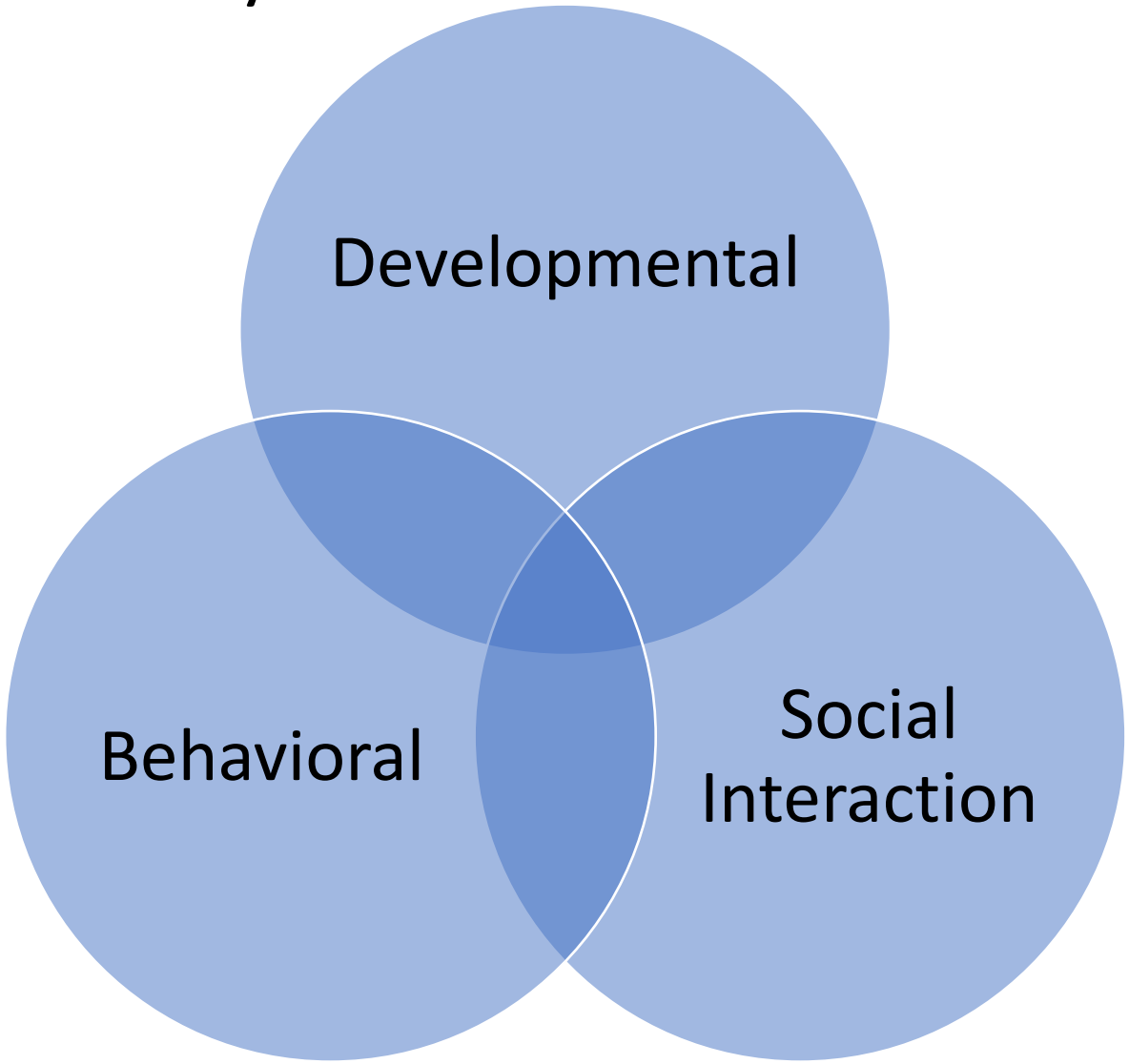



(Bruce and Borders, 2015)

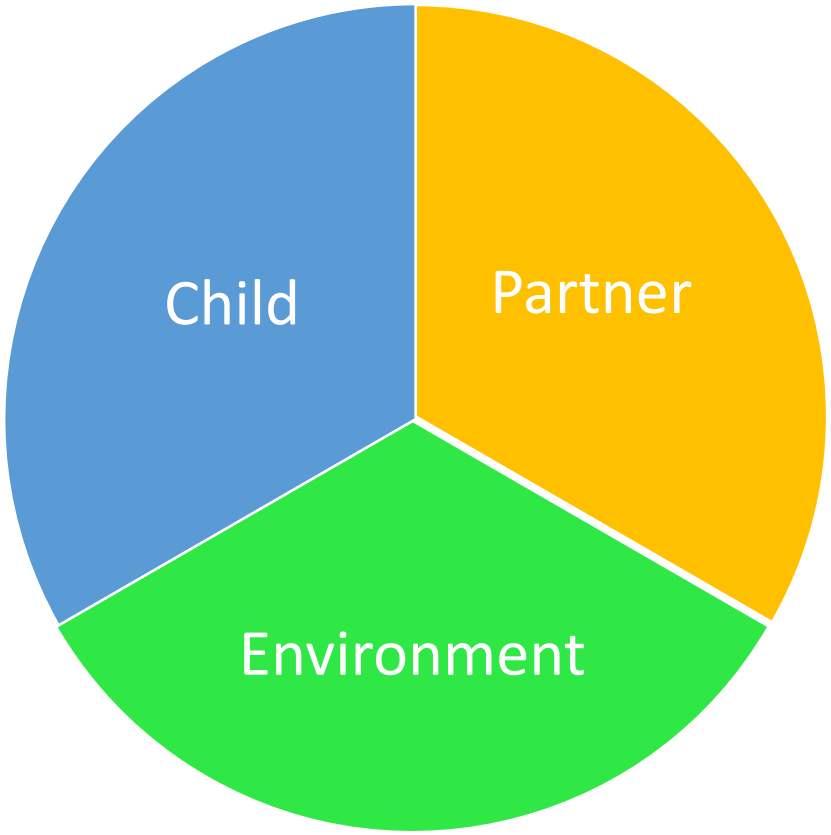
Child focused intervention




Theory driven intervention



# Child focused intervention

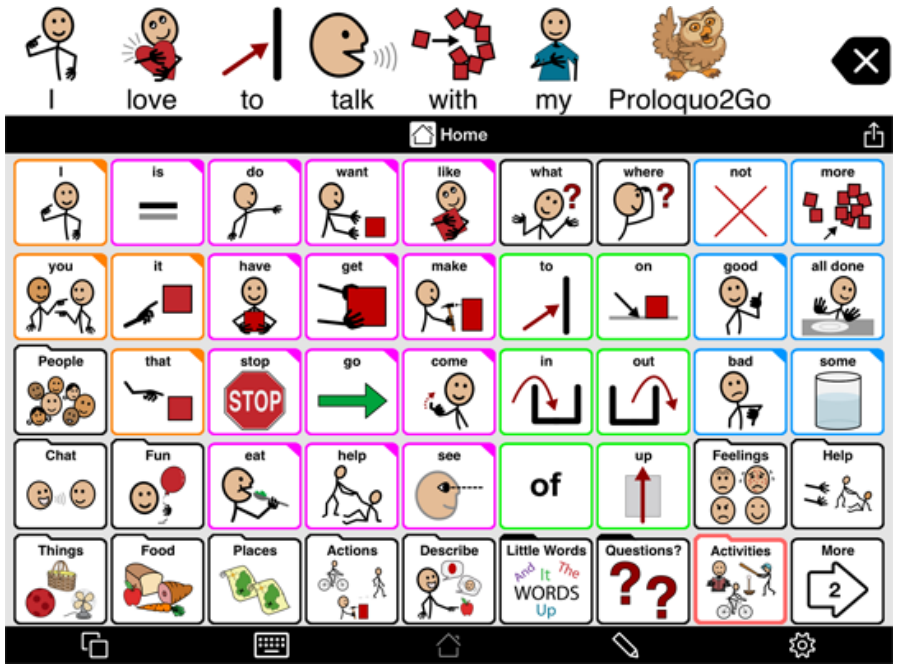



- Assessment to determine language <u>access</u>
  - What information do you need?
  - From what sources?
- Assessment to determine <u>current</u> understanding **and** use of language
  - Must take into consideration language used in all of child's environments
  - What tools do you like to use?
  - Assess now, plan for the future

# Suggested educational strategies for Deaf children with ASD (Shield, Graham & Neild, 2023)

| Area of difficulty | Suggested intervention |
| --- | --- |
| Minimal reduced expressive ASL | AAC/PECS |
| Echolalia | Video modeling |
| Pronoun avoidance | Sandwiching/Power cards |
| Palm reversals | Sign from child's perspective |
| Difficulty with transitions | Visual schedules |
| Difficulty with perspective taking/ identifying emotions based on facial expressions (Denmark et al, 2019) | Social stories/comic strip conversations (Book creator app for ASL/videos) |
| Difficulty understanding social rules/conversations | Video modeling/social skills instruction |

# AAC considerations






- Unaided vs aided forms
- Selecting device should take into consideration child's developmental needs (vision, cognition, motor, attention)
- Controversy of AAC
- May be part of multiple strategies used for expressive communication
- Perspectives of autistic adults

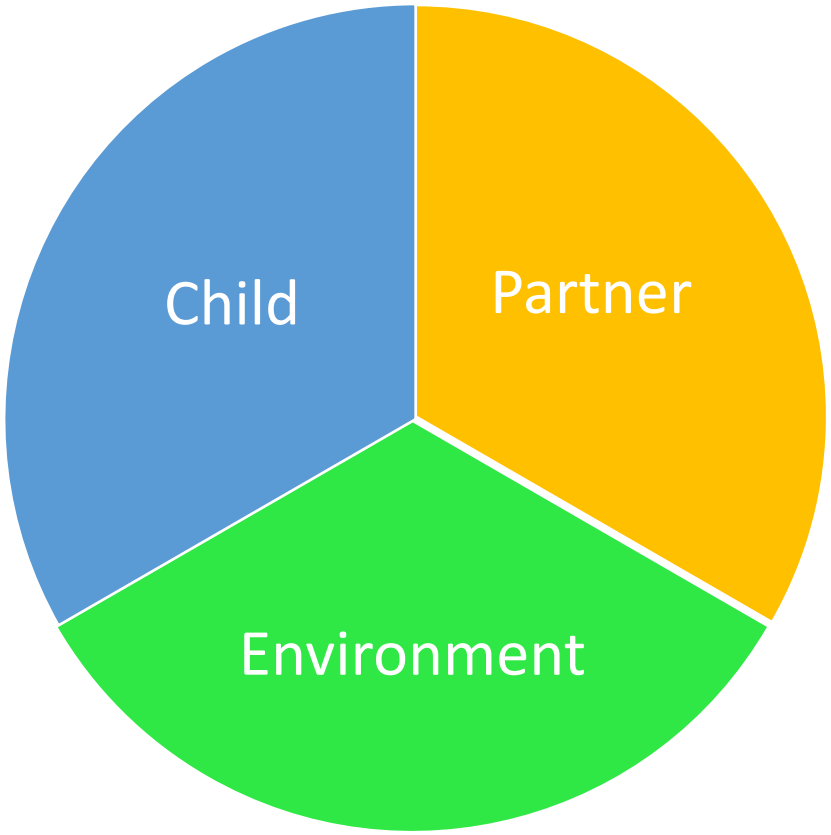
# Picture Exchange Communication System (PECS)

## Phases of PECS:

- (1) “how” to communicate,
- (2) distance and persistence,
- (3) picture discrimination,
- (4) sentence structure,
- (5) responsive requesting, and
- (6) commenting


- Wong, C. (2013). *Picture Exchange Communication System (PECS) fact sheet.* Chapel Hill: The University of North Carolina, Frank Porter Graham Child Development Institute, The National Professional Development Center on Autism Spectrum Disorders.

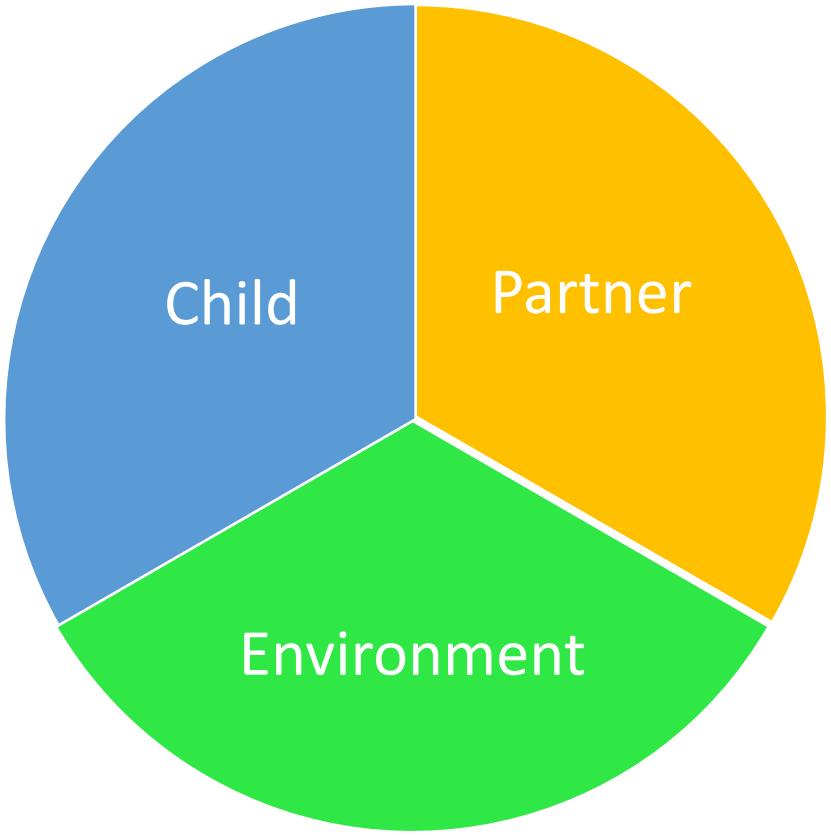
# Child focused intervention




Functions of communication:

Greeting
Protest
Request (items/information)
Comment
Giving information
Answering questions
Humor
Conversation

# Partner focused intervention




- Enhancing partner sensitivity to child's communication
- Instruction in child's most accessible means of communication if not the partner's first language
- Augmenting input
  - Acoustic highlighting
  - Changing pace of signing
  - Increasing tactile cues
  - Signing from child's perspective
  - Use of objects, PECS, AAC
- Teaching language within routines
- Use of wait time
- Intentionally creating communication opportunities
- Training in how to support child's hearing technology use and AAC device

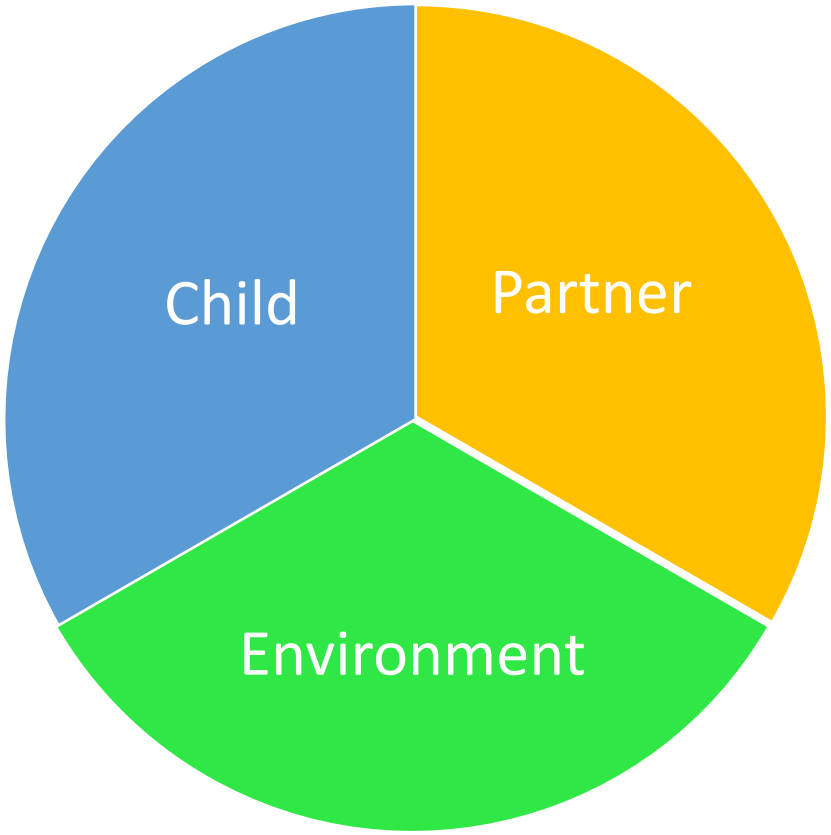
- https://www.childrenscolorado.org/doctors-and-departments/departments/audiology-speech-learning/speech-language-therapy/

(Scroll down to the middle of the page where it says "videos to help improve communication with an AAC user)

# Teaching social communication within routines

| Schedule | Skill | Strategy | Person responsible | Data |
|---|---|---|---|---|
| Entrance | Greetings<br>Responding to greetings | Meet child at door; social scripts, visual/gestural prompt | Paraprofessional | |
| Circle time | Recognizing name/name sign<br>Attending to communication<br>Greetings<br>Labeling<br>Sharing information about experiences | Acoustic highlighting/visual cues<br>High affect<br>PECS<br>Social scripts/video modeling | Teacher/paraprofessional/interpreter | |
| Snack time | Requesting items from peers<br>Asking peers what they want | Social scripts/video models, object/PECS | Teacher, paraprofessional, SLP | |
| Cafeteria/playground | Asking others questions? Requesting, Inviting peers to join, responding to peers | Conversation strips/starters<br>Duplicate item sets | | |

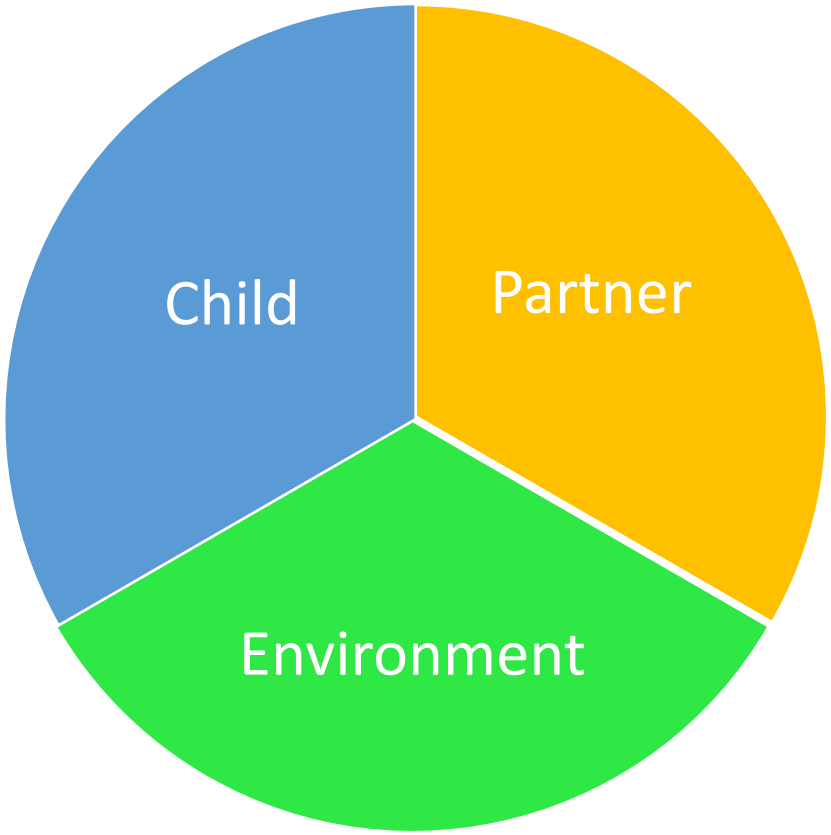
# Environment focused intervention



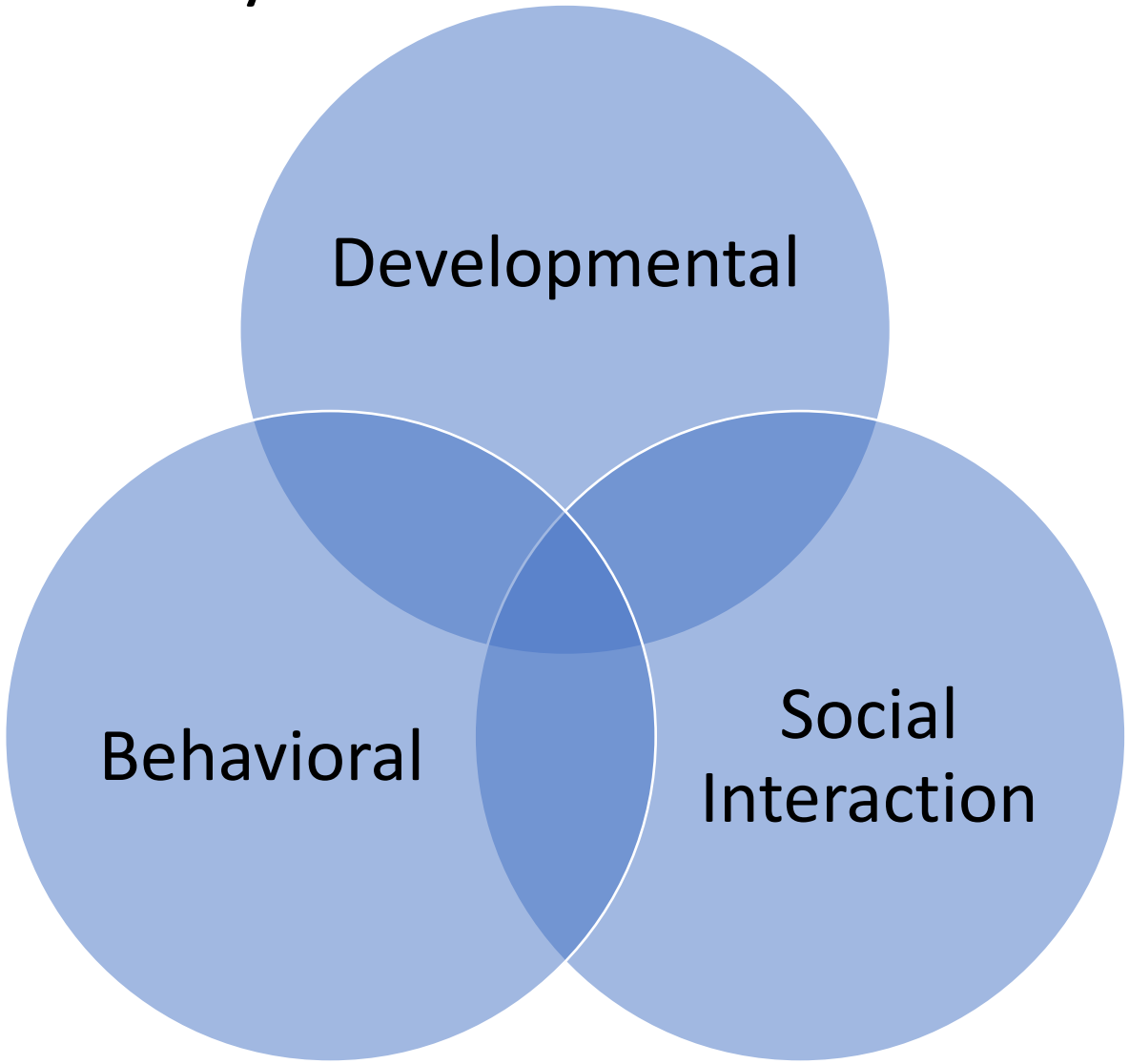

- Reduce visual clutter/obstructions to communication
- Use of hearing technology
  - Is classroom teacher trained?
  - Is there at least one to two other adults in the building trained on child's hearing technology?
- Consider acoustics
- Add items that support understanding/ability to communicate
- Duplicate items

# Behavioral Considerations

Behavioral Intervention




Theory driven intervention



# Teacher's perspectives on evidence-based practice

- Surveyed Teachers of the Deaf
- 55% with area of expertise beyond D/HH, 45% D/HH only
- Varying levels of awareness of Established treatments for ASD (20-100% of the EBP's known)

**Table 1.** EBP addressed across National Standards Report category of established treatments

| Established treatment | Intervention included in study |
|---|---|
| Antecedent package | Environmental enrichment |
| | Special interests |
| | Choice |
| | Prompting/cueing |
| | Stimulus familiarity |
| | Errorless learning |
| Behavioral package | Contingency contracts |
| | Contingency mapping |
| | Token economies |
| | Discrete trial training |
| | Shaping |
| | Task analysis |
| | Functional communication training |
| | Behavioral toilet training |
| | Generalization training |
| Comprehensive behavioral treatment for young children* | |
| Joint attention | Joint attention |
| Modeling | Live modeling |
| | Video modeling |
| Naturalistic teaching strategies | Incidental teaching |
| Peer training package | Peer buddies |
| | Peer initiation training |
| Pivotal response training | Pivotal response training |
| Schedules | Schedules |
| Self-management | Self-management |
| Story-based intervention package | Social stories |

*Note.* EBP = evidence-based practices.
*This was not addressed as it is typically not performed by the classroom teacher in a classroom setting.

- Among TOD with experience teaching children with ASD, rated effectiveness of EBP's for D/HH students with ASD
- **Varying opinions** on **effectiveness**
- >80% of TOD are **using EBP** they are **familiar with** (prompting/cueing, live modeling, schedules)
- **Familiarity** does **not** equate to **implementation**
  - 16 EPB were used by <50% of TOD who had familiarity with the practice

Borders CM, Jones Bock S, Szymanski C. Teacher ratings of evidence-based practices from the field of autism. *Deaf Studies and Deaf Education,* 2015, 91-100

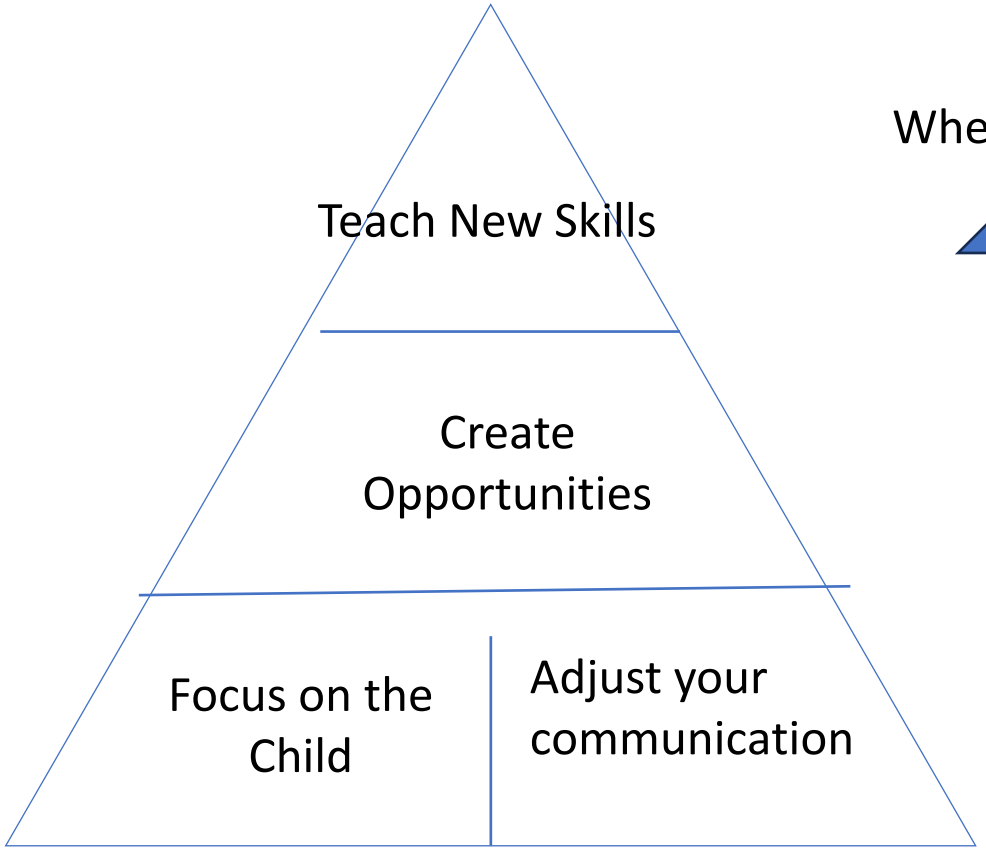
# Evidence Based Programs

- **National Professional Development Center on ASD**
- **http://autismpdc.fpg.unc.edu/**
- **https://autismpdc.fpg.unc.edu/sites/autismpdc.fpg.unc.edu/files/imce/documents/2014-EBP-Report.pdf**

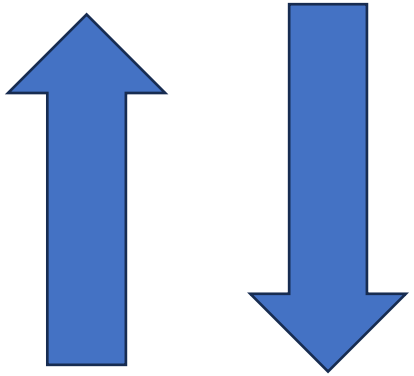
- **National Autism Center National Standards**
- **https://www.nationalautismcenter.org/national-standards-project/**

- **AFIRM Modules**
- **www.captain.ca.gov**
- **https://afirm.fpg.unc.edu/afirm-modules**

# PROJECT IMPACT F.A.C.T.S

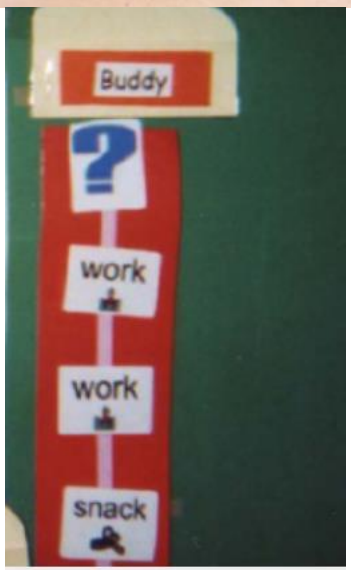


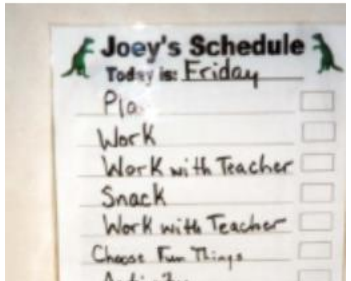

When child is regulated

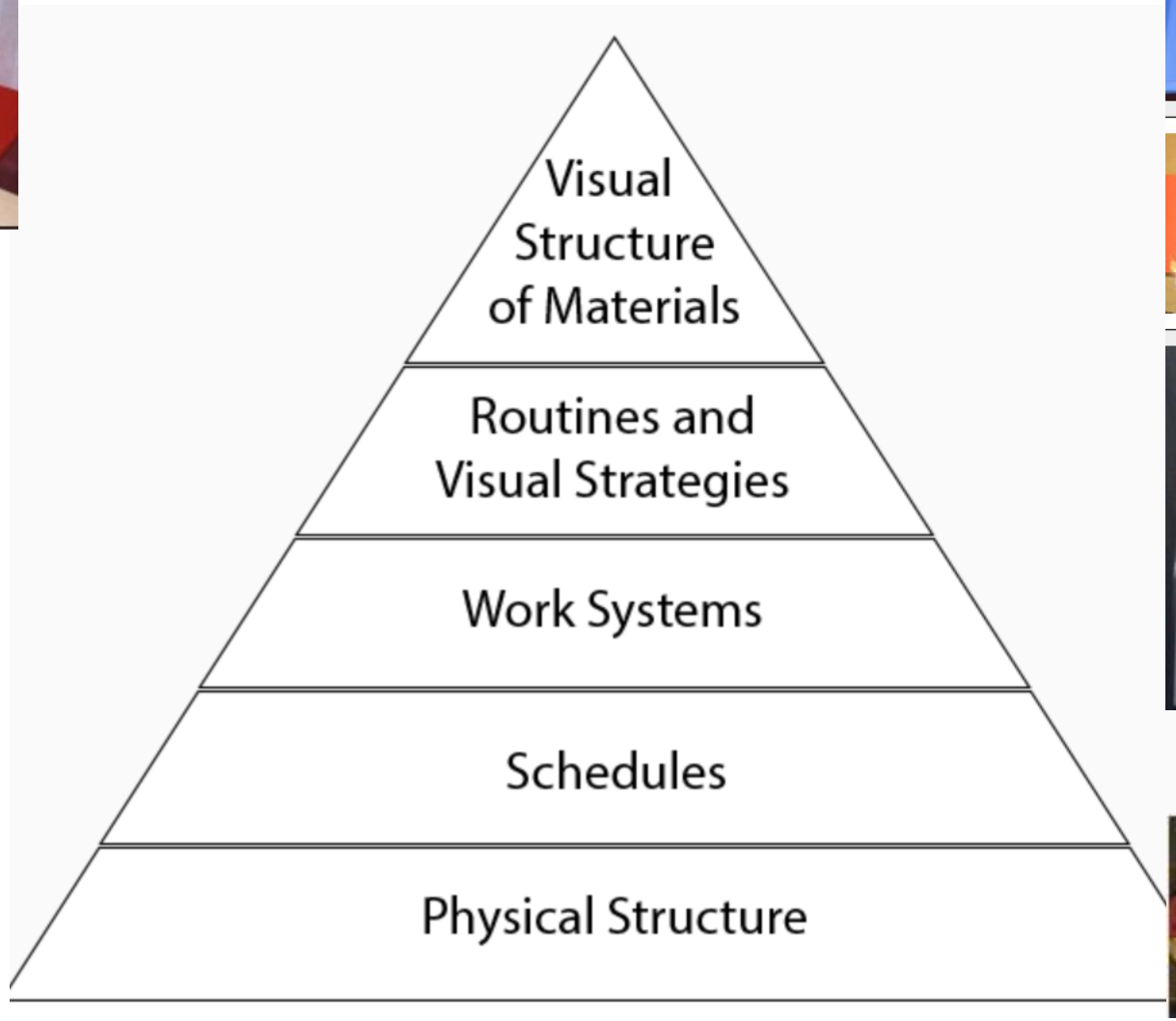


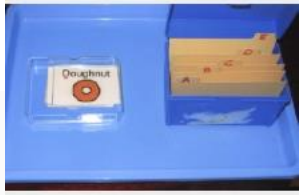
If child is not engaged or regulated, need to start here

# Educational Intervention





# Cognitive functioning

Findings

30% co-occurring ID

Varied cognitive profiles:

- Islets of ability: low VC and high visual spatial/working memory (FSIQ <85)
- Vs
- Right descending profile: high verbal comprehension and visual spatial with low processing speed

Classroom impact

May require functional curriculum, small group instruction, repetition

May demonstrate variable functioning depending on task demands; require supportive accommodations for WM or PS difficulties

Hyperlexia/poor reading comprehension

# Adaptive skills

## Findings

Adaptive skills often lower than expected based on IQ

## Implications

Difficulty with independently applying knowledge to real-life skills, difficulty/avoidance of self-care tasks (parents report difficult to get out the door in the morning)

Often benefit from occupational therapy

# Motor skills

## Findings

Motor difficulties ranging from hypotonia (low tone),poor coordination, fine motor difficulties, motor planning concerns, dyspraxia

Balance concerns have also been reported (DHH also high cooccurrence with balance concerns/ vestibular difficulties)

## Classroom implication

Low tone can impact attention and regulation as well as postural control necessary for motor tasks

Handwriting skills impacted

Impact on play skills

Impact on acquisition of expressive sign language

# Executive functioning

Findings

EF difficulties have been documented across numerous studies: particularly areas of cognitive flexibility and inhibition, working memory, and planning

Attention difficulties/ADHD also co-occur (40-70%)

Classroom implication

Difficulties with cognitive flexibility -> difficulty with transitions, rigidity about language use/assignments

Implications of flexibility with social interactions

Difficulty starting and completing tasks independently

Losing track of work/multi-step directions

Unsure where to direct attentional resources- may look distracted

# Won't vs Can't

Kenworthy et al., (2014*). Solving executive functioning challenges: Simple ways to get kids with autism unstuck and on target*.

| What looks like "won't"… | May actually be "can't" |
|---|---|
| "oppositional, stubborn" | Cognitive inflexibility<br>Protective effort to avoid overload |
| "Can do it when he wants to" | Difficulty shifting from one thing to another<br>Trouble paying attention to what other people think is important |
| "Self-centered" | Impaired social problem solving/theory of mind |
| "Doesn't care what others think" | Trouble understanding subtle social cues |
| "Doesn't try" | Difficulty getting started (initiation)<br>Impaired planning and trouble generating new ideas |
| "Won't put good ideas on paper" | Poor fine motor skills/handwriting difficulty<br>Trouble organizing thoughts |
| "sloppy, erratic" | Poor EF, trouble monitoring, overload |
| "won't control outbursts" | Overload, impaired inhibition or impulse control |
| 'Prefers to be alone" | Impaired social understanding<br>Needs break from complex social info |
| "Doesn't care about what's important" | Natural tendency to focus on details, difficulty understanding the "big picture" |

# Sensory processing

## Findings

Hypersensitivity

Hyposensitivity

Sensory seeking behaviors

## Implications

Heightened response to sounds, tactile experiences, crowded/noisy spaces

May avoid tactile experiences like playdoh, writing

May become easily dysregulated

May not report pain

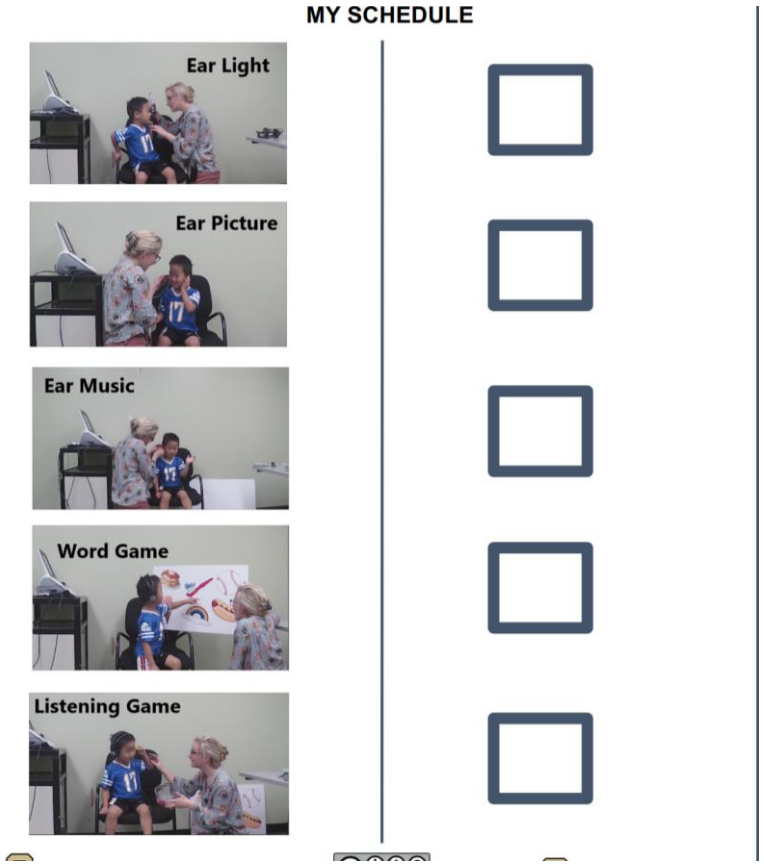
Engage in behaviors that appear distractible/dangerous seeking experiences to regulate themselves

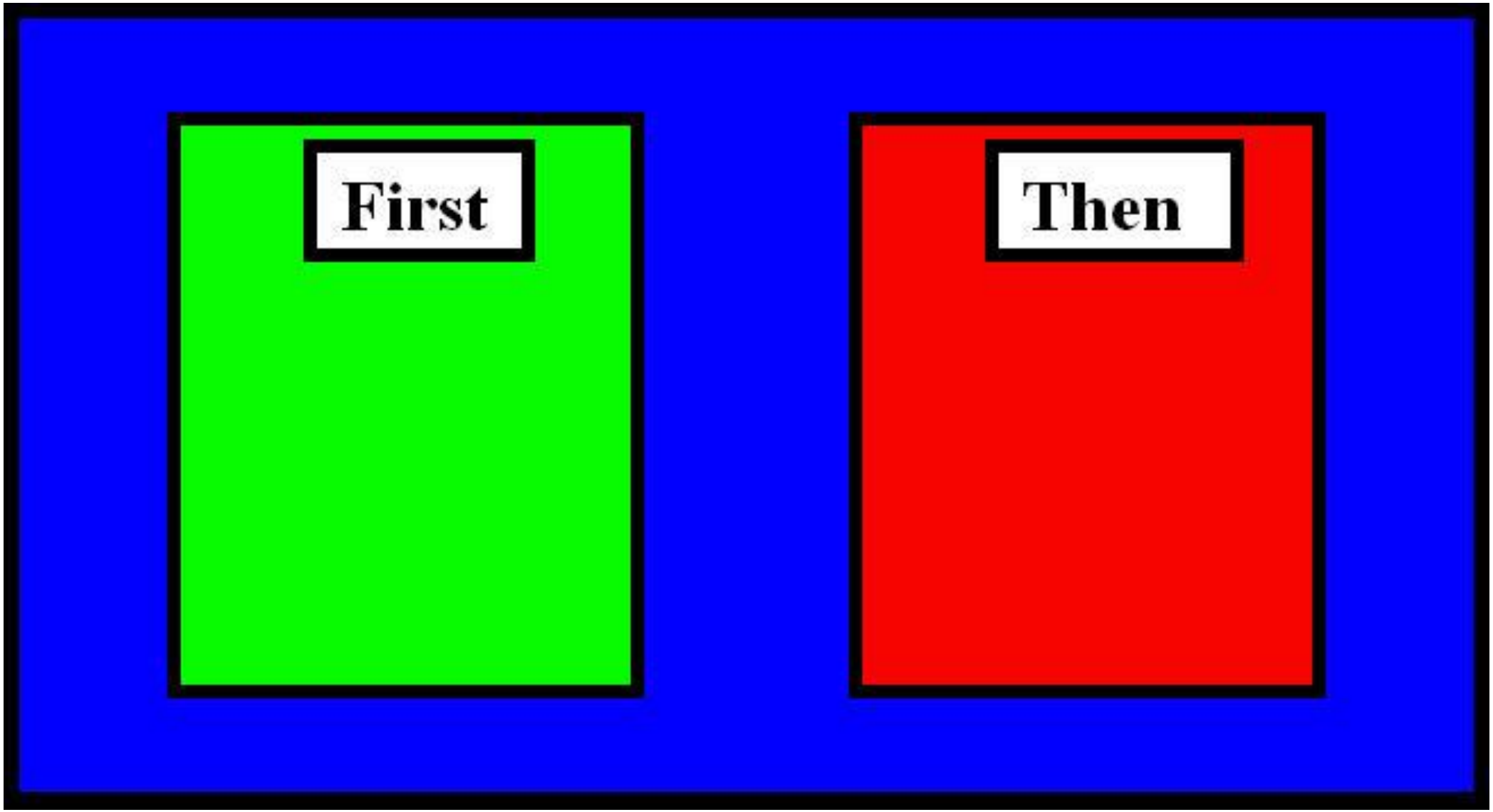
Important to proactively address sensory concerns

Consultation with occupational therapy

# Visual schedules as an antecedent

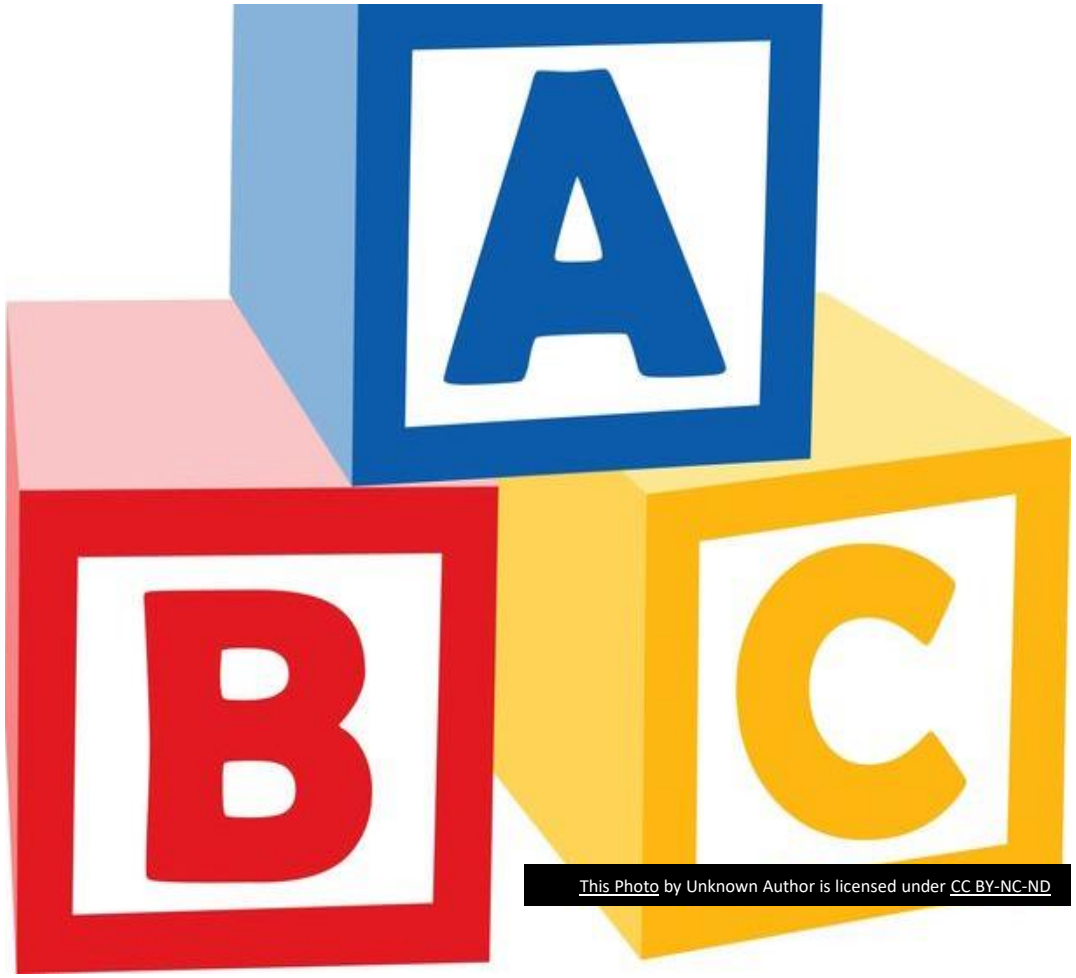
- McTee, H.M., Mood, D., Royer, W., Malley, A., Brumbach, S., Pancoast, E., Fredrickson, T., Thrasher, A., & Bonino, A.Y. (2019). Audiology video models and visual schedules. Available from: https://doi.org/10.17605/OSF.IO/B23UX




First
Then

# What is ABA?

- Theory of learning based on principles of behaviorism
  - Applied =makes meaningful changes
  - Addresses observable (& measurable) behaviors
  - Analytical= procedures implemented result in the behavioral change
  - Assumes behaviors are learned through conditioning
    - Classical conditioning
    - Operant conditioning
  - Emphasizes clearly defining procedures so can be carried out by any one working with the child



# Classroom based pivotal response therapy

| Antecedent based strategy | Self-assessment |
|---|---|
| Incorporate choice | Do I provide specific choices to the student either within or between activities? |
| Follow student interest | Do I respond to student interest within the context of the lesson/activity and adjust accordingly? |
| Incorporate preferred materials | Have I set up appealing activities/personalized interests? |
| Takes or facilitates turns | Did I model a related play, academic or communication skill at or just above the students' level |

# Classroom based pivotal response therapy

| Antecedent based strategy | Self-assessment |
|---|---|
| Presents opportunities for maintenance of tasks | Did I intersperses tasks that are easy with tasks difficult for the student? |
| Gains attention before cue | Did I provide a clear visual cue for the student before presenting instruction/making request? Are classwide systems for obtaining visual attention and directing attention to speaker implemented? |
| Provide clear cues | Did I provide a clear enough cue indicating to students how they should respond at or slightly above the students' response level? |
| Provide varied cues | Did I alter the type or form of the instruction or opportunity to respond related to each learning goal? |

# Classroom based pivotal response therapy

| Consequence based strategy | Self-assessment |
|---|---|
| Provide contingent responses | Did I provide immediate, appropriate feedback to the student based on their response |
| Provide reinforcement | Did I reward the student for appropriate responding and behavior with something other than praise? |
| Provide direct reinforcement | Did I use rewards that are directly related to the teaching activity/behavior required? |
| Reinforce goal directed attempts | Did I provide reinforcement after most of the students' reasonable, goal directed attempts |

# HB22-1260 ABA in schools

- https://leg.colorado.gov/sites/default/files/2022a_1260_signed.pdf
- ABA as “medically necessary”
- Does not have to be provided under IEP or 504

# Spread the news!

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# Resources

- PacWest ITAC cross cultural considerations in disability webinar (Mood and Nutt, 2023) https://vimeo.com/706625376