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
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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

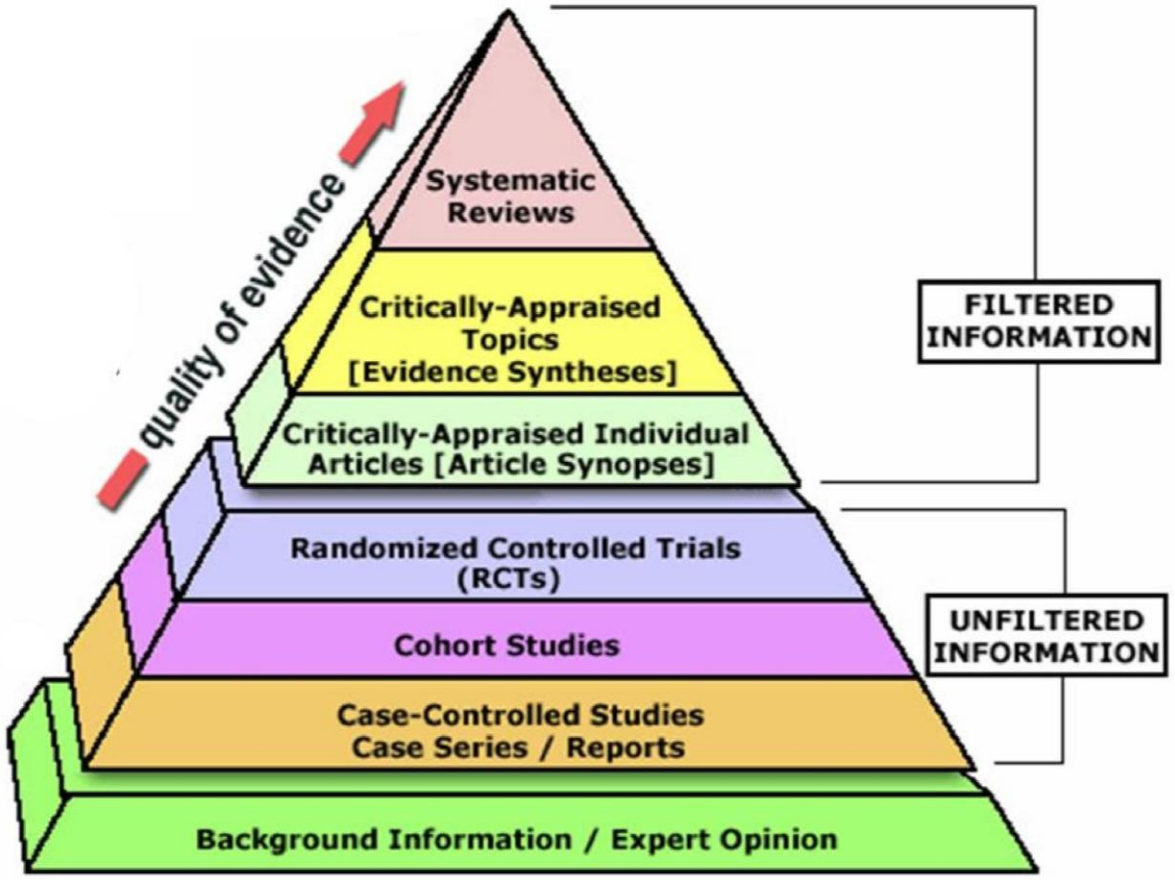
Objectives

- 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 Deficits in receptive language	Spatial grammar - classifiers, agreement verbs
Idiosyncratic language	
Pragmatic deficits	

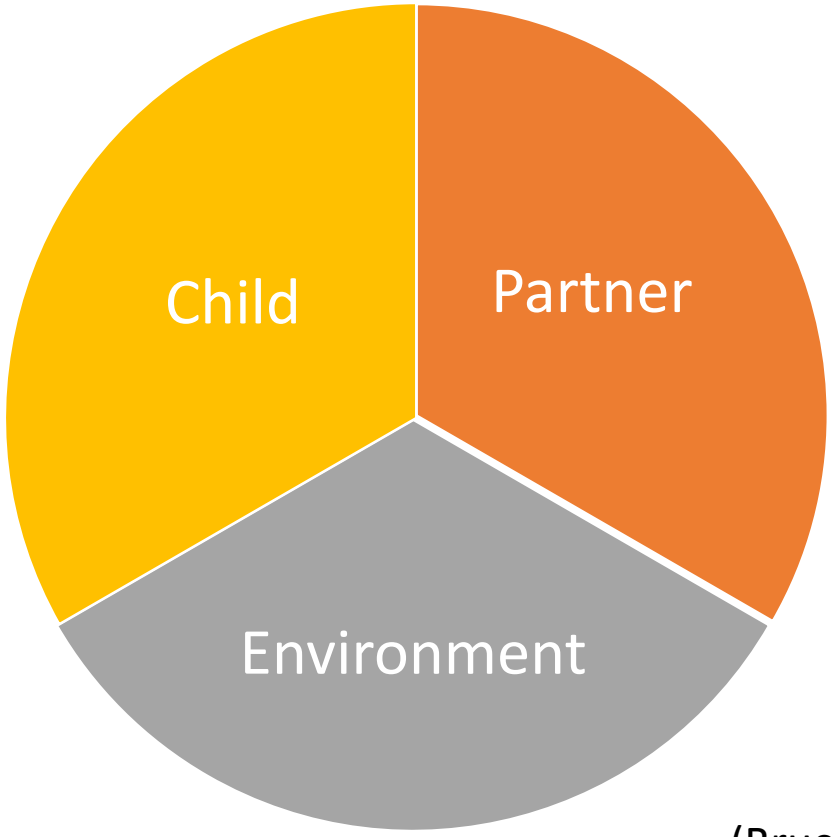
Language

- 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

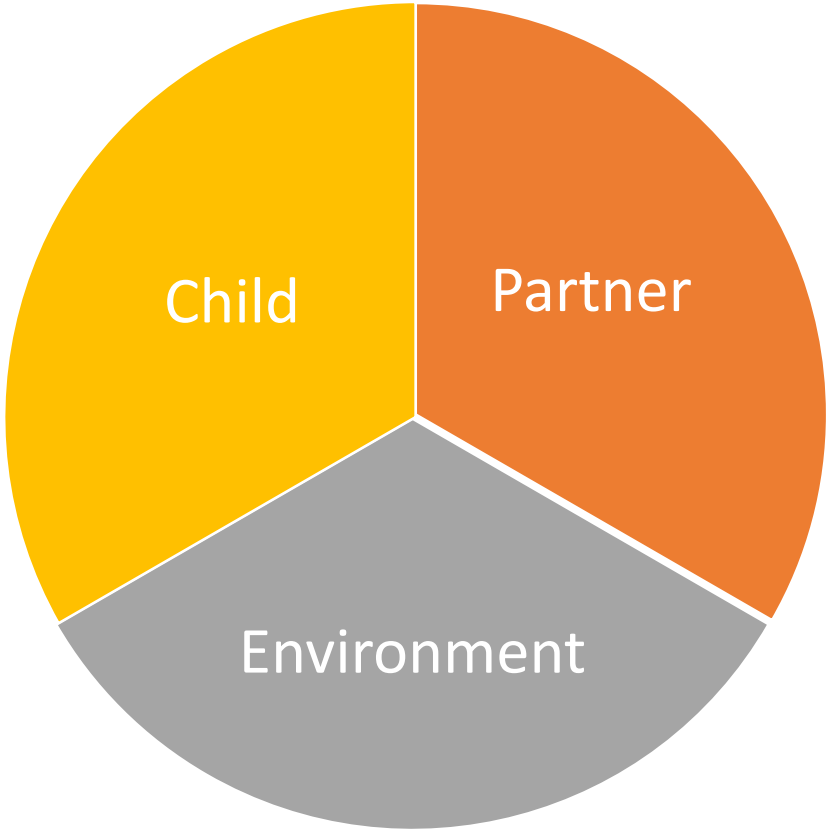
Traditional approaches

Rethinking communication with children with complex needs

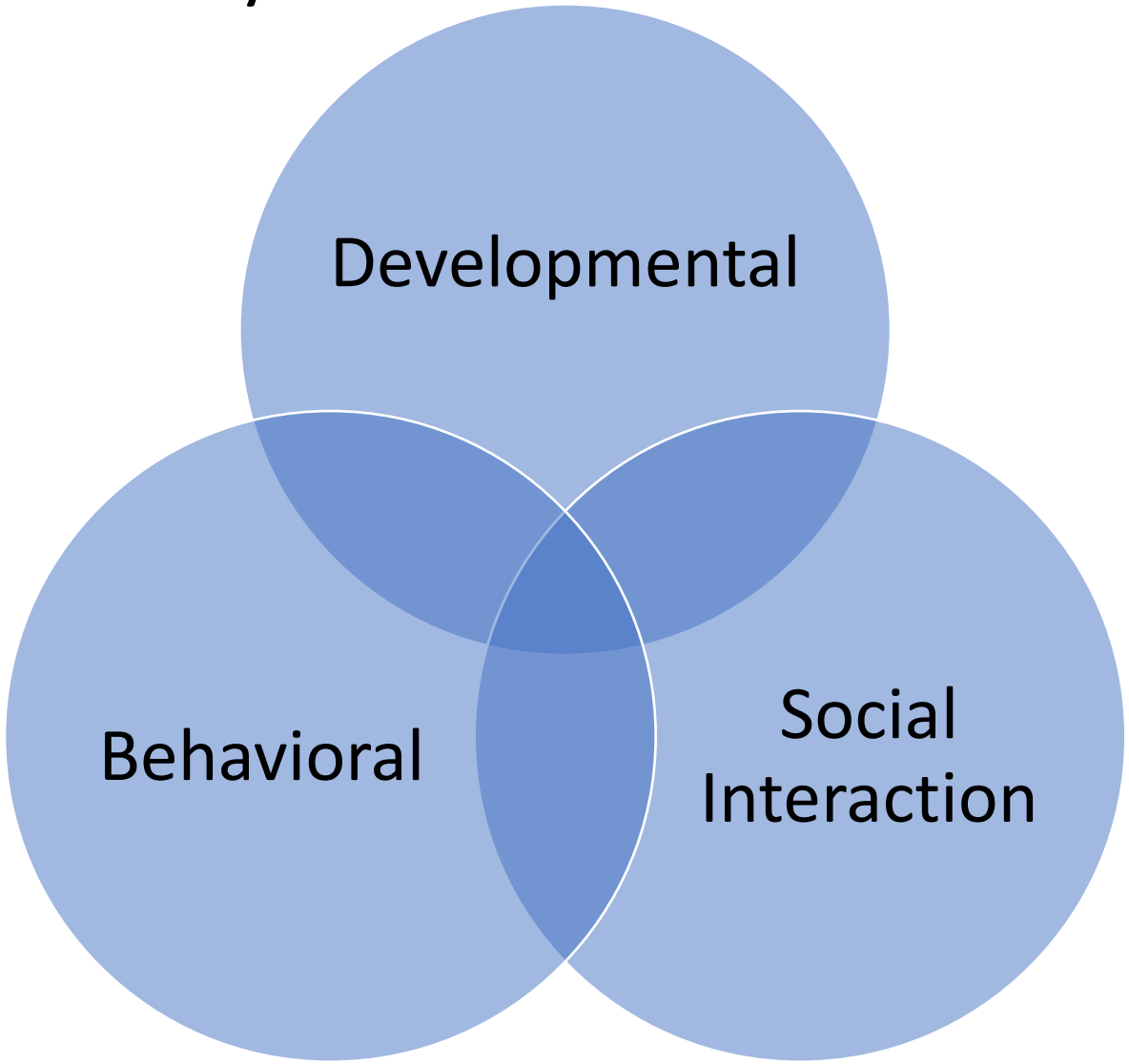


(Bruce and Borders, 2015)

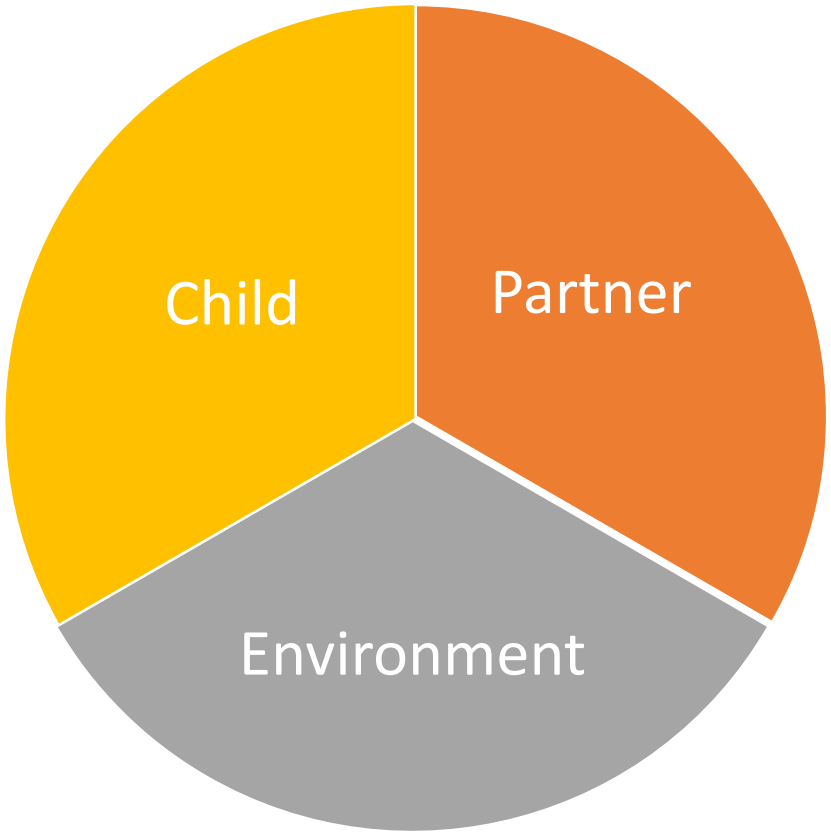
Child focused intervention



Theory driven intervention



Child focused intervention 2

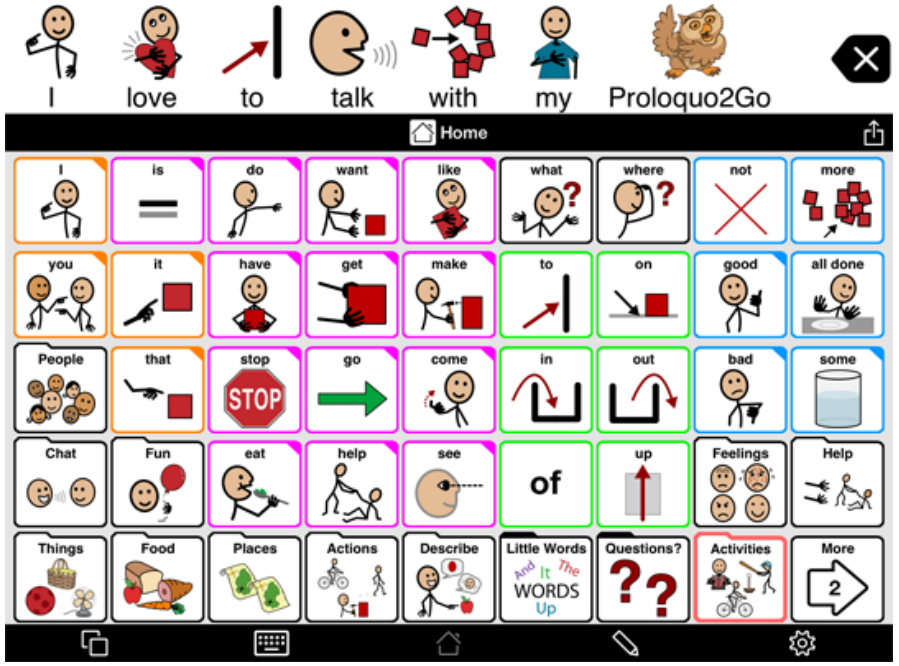


- Assessment to determine language <u>access</u>
  - What information do you need?
  - From what sources?
- Assessment to determine <u>current</u> understanding **and** use of language
  - Must take into consideration language used in all of child's environments
  - What tools do you like to use?
  -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



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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

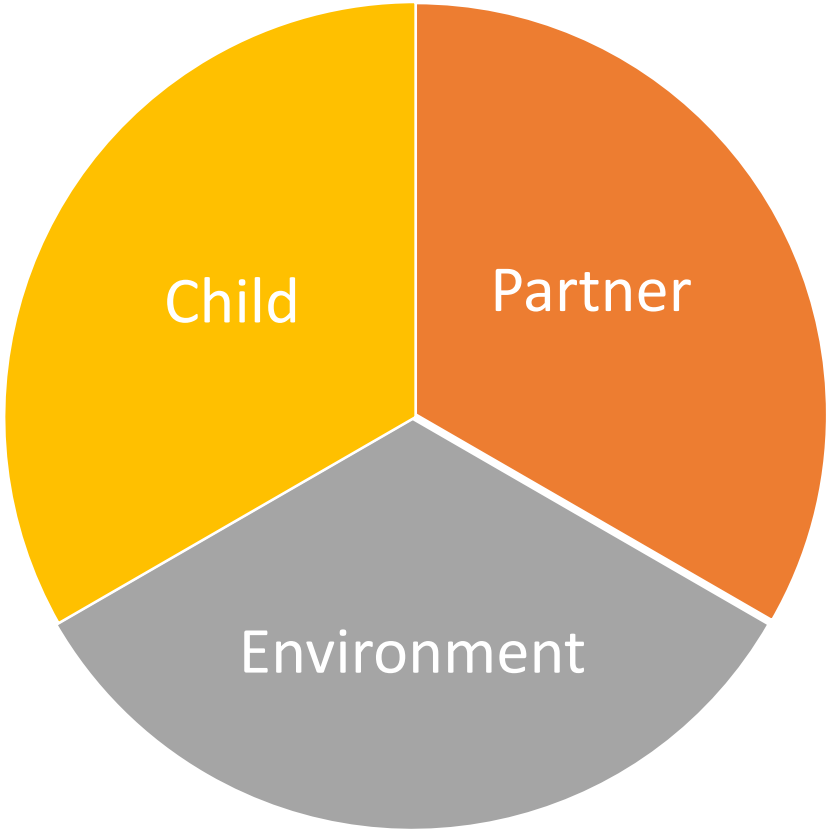
Picture Exchange Communication System (PECS)

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.

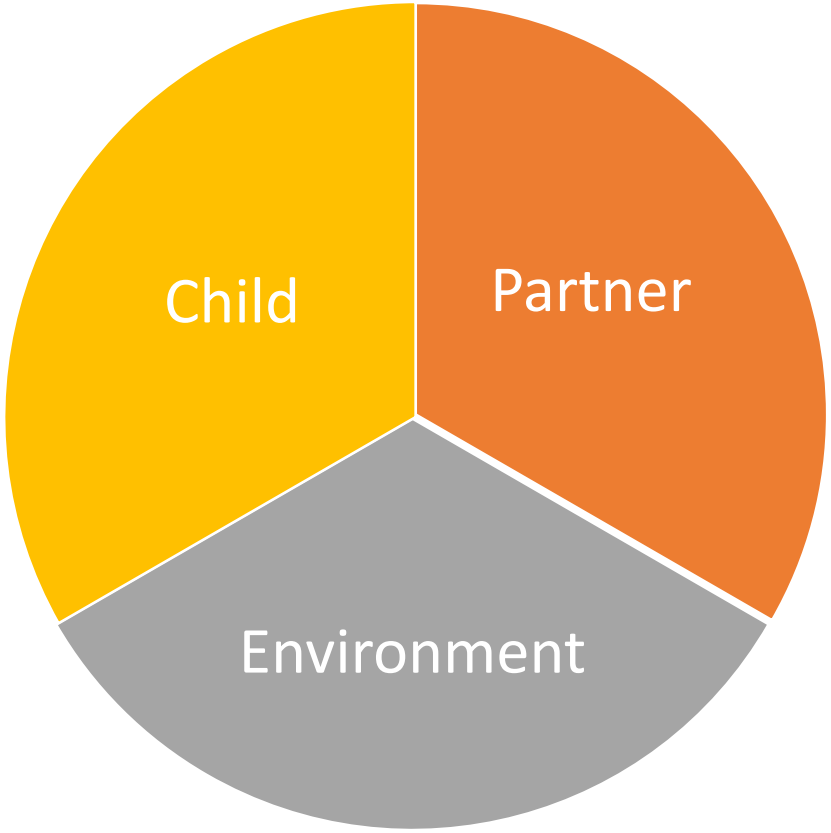
Child focused intervention: Function



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

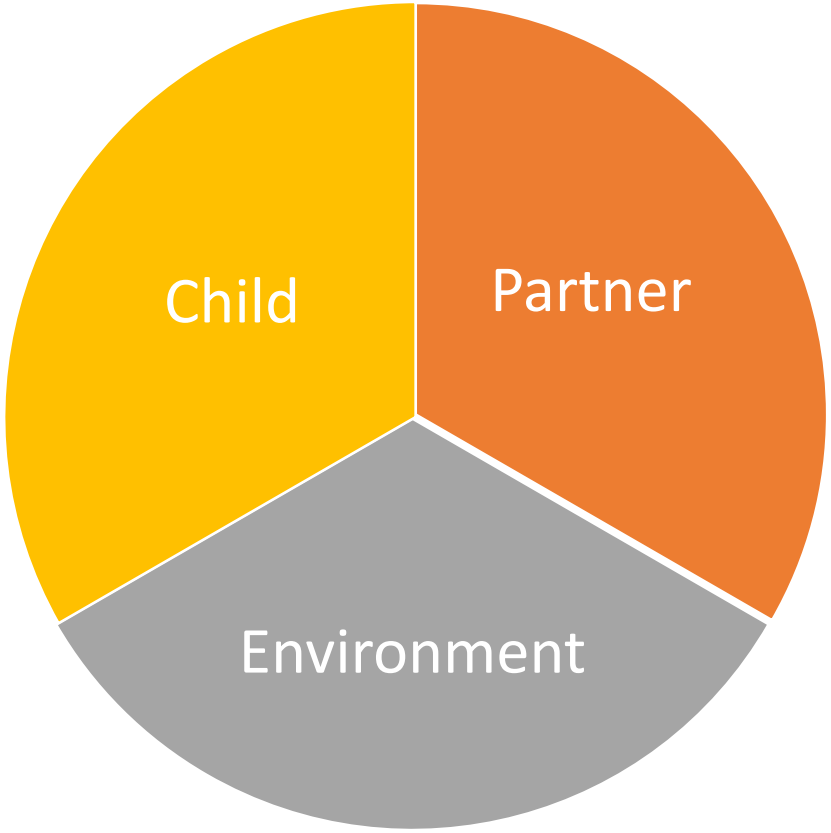
- https://www.childrenscolorado.org/doctors-and-departments/departments/audiology-speech-learning/speech-language-therapy/

(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 Responding to greetings	Meet child at door; social scripts, visual/gestural prompt	Paraprofessional	
Circle time	Recognizing name/name sign Attending to communication Greetings Labeling Sharing information about experiences	Acoustic highlighting/visual cues High affect PECS Social scripts/video modeling	Teacher/paraprofessional/interpreter	
Snack time	Requesting items from peers 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 Duplicate item sets		

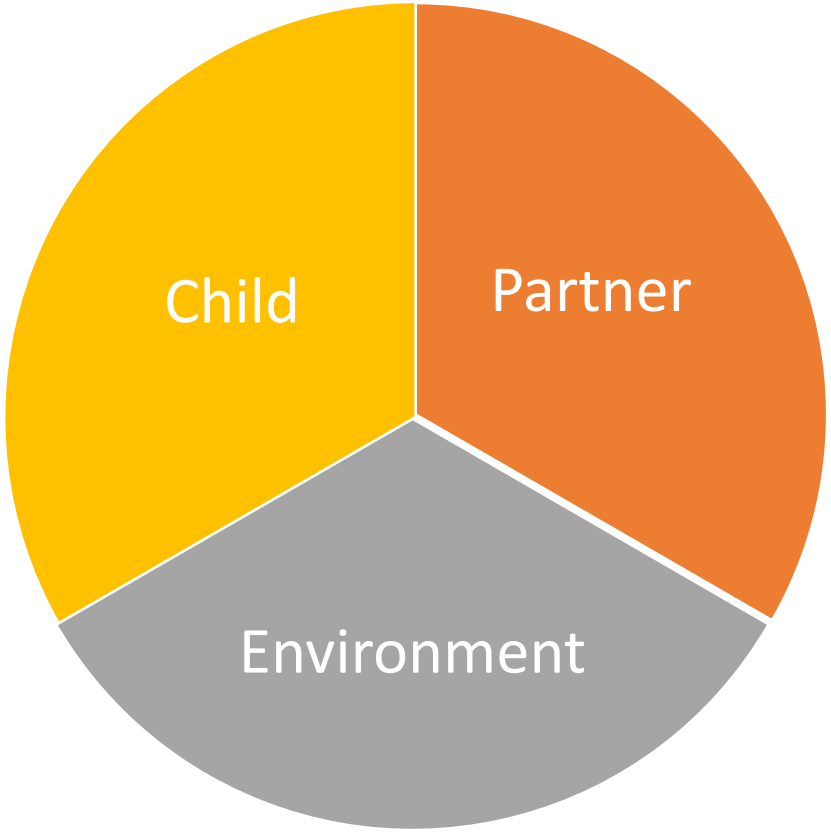
Environment focused intervention



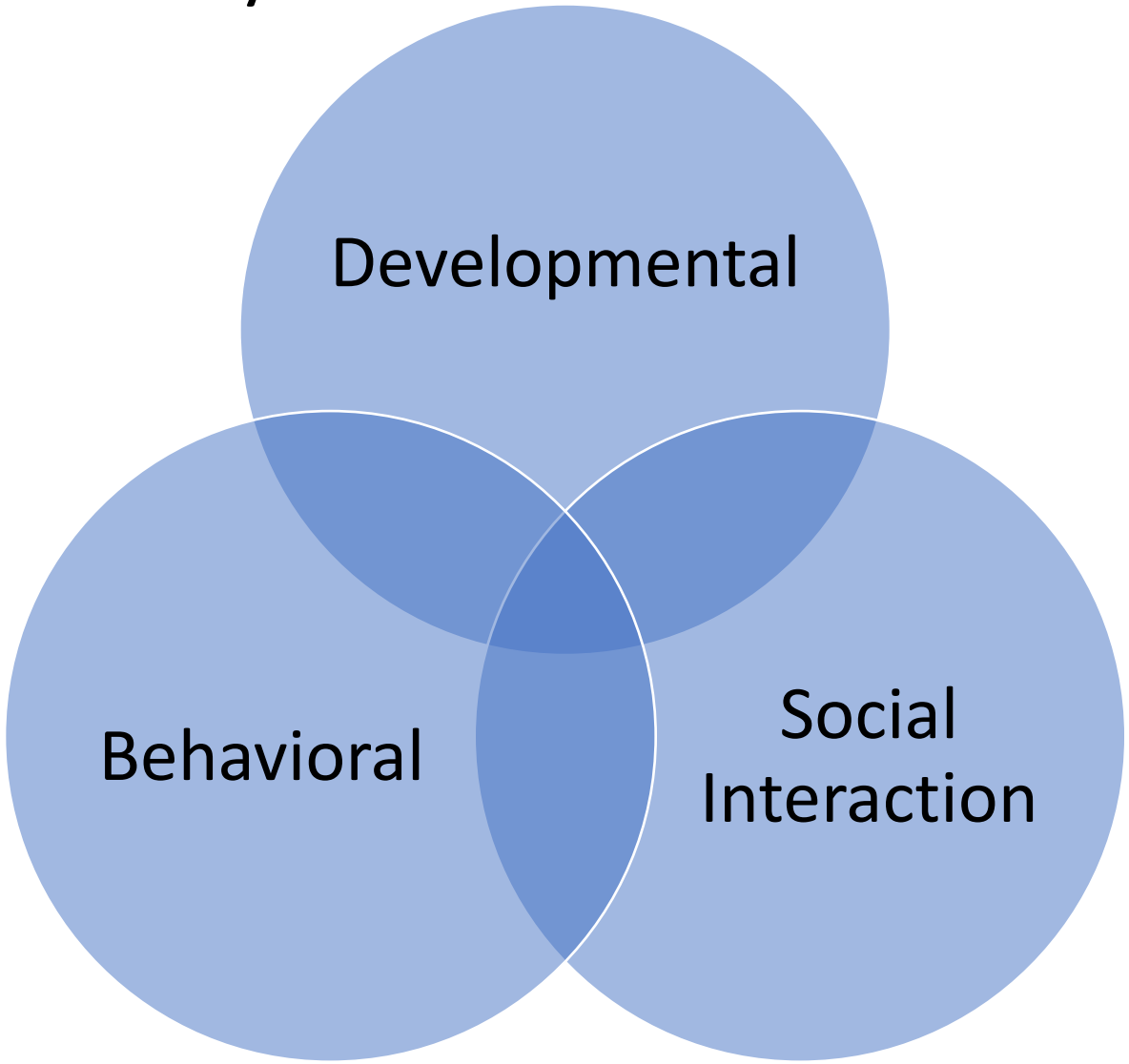
- Reduce visual clutter/obstructions to communication
- Use of hearing technology
  - Is classroom teacher trained?
  - Is there at least one to two other adults in the building trained on child's hearing technology?
- Consider acoustics
- Add items that support understanding/ability to communicate
-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

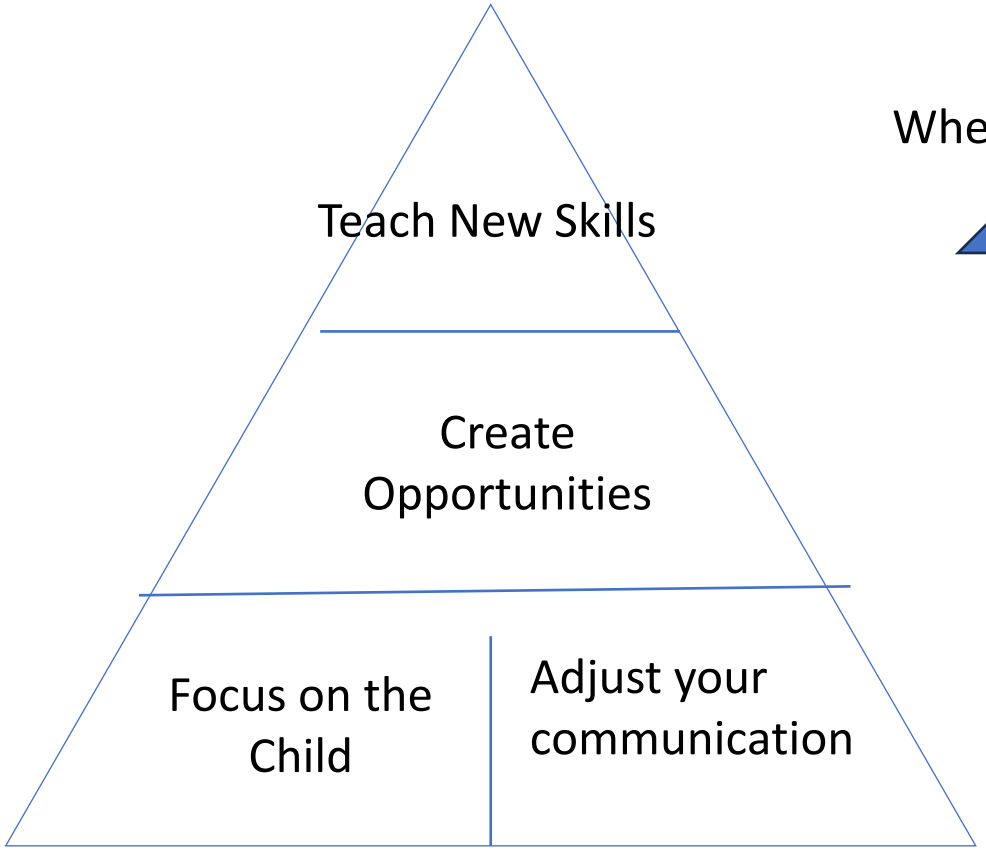
Evidence Based Programs

- **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**

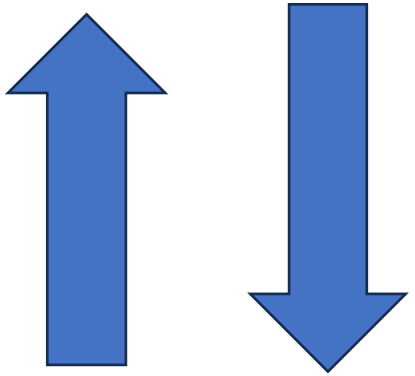
- **National Autism Center National Standards**
- **https://www.nationalautismcenter.org/national-standards-project/**

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

PROJECT IMPACT F.A.C.T.S

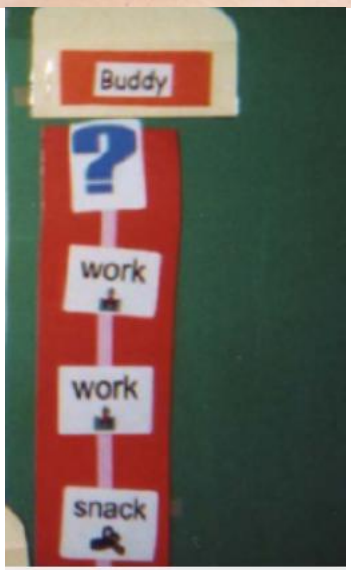


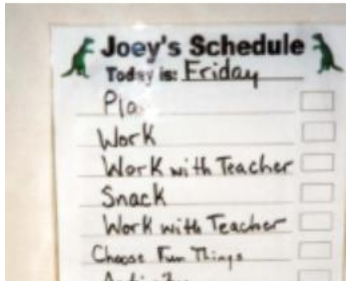
When child is regulated

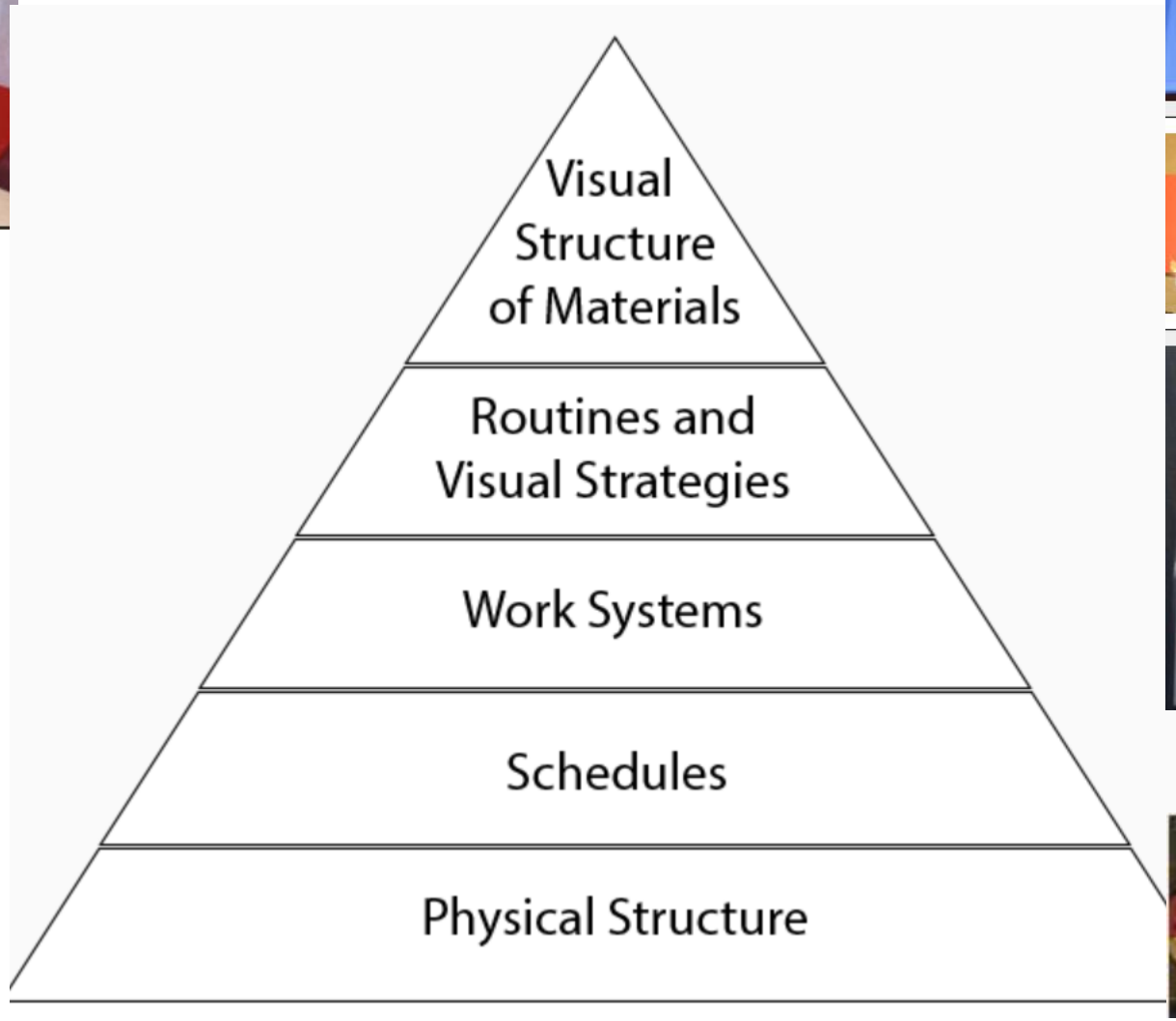


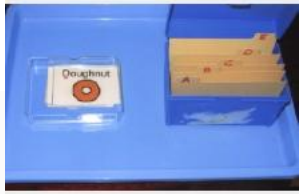
If child is not engaged or regulated, need to start here

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 Protective effort to avoid overload
"Can do it when he wants to"	Difficulty shifting from one thing to another 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) Impaired planning and trouble generating new ideas
"Won't put good ideas on paper"	Poor fine motor skills/handwriting difficulty 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 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

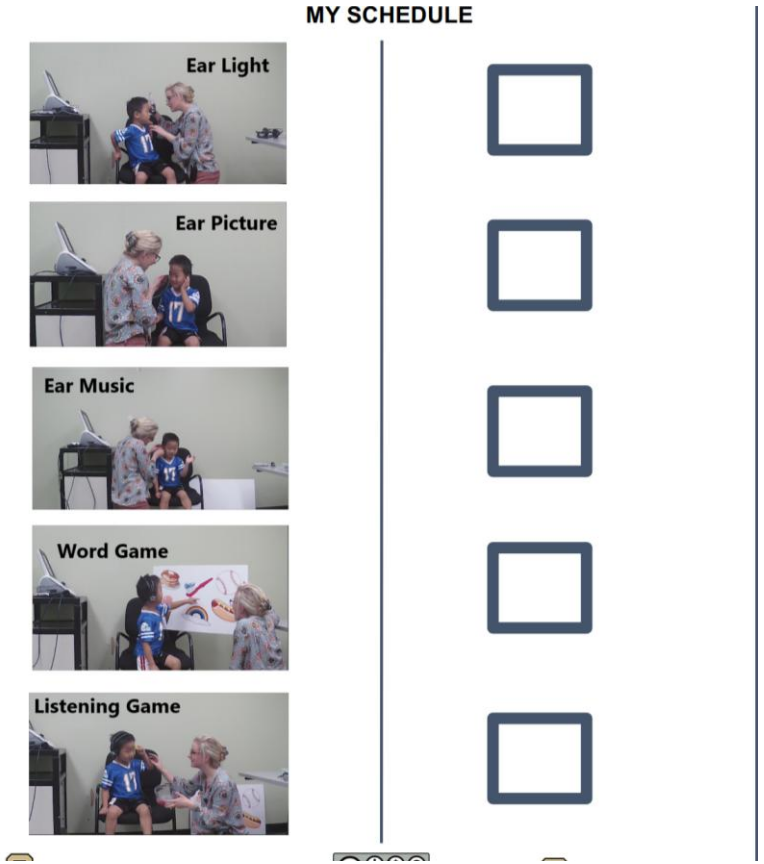
Engage in behaviors that appear distractible/dangerous seeking experiences to regulate themselves

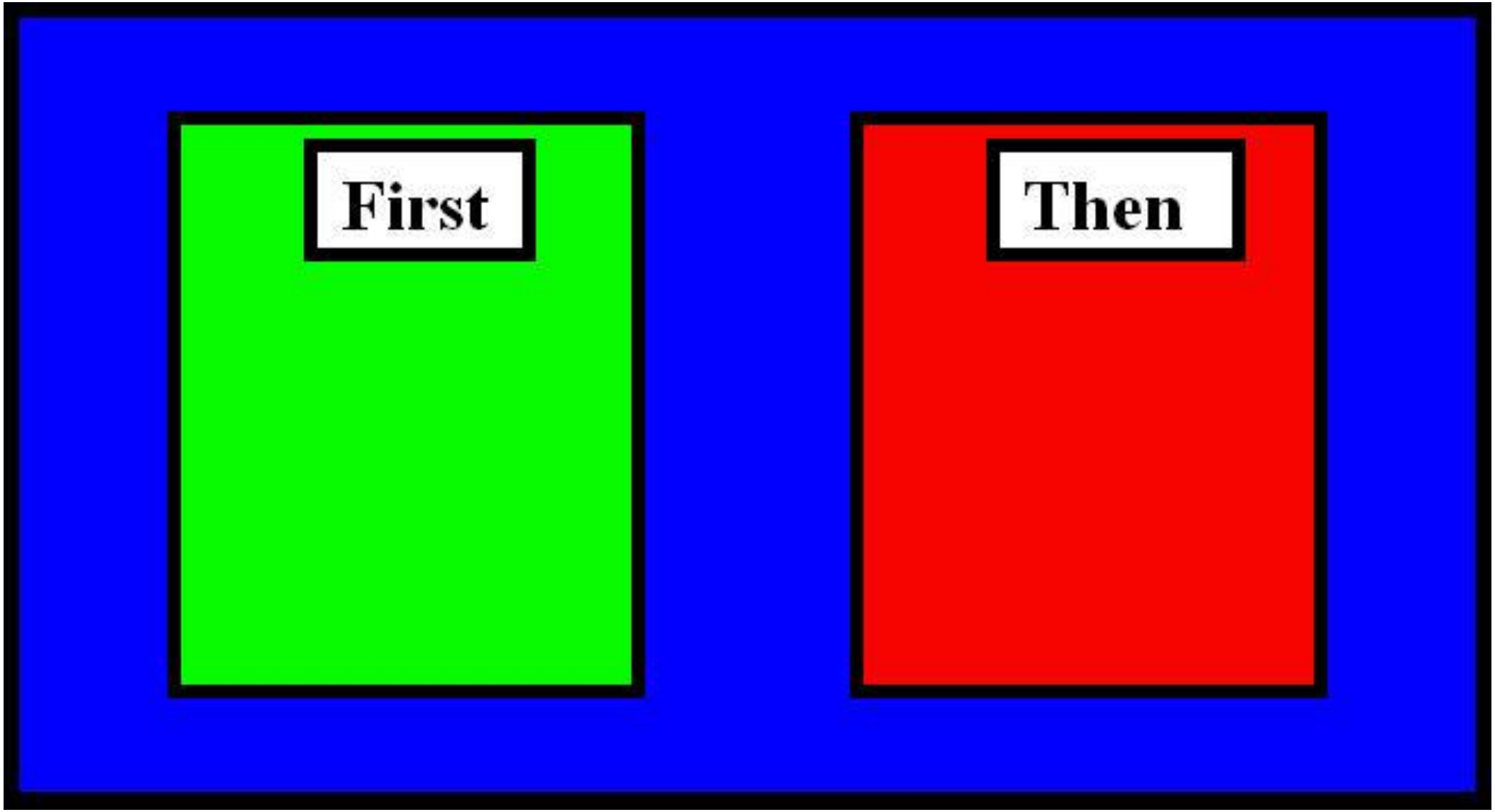
Important to proactively address sensory concerns

Consultation with occupational therapy

Visual schedules as an antecedent

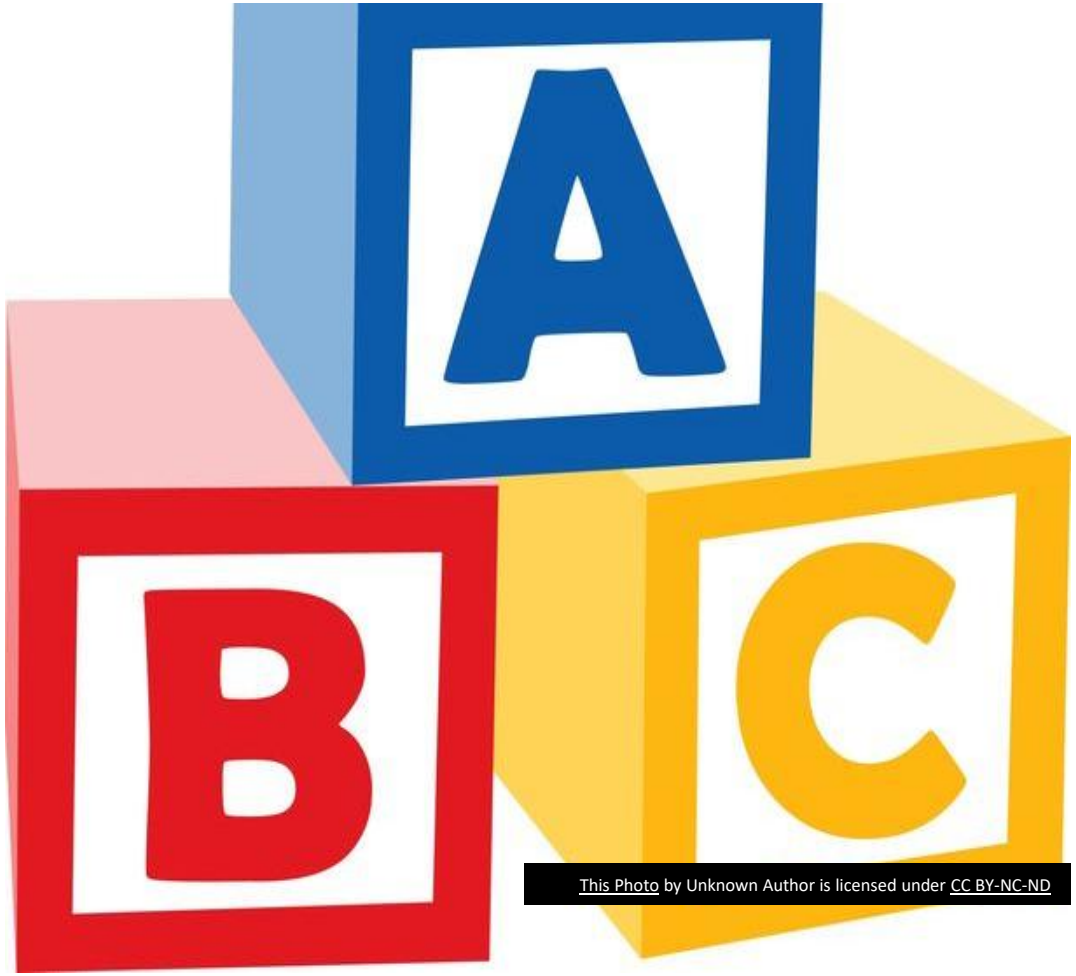
- McTee, H.M., Mood, D., Royer, W., Malley, A., Brumbach, S., Pancoast, E., Fredrickson, T., Thrasher, A., & Bonino, A.Y. (2019). Audiology video models and visual schedules. Available from: https://doi.org/10.17605/OSF.IO/B23UX




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



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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 2

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 3

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