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Dynamic Instruction in AAC: A Brief Tutorial

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Disclosures & Acknowledgements

Disclosures

- I have received funding from the ASHFoundation, NIH, and internal grants at UNM to support this work.
  - *NIH grant: 1R03DC011610*
- I am being compensated for serving as your speaker today.

Acknowledgements

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- The AAC Lab students from UNM for countless hours of hard work
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- The National Institutes of Health for supporting this work

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Clinical Challenges

How do we accurately assess children's potential to use aided AAC?

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Dynamic Assessment (DA) – A Holistic Approach (Tzuriel, 2000)

- Incorporates active teaching within the assessment process
- Aims to TEACH new skills during DA sessions
- Identifies barriers to learning and degree of support required is identified
- Measures degree of clinical support required
- Evaluates learning potential

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Zone of Proximal Development

- Rooted in Vygotsky's sociocultural theory of learning
- Difference between a child's level of independent performance and level of assisted performance

- Level of potential development is determined through problem solving under adult guidance or in collaboration with more capable peers

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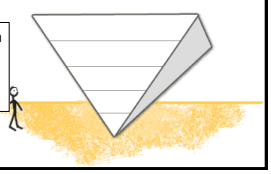
One Approach to DA: Graduated Prompting

- Uses a predetermined, least-to-most cueing hierarchy
- Indicates child's ZPD by measuring amount of support required
- Measures changes in level of support required across similar tasks
- May indicate transfer of learning

We will not be focusing on the other main DA approach today: ***Mediated Learning***



Research to Date

- The only peer-reviewed DA research data focused on aided AAC that we know about comes from our own labs
  - King, M., Binger, C., & Kent-Walsh, J. (2015)
  - Binger, Kent-Walsh, & King (2017)
- We used a graduated prompting approach. Why?
  - Highly consistent procedures: may allow non-AAC experts to use more easily
  - Gain a systematic understanding of which cues are working well and which cues are not

Summary of Research Findings

3- and 4-year-olds with normal receptive language

Participants, Setting, Experimenters, and Instrumentation

- All children had receptive language and nonverbal IQ scores within normal limits
- All sessions administered by experienced researchers and trained SLP graduate students
- Conducted in a private therapy room
- Approximately 2, 60-minute sessions per week
- iPad containing Proloquo2Go™ app
- Static pages with line drawings representing target vocabulary

Targets

Target	Example
Entity-Attribute	Monkey is happy
Possessor-Entity	Monkey's motorcycle
Entity-Locative	Monkey under trash
Agent-Action-Object	Monkey kisses Lion

- All children comprehended all of these structures
  - Tested this prior to administering the DA task

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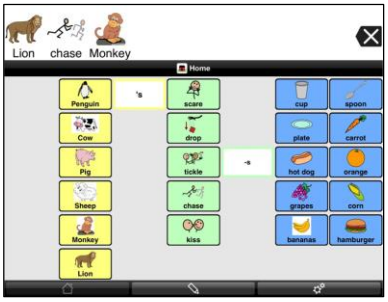
Communication Display Used During DA



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DA Session Procedures

Adapted from Olswang and Bain's (1996) procedures

- Graduated Prompting
- DA for each target administered in a separate block
- 10 trials administered for each target
- Child's production at each level of cueing recorded
- Examiner used toy animals and objects to demonstrate target structure

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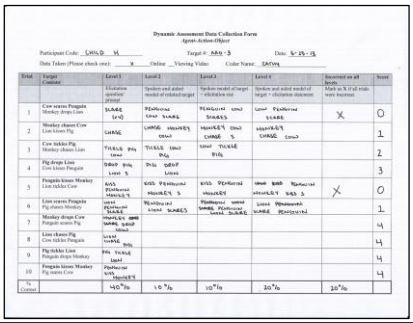
Cueing Levels

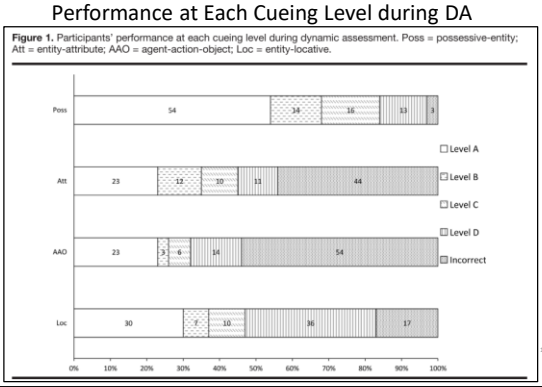
Target: PENGUIN UNDER TRASH		Contrast: PIG BEHIND CAR		
Level	Prompt	Example		Scoring
		Set up/Directions	Prompt	
Level A	Elicitation question/prompt	Place Penguin underneath the trash.	Tell me about this one.	4
Level B	Spoken and aided model of a contrast target	Place Pig behind the car.	Look, Penguin is behind the car PENGUIN BEHIND CAR. Now tell me about this one [placing Penguin under the trash again].	3
Level C	Direct spoken model of the target	Place Penguin underneath the trash.	See, Penguin is under the trash. Now you tell me.	2
Level D	Direct spoken and aided model of the target	Place Penguin underneath the trash.	Tell me, Penguin is under the trash PENGUIN UNDER TRASH.	1

Sample Data Sheet: DA

- Point value assigned for each trial
- Perfect data reliability



Performance at Each Cueing Level during DA



Side note…

AUGMENTATIVE AND ALTERNATIVE COMMUNICATION
https://doi.org/10.1080/07434618.2019.1576224
Taylor & Francis
Taylor & Francis Group
RESEARCH ARTICLE
Check for updates

Error patterns and revisions in the graphic symbol utterances of 3- and 4-year-old children who need augmentative and alternative communication

Cathy Binger, Kaethe Richter, Allyson Taylor, Emily K. Williams and Ashley Willman
Department of Speech and Hearing Sciences, University of New Mexico, Albuquerque, NM, USA

- Very similar findings in our new study of error patterns
  - Graphic symbol errors vary dramatically, depending on the target
  - Important to assess a range of target
  - If they don't get one linguistic structure correct, you cannot assume that they will not get others correct

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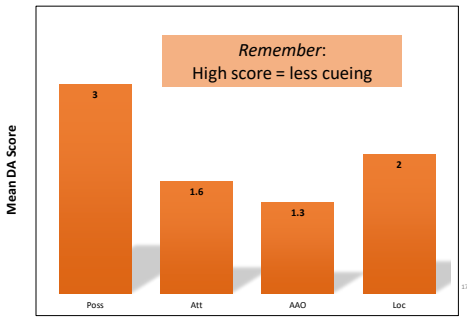
Mean Level of Support Required for Accurate Productions across Participants during DA



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Teaching New Skills in DA Sessions: Did the children's performance improve during each DA session?

- We compared performance on first five trials with performance on last five trials
  - Scores on second half were higher or the same for 32/36 DA sessions
  - Results were statistically significant

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Did DA Performance Predict Intervention Performance?

- Significant correlation between the participant's performance in DA and performance the subsequent intervention for
  - Agent-action-object
    - Monkey kiss Dog
  - Entity-Attribute
    - Monkey is blue
  - Entity-Locative
    - Monkey under bathtub
- Ceiling effects likely for possessor-entity
  - Monkey's grapes

The higher the DA score, the quicker they learned the target

Predicting Future Performance

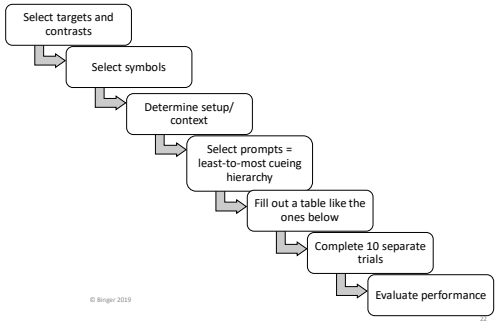
- DA may help predict future performance on similar AAC tasks
  - Useful in determining goals for intervention
    - Little to no cueing needed during DA → Select more challenging targets
    - Moderate cueing needed during DA → Probably an appropriate target
    - Extensive cueing needed during DA, especially with no accurate responses at all →
      - Consider slightly simpler target
        - Can use DA to assess developmental readiness
      - Caution: Even the children who performed poorly in DA still mastered most of the targets

How Can ***YOU*** Use DA? Examples

- Similar procedures can be used with virtually any discrete skill; e.g.,

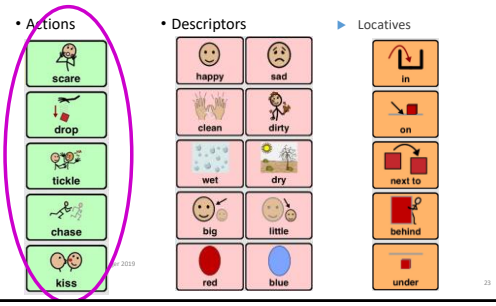
Semantics	• Select abstract graphic symbols (needed to build lexical diversity and to build sentences)
Morpho-syntax	•Use plural –s •Using early verb-based grammatical morphology (-ing, -ed, -s)
Pragmatics	• Take turns during a story reading activity • Using a socially appropriate method to request continuation of an activity

Procedures for Creating a DA Task



Example Adaptation of DA: *Selecting Abstract Symbols*

- Decide what vocabulary to target; e.g.,
  - Actions
  - Descriptors
- Locatives



Devise Cueing Levels

Example: *Select Abstract Symbols (Actions)*

Target: *SCARE* Contrast: *DROP*

Level	Prompt	Example		Scoring
		Set up/Directions	Prompt	
Level A	Elicitation question/prompt	Make Penguin scare Pig	Tell me about this one.	4
Level B	Spoken and aided model of a contrast target	Make Penguin drop Pig	Look, Penguin ***drops*** Pig. *DROP*. Now tell me about this one [making Penguin drop Pig again].	3
Level C	Direct spoken model of the target	Same as Level A	Now, Penguin ***scares*** Pig.	2
Level D	Direct spoken and aided model of the target	Same as Level A	Tell me, **Scare**. *SCARE*	1

Devise Cueing Levels

Example: *Use plural -s*

Target: *Plural -s* Contrast: *Singular -s*

Level	Prompt	Example		Scoring
		Set up/Directions	Prompt	
Level A	Elicitation question/prompt (Cloze sentence)	Put one penguin by himself and two addition penguins together.	Here is one penguin. And here are two _____.	4
Level B	Spoken and aided model of a contrast target	Put one pig by himself and two additional pigs together. Then do the same with the penguins.	Here is one pig ***PIG***. And here are two pigs ***PIG+S***. Here is one penguin. And here are two _____.	3
Level C	Direct spoken model of the target	Same as Level A	Here is one penguin and here are two penguin***s***.	2
Level D	Direct spoken and aided model of the target	Same as Level A	Tell me: here is one penguin ***PENGUIN*** and here are two penguins ***PENGUIN+S***.	1

Devise Cueing Levels

Example: *Take Turns during a Story Activity*

Target: *Take a turn using any communication mode*

Level	Prompt	Example		Scoring
		Set up/Directions	Prompt	
Level A	Nature cue + wait time	Read a page of the story, then wait at least 10 seconds	[Read then wait]	4
Level B	Point toward device	After Level A is complete, point toward device	[Point toward device]	3
Level C	Ask a WH question	Ask a Who, What, or Where question that pertains to the story	Who is with Clifford ***CLIFFORD***?	2
Level D	Answer WH question using any communication mode	Answer question by pointing to a picture in the story, or using speech, or using aided AAC	*[Point to Emily Elizabeth] or* *Say EMILY ELIZABETH on device*	1

Use Caution…

- We've all been using cueing hierarchies and some form of DA for a long time
- But be careful not to put too much weight on your findings
  - With our own study, we found only a moderate correlation between DA results and intervention outcomes
  - Even children who performed poorly on DA ended up mastering some of those same targets within 10 intervention sessions

Acknowledgements

- Many thanks to:
  - The children and families who participated in the studies
  - AAC Lab students from UNM for countless hours of hard work
    - Lindsay Mansfield, Esther Babje, Nathan Bickley, Aimee Bustos, Merissa Ekman, Jacque Garcia, Victoria Ortega, Jamie Ragsdale, Jesse Trujillo, Maja Whitaker
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Selected References

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