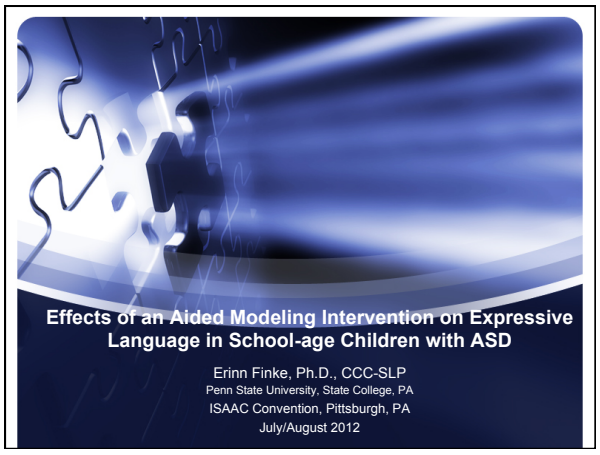

Effects of an Aided Modeling Intervention on Expressive Language in School-age Children with ASD

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Background

- Autism Spectrum Disorder (ASD) is one of the fast growing disability categories in the United States (Tincani, Crozier & Alazetta, 2006).
- It is estimated that anywhere between 14-20% (Lord, Risi & Pickles, 2004) to 50% (National Research Council, 2001) of individuals with ASD need some form of AAC to meet their daily communication needs.

- Acquisition of communication and language skills is challenging for children with ASD (Wetherby & Prizant, 2005), and for children who use AAC (e.g., Lund & Light, 2007).
- Children with ASD have been reported to communicate predominately or exclusively for behavior regulation functions (Wetherby, Prizant & Hutchinson, 1998).

- Further, there is an apparent absence of communication for other functions such as joint attention and social interaction (Wetherby, Prizant & Hutchinson, 1998).
- It has been suggested that this pattern of use of communicative functions is hallmark of individuals with ASD (Wetherby, Prizant & Hutchinson, 1998).
  - Not characteristic of individuals with language disorders or intellectual impairment

- Impairments in using joint attention and social interaction communicative functions are highly correlated with language development for children with ASD.
  - Using a limited range of communicative functions may impact language learning in other ways.

- One impact may include making the transition from using telegraphic (single-symbol) messages to longer multi-symbol messages (e.g., Binger & Light, 2007; Paul, 1997).
- This transition is the first step toward expression of more complex, generative language.

- It is important to target communication for other functions in intervention with children with ASD (Wetherby, Prizant & Hutchinson, 1998).
  - Joint attention
  - Social interaction
- This should be a primary goal of intervention with children with ASD, including those who use AAC (e.g., Light, et al, 1998).

- Intervention using aided AAC models may be one way to help children with ASD increase their range of communicative functions and facilitate the transition to multi-symbol messages (e.g., Binger & Light, 2007; Drager, 2009).
  - Use the child's AAC system to model use of AAC
  - Provide grammatically complete spoken input
    - E.g., {*Ice Pop "Ice Pop"*}{*Melt "Melt"*}
      Sid let his ice pop melt!

- There are several reasons why modeling interventions may be appropriate for children with ASD (Drager, 2009):
  - 1. Modeling makes use of relatively strong visual-spatial skills of children with ASD.
  - 2. Modeling slows down rate of communicative interactions – allowing for more time to process information during interactions.
  - 3. The models (input) provided is directly relevant to context of interaction.
- Could be a combination of these as well.

Goals of this Presentation

- Describe research investigating an AAC intervention to increase communicative turns for the purpose of social interaction and joint attention in children with ASD.
- Illustrate the effects of the intervention on increasing turns for the purpose of social interaction as well as in facilitating the transition to use of multi-symbol messages through video examples.

Current Intervention

- Participants
  - Were between 8-12
  - Required AAC to communicate
  - Had a diagnosis of an ASD
    - Verified by an outside professional using DSM-IV criteria
  - Met the minimum criteria for classification in the "first word" phase of expressive language (excluding phonology) according to the "Language Benchmarks in Children with ASD"
    - Developed by an NIDCD panel of experts
  - Had adequate vision and hearing

Modeling Interventions…(Drager, 2009)

- Aided modeling interventions fall within the naturalistic side of an intervention continuum.
- Some characteristics of naturalistic intervention approaches include:
  - intervention involves the family and other caregivers,
  - intervention takes place in the natural environment,
  - intervention is embedded into functional and meaningful contexts,
  - intervention acknowledges that communication is transactional in nature.

Current Intervention

- Design
  - Single subject, multiple probe research design (Tawney & Gast, 1984) across one set of three participants
  - Concurrent second study using same design with three additional participants

- Materials
  - Children's storybooks used as context for intervention
  - AAC Systems – iPad with P2G
    - 25 symbols per storybook
    - Photos from book pages
    - Grid layout

- Intervention Procedures
  - Baseline:
    - Researcher and child engaged in book reading interaction
    - Researcher paused after reading each page
    - Child had access to aided AAC system
    - Researcher provided at least 2 spoken models per double page spread of each book read.
    - If child takes a turn, the researcher provided a spoken model that reflected the child's turn
    - Spoken models consisted of at least 2 vocabulary words on the communication display for the book

- Intervention Procedures
  - Intervention:
    - Researcher and child engaged in book reading interaction
    - Researcher paused after reading each page
    - Child had access to aided AAC system
    - Researcher provided at least 2 aided AAC models per double page spread of each book read
    - If child takes a turn, the researcher provided a spoken and aided AAC model that reflected (and expanded or recasted) the child's turn
    - Aided AAC models consisted of at least 2 vocabulary words on the communication display for the book

- Aided AAC Models
  - The researcher
    - Touched a combination of two symbols on the child's aided AAC system
    - Allowed the aided AAC system to provide the label for the selected items via synthesized speech
    - Provided a spoken model of the message similar to those provided during the baseline phase.

- Generalization
  - Measures will be collected to determine if children are able to generalize use of increased turns for joint attention and use of multi-symbol messages to novel books when aided AAC models are not provided.
  - Data are ongoing
- Maintenance
  - Measures will be collected 2, 4 and 8 weeks after the completion of the generalization phase.
  - Procedures the same as the intervention phase.

- Measures
  - Dependent variables
    - Frequency of related joint attention turns taken by child with ASD during each 15-minute storybook reading interaction
    - Frequency of multi-symbol messages produced by the participants during each 15-minute storybook reading interaction
  - Independent variable
    - Aided AAC modeling intervention

- Data coding
  - Turns by the child with ASD were coded in two different ways
    - 1. For pragmatic function
      - Behavior regulation
      - Social interaction
      - Joint attention
    - 2. For type of turn
      - Intentional Related turn
      - Intentional Unrelated turn
      - Perseverative turn
      - Exploratory turn

Pragmatic Functions (Wetherby, Cain, Yonclas & Walker, 1988)

- Behavior regulation
  - Request object
  - Request action
  - Protest
  - Navigational tool
- Social interaction
  - Request social routine
  - Showing off
  - Greeting
  - Calling
  - Acknowledgement
  - Request permission
- Joint attention
  - Comment
  - Request information
  - Clarification

Types of Turns

- Intentional Related Turn*
  - Turn taken by child that is directly relevant to the model provided by the researcher, the context of the story or the page being read.
  - Did not require social referencing of partner
  - Researcher responded to turn contingently
- Intentional Unrelated Turn
  - Turn taken by child that was directed to the researcher that was not related to the storybook reading context.
  - Researcher responded to turn

- Perseverative Turn
  - Child expresses same message (via any symbolic mode) multiple times within one 2-second time period.
  - May or may not be responded to by the researcher.
- Exploratory Turn
  - Child changes pages or navigates to other applications on the iPad.
  - Child navigates away from book currently being read.
  - Child expresses multiple different messages (via any symbolic mode) within one 2-second time period.

Overall Results

- All three children with ASD showed improvement in both
  - frequency of turns for the purpose of joint attention
  - frequency of multi-symbol turns
    - One participant, EG, progressed from using only single symbol messages in baseline to using up to 4 symbols in one message during intervention

Discussion

- Aided AAC modeling was a successful intervention for all 3 of these participants
  - Provides supports for inclusion of aided AAC models in intervention for children with ASD
  - Provides support that aided AAC modeling intervention can increase communication for the function of joint attention in school-age children with ASD.
  - Provides support that aided AAC modeling intervention can increase production of symbol combinations in school-age children with ASD.

- Intervention effective for children with ASD with a range of baseline functioning and skills.
- There may be some skill or ability of EG that TF and TW did not have that predisposed her to such a high level of success with the intervention.
  - This cannot be determined from this study, but may be worth pursuing in future research.

- Why was this intervention successful?
  - There are several possible reasons:
    - Context of intervention was an engaging and motivating activity (Watson, Lanter, McCormish & Potson Roy, 2004).
      - Books chosen included characters or topics of high interest to the child with ASD.
    - Actions of the researcher (e.g., use of pause time) may have slowed the rate of the interaction (Seung, Ashwell, Elder & Valcante, 2006).
      - May have provided more time for child to process information in interaction
      - May have provided the child with additional time needed to respond
    - Contingent and appropriate responses to any attempt by the child (Siller & Sigman, 2002).

Limitations

- Few participants in study and even fewer reported in this presentation
  - Data presented here are preliminary and should be viewed with caution
  - Reliability data are not yet available for this data
  - Data collection is ongoing and is not complete for any of the participants, including those discussed in this presentation

Limitations

- Did not control for type of model
  - E.g., expansion versus recast
- Same instructor for each child
- Intervention provided in a pull-out context

Future Research

- Instruct other interventionists
  - Teachers
  - 1:1 instructional assistants
  - Parents/caregivers
- Investigate use of prompts
  - Use modeling intervention with added prompts to make goal of intervention more explicit to child with ASD
- Provide intervention in a more natural context
  - Inside the classroom, at home
- Investigate the effectiveness of other intervention approaches at teaching these same language and communication skills.

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