Models of Parent-implemented AAC Intervention for Children With Severe Autism

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Disclosure Statement

Oliver Wendt is Chief Science Officer for SPEAK MODalities LLC; one of the products, SPEAKall!, will be shown in this presentation, but all intervention procedures are replicable with other apps.

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Benefits of Parent Involvement

- Involving parents as trainers can maximize benefits of speech-language interventions (Kaiser et al., 2000)
- AAC interventions can be expensive
- Often lack of qualified personnel
- If parents can be trained to conduct AAC intervention at home, children may obtain more consistent benefits from AAC without extra costs
- Little research in AAC and ASD on parent-training (Park et al., 2011)
  - Particularly how to teach parent use of tablets with their children

Models for Parent Training

- Behavioral Paradigm
  - Picture Exchange Communication System
  - Highly structured, manualized
  - Discrete trial format
  - Desired items as reinforcement
- Naturalistic Paradigm
  - Naturalistic Teaching
  - Natural environments
  - Learning opportunities are child-initiated
  - Uses child interests

Autism Spectrum Disorder and AAC

- Autism includes a “delay in, or lack of the development of spoken language” (American Psychiatric Association, 2000)
- Up to 66% of children diagnosed with an autism spectrum disorder (ASD) do not develop communicative speech (Lord & McGee, 2001)
  - No sufficient natural speech or writing to meet their daily communication needs (Light, Roberts, DiMarco, & Greiner, 1998)
  - Candidates for intervention in augmentative and alternative communication (AAC)

iPad Impact on AAC Services

Pre-2010
- $2,000-$10,000 high price tags
- Prescriptive therapist led
- Isolation learner alone, 1-on-1 therapy

Post-2010
- $0-$200 low app price tags
- Do It Yourself
- Parental experimentation!
- Shared Community between learner, parent, clinicians

Important: when parents get involved they need proper coaching & support
**Experiment 1:**
Parents using Modified PECS

- Multiple Probe Design across participants (Horn & Baer, 1978)
  - Intervention phase split into sub-phases derived from modified picture-exchange protocol
  - Generalization probes taken throughout baselines and all subsequent intervention phases
- Dependent measures:
  - Requesting skills: number of correct requests during 20-trials session
  - Emerging speech: intentional word vocalizations or word approx. or full word utterances
  - Full sentences (“I want cookie”) counted as one utterance

**Modified PECS Protocol**
(after Bondy & Frost, 1994)

- Preference Assessment
  - iPad Phase I (Ph 1): One-Symbol Activation
  - iPad Phase II (Ph 2): Distance and Persistence
  - iPad Phase III (Ph 3): Discrimination Between Symbols
  - iPad Phase IV (Ph 4): Sentence Structure
    - Added more rigorous speech elicitation, parent and child read “sentence strip” together
  - iPad Phase V (Ph 5): Responding to “What do you want?”/ Increasing Spontaneity
    (Boesch, Wendt, Subramanian, & Hsu, 2013a, b)

**Materials: iPad and SPEAKall!**
- Purposely reduces processing difficulties through design (reduces cognitive and sensory load)
- Teaches early symbol vocabulary and simple sentences
- Customizable to each child’s specific needs
- Seamlessly connects with Picture Exchange (PECS) intervention
- Easy-to-use, parent-friendly
- Evidence- (Research-) based
  - Behavioral
  - Neurophysiological
- Free version available on iTunes search “SPEAKall”

**Training Approach**
- Parent-implemented intervention: Parents receive comprehensive training
  - General workshop at parent support group
  - Written instructions
  - Modeling and role playing
  - Video resources
  - Sole trainer for child, clinician only provides feedback
- Two clinicians with advanced PECS training independently checking sessions for treatment integrity.
  - Treatment schedule was 2 days/week, with 1-2 sessions each day
### Participant Characteristics

<table>
<thead>
<tr>
<th>Participant</th>
<th>Age/Gender</th>
<th>Dx*</th>
<th>Communication Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sally</td>
<td>7 yrs./Female</td>
<td>severe autism</td>
<td>some echolalia and scripted speech, less than 15 functional words</td>
</tr>
<tr>
<td>Leo</td>
<td>8 yrs./Male</td>
<td>moderate-severe autism, dual diagnosis: Down syndrome</td>
<td>no vocalizations, no functional speech</td>
</tr>
<tr>
<td>Stan</td>
<td>6 yrs./Male</td>
<td>severe autism</td>
<td>vocalization and jargon, no meaningful words, no functional speech</td>
</tr>
</tbody>
</table>

*based on ADOS and CARS scores

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### Participant P1

#### Phase 1 – One-symbol Requests

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#### Phase 2 – Distance and Persistence

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#### Phase 3 – Symbol Discrimination

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#### Phase 4 – Sentence Structure
Wendt & Boesch: Parent-Implemented AAC

### Participant P1

**Phase 5 – “What Do You Want?”**

**Participant P1**

**Phase: iPad Fadeout**

**Participant P1**

**Maintenance and Generalization**

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**Discussion**

- **M-PECS Model Pros:**
  - Step-by-step instructions easily to follow
  - Can be done with high treatment integrity
    - Ex.: Family #1: Overall TI= 97.75%; range 87%-100%
  - Familiarity with PECS materials used in school
  - Can target generalization

- **M-PECS Model Cons:**
  - Difficulties with error correction procedures
  - Overuse of speech elicitation
  - Identifying and changing reinforcers
Experiment 2: Parent Training using NT

- **Purpose:**
  - Pilot test parent-training program
  - Increase child’s requesting

- **Design:**
  - A-B-C Design with Follow-up

- **Dependent Measure:**
  - Requesting skills via SPEAKall! app during snack time
  - Independent activation of single icon (food/drink item)

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Participant Characteristics

- **Parent:**
  - 40-year old father
  - Asian descent; spoke Cantonese & English
  - Master’s degree in Business
  - Knowledge of iPhone & iPad but no exp. w/ AAC

- **Child:**
  - 12-year old boy with severe ASD
  - Asian descent; 1 word utterances in English (prompted); understood Cantonese; some pointing
  - Exposure to iPad (games only)
  - Not current user of SGD but prior exposure to low-tech AAC system @ school

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Setting & Materials

- **UNT Kristin Farmer Autism Center**
  - Workshop training
- **Home environment**
  - Baseline
  - Post-Workshop
  - 1:1 Parent Coaching
  - Follow-Up
- **iPad tablet with SPEAKall! App**
  - Pictures of preferred foods and drinks

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Study Phases

- Baseline (home)
- 2-Day Workshop (KFAC)
- Post-Workshop (home)
- 1:1 Parent Coaching (home)
- 6-Week Follow-Up (home)

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Workshop Training

- **Day 1: Naturalistic Teaching Strategies** (Franzone, 2009)
  - ~4 hours
  - Overview of NT (research support, rationale)
  - Specific instruction (manding, mand-modeling, modified-time delay, environmental arrangements, etc.)
  - Modeling techniques & role-playing

- **Day 2: AAC**
  - ~3 hours
  - Overview of AAC (principles, research support, rationale)
  - SPEAKall! App (setting it up, trouble-shooting, using it)
  - App demonstrations & role playing

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Post-Workshop

- 3 sessions during snack time routine
- Purpose was to determine if the child’s requesting skills improved after the parent attended the 2-day workshop
- Parent was asked to train the child to request preferred food/drinks using the SPEAKall! app
- No additional instruction beyond the workshop was given
1:1 Parent Coaching
- 1 in-home coaching session per week
- Coaching varied but were based on the prior week’s videos
- Parent Feedback (strengths/weaknesses):
  - Structuring the environment to elicit requesting
  - Preventing satiation
  - Allowing sufficient wait-time
  - Minimizing prompts
  - Modeling teaching strategies; role-playing

Data Collection
- 3 video-recorded sessions per week
  - But not on the same day as the coaching session
  - Sessions were ~5-20 min. each

Video Demonstrations

Parent Training Study

Discussion
- NT-MODEL Pros:
  - Strategies are flexible in most environments
  - Intuitive training techniques suitable for parents
  - Uses the child’s interests to elicit a teaching moment
- NT-MODEL Cons:
  - Because of flexibility in training techniques, it’s easy for the parent to revert to previous behavior (excessive prompting)
  - Parents may find it difficult to structure the environment to elicit communicative opportunities

Discussion (cont.)
Potential limitations to any parent-implemented intervention:
- Burden on family schedule
- Ability to handle problem behavior
- Finding trained personnel to work with
- Procedural integrity
- Environmental constraints in the home
  - Ex: extra distractions, space limitations, inability to keep strong reinforcers restricted to training sessions only
Conclusions

- Results underscore the potential of including parents for maximizing benefits of AAC intervention in autism
- Clinicians should recognize the value of joint parent-professional partnerships, and develop expertise for parent training
- Workshop style training alone is not sufficient in increasing parents’ intervention skills
  - Ongoing supervision and consultation recommended
  - Coaching element critical

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SPEAKall! Resources

- Website: www.speakmod.com
- YouTube Channel: http://www.youtube.com/channel/UCNq-ywgu0ESwLawPDvhGUQg
  OR SEARCH: SPEAK MODalities
- Facebook Site: https://www.facebook.com/speakmod
- Twitter: https://twitter.com/speakmodalities

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Questions ???

References


References (cont.)


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