Example of a Critically Appraised Topic (CAT), from

Schlosser, R.W., Wendt, O., & Blischak, D.M. (manuscript in preparation). Effects of augmentative and alternative communication on natural speech production in autism: II. Developing a critically appraised topic. (PLEASE DO NOT QUOTE WITHOUT AUTHORS’ WRITTEN PERMISSION)

CAT: Impact of AAC Intervention on Natural Speech Production in Learners with Autism

Title

- This CAT is related to treatment/intervention
- Sam is a 4-year old child who was recently diagnosed with autism. He is unable to meet his daily communication needs in his preschool through natural speech. He has recently learned to imitate words such as “mama,” “dada,” “quack-quack,” and “bye-bye.” To date, Sam does not use these words to communicate. His family and the staff at his preschool anticipate many of his needs and consistently respond to his presymbolic communication behaviors such as touching objects or leading people to objects he wants or activities that he would like to do. Sam’s parents hope that he will eventually speak and be included in a classroom with typically-developing children. Prior to Sam’s diagnosis, his parents were not interested in exploring other forms of communication because they had serious concerns about the impact on Sam’s potential for developing speech. Their current goals for Sam are that he improve his speech and communicate more effectively through whatever means are appropriate and are supportive of speech development. His parents want to know, “Which AAC approach(es) best support natural speech development?”

Reviewer

- Ralf W. Schlosser and Doreen M. Blischak

Search

Database Searches

- DARE (1996 – 2002): keywords “autism” and “communication;” yielded 6 references but none focused on AAC and autism;
- CINAHL (inclusive 2002): keywords “autism” and “augmentative and alternative communication” and “systematic review [DT]” and similar combinations; yielded 3 review but not focused on autism;
- ERIC (- 2002): keywords “autism” and “communication” and “review;” “autism” and “augmentative and alternative communication;” yielded 5 reviews on autism and AAC some of which included sections on natural speech production but did not focus on this issue;
- Medline (- 2003): keywords “autism” and “communication” and “review;” yielded 4 reviews, some of which included sections on natural speech production.
- PsycINFO (- 2002): keywords “autism” and “augmentative communication,” and “review” yielded 3 reviews, some of which included sections on natural speech production.
Hand Searches

- Special issue on speech output in Augmentative and Alternative Communication (2003): Yielded 1 relevant review and 1 relevant study
- ISAAC proceedings 2000 & 2002: Yielded 1 systematic review
- ASHA Convention Abstracts 2001 & 2002: Yielded 1 systematic review
- Millar et al. (2003): Yielded
- Schwartz et al. (2003): Yielded

Date

- The search was completed August 10, 2003;
- Proposed re-evaluation: August 2006

Citations (include only those that are relevant)

Relevant Narrative Reviews (only included sections):

Bondy & Frost (1998); Bondy & Frost (2001); Goldstein (2002); Koul, Schlosser, & Sanscibrian (2001); Mirenda (2001); Mirenda & Erickson (2000); Schlosser (2003a); Schlosser (2003c); Schlosser & Blischak (2001); Sigafoos, & Drasgow (2001); Sundberg, & Michael (2001)

Relevant Systematic Reviews (to locate individual appraised studies):


Relevant Studies (Suggestive evidence):


**Relevant Studies (Inconclusive evidence):**

Bondy & Frost (1994); Bonta & Waters (1983); Dyches (1998); Fulwiler & Fouts (1976); Kravits et al. (2002); Schwartz et al. (1998); Sigafoos et al. (2003)

**Summary and Appraisal of Studies**

<table>
<thead>
<tr>
<th>Study; AAC</th>
<th>Subjects (n, age,(^a))</th>
<th>Results</th>
<th>Appraisal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anderson (2002); PECS vs. manual signing</td>
<td>6 children (2 to 4)</td>
<td>Signing resulted in more vocalizations during correct responding at post treatment than PECS; vocalizations during and after treatment were associated with initial vocal imitation levels. John mastered 3 items with speech during signing and 1 item during PECS intervention. Ryan mastered one item with speech in signing and none in PECS.</td>
<td>Suggestive: Sets were equated in terms of preference; a teaching criterion was used; treatment integrity and interobserver agreement are strong; because vocalizations were measured only during correct responding, there is no comparable baseline.</td>
</tr>
<tr>
<td>Charlop et al. (2002); PECS</td>
<td>3 children (3, 5, 12)</td>
<td>Spontaneous speech and imitation increased even with novel (a) partners, (b) settings, and (c) stimuli.</td>
<td>Suggestive: The speech design rules out threats to internal validity; strong interobserver agreement data; treatment integrity data are lacking</td>
</tr>
</tbody>
</table>
### Applicability

- The n of the single-subject designs is less than 9 subjects per experiment and there is only 1 study per recommendation; therefore, generality may be compromised
- However, several participants are of the same age as Sam
- However, three of the four studies included participants with demonstrated vocal imitation skills at onset (just like Sam) of the intervention

### Conclusions

Taken together, these studies suggest that it is plausible that:

- PECS instruction increases spontaneous natural speech (Charlop et al., 2002)
- Manual signing instruction increases natural speech production to a greater extent than does PECS instruction (Anderson, 2002);
- simultaneous communication and alternating between speech alone and simultaneous communication yield better speech production than signing alone (Yoder & Layton, 1988);
- computer-based instruction with synthetic speech output increases natural speech production compared to computer-based instruction without speech output (Parsons & LaSorte, 1993); and,