Examining the Effects of AAC Intervention on Oral Language in Children with Autism Spectrum Disorders: A Systematic Review

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Background

- Many children with Autism Spectrum Disorder (ASD) are non-verbal or minimally verbal.
- Augmentative and Alternative Communication (AAC) is an external system used to support communication, which may include the Picture Exchange Communication System (PECS) or Speech Generating Devices (SGDs).
- AAC is a common intervention for children with ASD.
- There is a widely held fear that AAC use may have a negative impact on verbal language development, but research shows this is not the case.

Objective

To determine whether AAC intervention will increase verbal communication in children with ASD.

Systematic Review Protocol:

- Inclusion criteria: 0-17;11 years old, diagnosis of ASD, research within the past 10 years, peer-reviewed, quantitative studies.
- Exclusion criteria: Publications in languages other than English, qualitative studies.
- Intervention: Augmented AAC (e.g., Picture Exchange Communication System (PECS), Speech Generating Device (SGD)).
- Outcome: Verbal language (e.g., words, word approximations, meaningful verbalizations).
- Boolean Sentence used for search strategy: (Autism Spectrum Disorder OR ASD OR Autis*) AND (Verbal Communication OR Speech Development OR Verbal Language Development OR Verbal Development) AND (Augmentative Communication OR Augmentative AND Alternative Communication OR Assistive Technology).
- Manual search yielded an additional 22 articles.

Methods

- Study Design:
  - Randomized Control Study (2)
  - Systematic Review (2)

Results

- Table 1. Quality Analysis of Included Studies

<table>
<thead>
<tr>
<th>Evidence</th>
<th>Number of Studies</th>
<th>Study Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>7</td>
<td>Meta Analysis (3)</td>
</tr>
<tr>
<td>Level 4</td>
<td>16</td>
<td>Systematic Review (2)</td>
</tr>
</tbody>
</table>

*Scale of 1 to 5, with 1 being the highest

Measurements: The majority of studies used event recording of verbalizations to quantify data. Of the studies collected, only three used formal measures.

PECS: Some studies showed that PECS has the potential to increase verbal language. However, there were mixed results across studies.

SGDs: The two studies that conducted a statistical analysis showed significant gains in expressive language with SGD intervention. Most other studies found varied results.

PECS vs. SGD: A comparison of PECS and SGDs suggested that both forms of AAC benefit verbal language outcomes when compared to baseline, with no clear advantage to using one over the other.

Limitations

- The research currently lacks randomized control studies (RCTs), replication, and longitudinal studies.
- Heterogeneity of intervention protocols and participant characteristics reduces generalizability of results.
- Clinical significance is low due to reduced generalizability of results, lack of robust evidence, and lack of significant changes due to intervention.

Conclusions

- AAC does not hinder spoken language.
- AAC will increase overall communicative acts, but not necessarily verbal output.
- There is not enough research evidence at this time to support using AAC interventions to increase spoken language in children with ASD.

Recommendations

- Conduct more RCTs and replicate methodologically rigorous studies.
- Consider communicative function of AAC use in future studies.
- Request vs. comments.
- Conduct more research on forms of AAC other than PECS.
- Use more formal measures.
- Conduct a longitudinal study to determine what happens once the child learns how to functionally use the device.
- More analysis of confounding variables of studies (e.g., subjects' baseline characteristics, intervention environment, interaction partners).

Selected References