

Critical Review.

Peer attitudes toward a school aged AAC user: Does use of high vs low tech device matter?

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The attitudes of communication partners may have a significant effect on communication expectations and overall success. Research in the area of Augmentative and Alternative Communication (AAC) has continued to identify characteristics of the individual client or factors of the physical AAC system that influence the attitudes of communication partners. This critical review examines literature exploring two levels of technology (high tech vs. low tech) that may influence peer attitudes toward a school-aged child using an AAC system. Studies include between-group and within-group research designs exclusively and were critically evaluated. The collective evidence in this area was inconclusive. Clinical implications and recommendations are provided.

Introduction

The field of Augmentative and Alternative Communication (AAC) has been a growing area of research as it operationally serves as a voice for those in society with the most severe communication impairments. AAC involves any form of communication method that replaces or supplements oral speech (Dressler, Bland & Baumgartner, 2016). As general technology continues to advance, the field of AAC rapidly changes. Therefore, AAC devices can vary drastically in regard to level of technology. High tech devices involve specialized equipment including Dynavox, Eye Gaze Technology, and speech

and alternative communication) AND (attitudes) AND (children OR school-aged OR child) AND (peer OR friend OR classmate) AND (informal interaction) AND (high tech OR sgd OR speech generating device).

Selection Criteria

Articles were eliminated if they did not require an attitude component. Attitudes must be rated on standardized measurement scale. Articles that were strictly teacher or parent experience/perception with inclusion of students who use AAC were not included.

Data Collection

The articles selected to be included in this review comprised of one within-group repeated measures (cross-over treatment study) and four between-groups experimental designs.

Results

Between-Groups Design

Four of the selected studies included a between-groups research design. This design limits the number of conditions exposed to each participant. Considering the young age of the target population, reducing demands and the length of sessions may limit the chance of boredom and fatigue affecting results. This design serves to minimize learning and carry-over between conditions as participants are never exposed to other independent variables. Limitations of this design include the requirement for more participants to detect statistical difference. The literature collected typically involved a narrow group of participants that were restricted in age, geographical location, and socioeconomic status (SES). Narrow and small sample sizes may limit the ability to generalize to the broader population.

Lilienfeld & Alant 2002 developed a Communication Aid/Device Attitudinal Questionnaire (CADAQ) to measure school-aged children's attitude toward a peer with complex communication needs. The questionnaire evaluated the following domains of attitudes: Behavioral (intentions to behave in a certain way), Cognitive (beliefs), and Perception of Communicative Competence. 115 participants between the ages of 11-13 who had no previous experience with people with severe disabilities were selected from a mainstream school. Participants were randomly assigned to two groups that were comparable by age and gender. Each group was required to watch a video of a student with no functional speech engage in a 4.50-minute conversation using a DeltaTalker with synthetic voice output or the same video without the synthetic voice output. CADAQ was completed after viewing. Order

Blockberger et al. 1 3)

Strengths of this study include a clear selection criterion for participants. Additionally, results demonstrate no statistical difference between groups or within individual performance on each dimension of the questionnaire. The measurement tool, although literarily established, only had satisfactory internal consistency. A nested ANOVA was completed and demonstrated borderline effects for Cognitive and Behavioral domains, suggesting sequence of viewing influenced participant performance. Additionally, the stimuli video was described as 'similar,' but did not identify statistical consistency or provide detail of the conversation. A major shortcoming of this study was the use of a typically developing peer as the target AAC user. This technique limits generalization to typical communication situations which commonly involve children with disabilities. Overall, this study is suggestive that high tech AAC techniques are associated with more positive attitudes toward same aged peers with communication needs.

Discussion

The summative conclusions of these studies are highly mixed with all five studies representing varying levels of suggestive conclusions. Based on the lack of conclusive research, a strong clinical conclusion cannot be made. The literature demonstrates contradictory evidence; with two studies yielding significant effect of high technology device on peer-rated attitudes (Dada et al., 2016; Lilienfeld & Alant, 2002) and three suggesting no effect (Hyppa et al., 2016; Blockberger et al., 1993; Beck et al., 2002). The research concluded by Hyppa et al. (2016) and Blockberger et al (1993), which suggest that technology level does not influence peer attitudes, had more rigorous methodology and may offer a more appropriate representation of the proposed research question. However, the glaring contradiction in conclusionary evidence is concerning. The conclusions by Dada et al. (2016) and Lilienfeld and Alant (2002), which suggest that level of technology had a significant effect on attitudes, had several noticeable differences in comparison to the other studies regarding methodology and procedures. Firstly, these were the sole articles to measure outcomes with the CADAQ. This questionnaire

children of this age group. For example, children may consider conversations with adults to be more formal or authoritative, and therefore change their ratings accordingly.

Gender appeared to be a significant factor influencing attitude toward peers who use AAC techniques across all studies. Consistently, females were found to have more positive self-rated attitudes toward their peers. The influence of gender may be a result of this specific socio-demographic, where females are commonly reared to be more nurturing from a young age. Future research should aim to better control for the interaction of gender and socio-demographics in order to make appropriate recommendations concerning education and support for male peers.

Conclusion

In order to improve the level of evidence in this area of research, the following research avenues are recommended:

- 1) Future research should employ study designs that offer stronger levels of evidence. Specifically, it may be beneficial to use larger sample sizes and broader populations to improve probability of generalization.
- 2) Future research should consider peer attitudes in response to levels of competence of the AAC user as a significant confounding variable.
- 3) As earlier discussed, future studies should focus on naturalistic communication exchanges. This may include preserving informal language, using natural responses, and focusing on children who use the device on a regular basis. Additionally, the procedure of using video stimuli should be restructured to reflect more naturalistic conditions.
- 4) Future studies would benefit from including statistical baseline measures for participants to improve validity and ability to replicate study.

Due to the mixed nature of the collected results and inherent weakness across study designs, a clinical recommendation to pursue a specific level of technology in AAC systems is not warranted. However, clinicians petgetce

Lilienfeld, M., & Alant, E. (2009). Attitudes of children toward an unfamiliar AAC device with and without voice output. *Attention Attention* 1 (2), 91-101.

McCarthy, J. & Light, J. (2009). Attitudes toward individuals who use augmentative and alternative communication: Research review. *Attention Attention* 1(1), 41-55.