SWAAAC Evidence-Based Practice

AAC Implementation

The following is a collection of peer-reviewed journal articles addressing the implementation of AAC systems and strategies to facilitate the acquisition of language skills in students with Complex Communication Needs. The intent of this document is to provide some foundational information for the implementation of evidence-based practice. Please contact the SWAAAC office if you would like to add an article to this resource.

**This document contains a variety of resources including, but not limited to peer-reviewed journal articles, magazine articles, academic papers, and conference proceedings. It is the responsibility of the reader to evaluate the sources and use their best judgment with regard to EBP applications.*

Summary of the Research

-AAC Modeling or Aided Language Input led to meaningful linguistic gains.
-A significant overlap was found between the vocabularies used by typically developing young children and the vocabularies their mothers use to communicate with them. Implications for choosing vocabulary to be used during Aided Language Input.
-Communication Partner instruction programs (including peer-mediated programs) were found to be highly effective.
-Children with multiple disabilities including visual impairments and deaf blindness responded twice as often when given 5, 10, 15+ seconds of wait time.
-Identified reasons for AAC abandonment at home: (a) parents lacked the emotional readiness and resilience to implement AAC, (b) implementing AAC was extraneous work for parents, (c) the child did not use their AAC system for communication, and (d) parents were not satisfied with the AAC system itself.

AAC Modeling Intervention Research Review
-Samuel C. Sennott, Janice C. Light, and David McNaughton
Abstract: A systematic review of research on the effects of interventions that include communication partner modeling of aided augmentative and alternative communication (AAC) on the language acquisition of individuals with complex communication needs was conducted. Included studies incorporated AAC modeling as a primary component of the intervention, defined as the communication

partners (a) modeling aided AAC as they speak and (b) participating in the context of a naturalistic communication interaction. This review used a best-evidence approach, including nine single-case studies, with 31 participants, and 70 replications, and one quasi-experimental randomized group design study, including 63 participants. The results of the review indicated that AAC modeling intervention packages led to meaningful linguistic gains across four areas including (a) pragmatics, marked by increases in communication turns; (b) semantics, marked by receptive and expressive vocabulary increases; (c) syntax, marked by multi-symbol turn increases; and (d) morphology, marked by increases in target morphology structures. (Sennott, Light, & McNaughton, 2016)

The effectiveness of aided augmented input techniques for persons with developmental disabilities: a systematic review

-Anna A. Allen, Ralf W. Schlosser, Kristofer L. Brock and Howard C. Shane

ABSTRACT:

When working with individuals with little or no functional speech, clinicians often recommend that communication partners use the client's augmentative and alternative communication (AAC) device when speaking to the client. This is broadly known as "augmented input" and is thought to enhance the client's learning of language form and content. The purpose of this systematic review was to determine the effects of augmented input on communication outcomes in persons with developmental disabilities and persons with childhood apraxia of speech who use aided AAC. Nineteen studies met the inclusion criteria. Each included study was reviewed in terms of participant characteristics, terminology used, symbol format, augmented input characteristics, outcomes measured, effectiveness, and study quality. Results indicate that augmented input can improve single-word vocabulary skills and expression of multi-symbol utterances; however, comprehension beyond the single word level has not been explored. Additionally, it is difficult to form conclusions about the effect of augmented input on specific diagnostic populations. Directions for future research are posited. (Allen , Schlosser, Brock, & Shane , 2017)

Effects of Communication Partner Instruction on the Communication of Individuals using AAC: A Meta-Analysis

-Jennifer Kent-Walsh, Kimberly A. Murza, Melissa D. Malani & Cathy Binger

Abstract

The purpose of this study was to conduct a systematic review and meta-analysis of the augmentative and alternative communication (AAC) partner instruction intervention literature to determine (a) the overall effects of partner interventions on the communication of individuals using AAC, and (b) any possible moderating variables relating to participant, intervention, or outcome characteristics. Seventeen single-case experimental design studies (53 participants) met the inclusion criteria and were advanced to the full coding and analysis phase of the investigation. Descriptive analyses and effect size estimations using the Improvement Rate Difference (IRD) metric were conducted. Overall, communication partner interventions were found to be highly effective across a range of participants using AAC, intervention approaches, and outcome measure characteristics, with more evidence available for participants less than 12 years of age, most of whom had a diagnosis of autism spectrum disorder or intellectual/developmental disability. Aided AAC modeling, expectant delay, and open-ended question asking were the most frequently targeted communication partner interaction skills. Providing a descriptive overview, instructor modeling, guided practice, and role plays were the most frequently incorporated communication partner intervention activities within the included studies. (Kent-Walsh , Murza , Malani , & Binger , 2015)

The Use of an Eight-Step Instructional Model to Train School Staff in Partner-Augmented Input

-Jill E. Senner, PhD and Matthew R. Baud, MS

Abstract
An eight-step instruction model was used to train a self-contained classroom teacher, speech-language pathologist, and two instructional assistants in partner-augmented input, a modeling strategy for teaching augmentative and alternative communication use. With the exception of a 2-hr training session, instruction primarily was conducted during naturally occurring lessons in a self-contained classroom. All staff increased modeling on students' speech-generating devices between pre- and post-test measures across activities. (Senner & Baud , 2017)

Using the iPad to facilitate interaction between preschool children who use AAC and their peers
-Michelle C. S. Therrien & Janice Light
Abstract
Social interaction is one of the key components of education, yet children with complex communication needs often face social isolation in the classroom, rarely interacting with same-age peers. This study investigated the impact of the provision of an iPad with an AAC app with visual scene displays and a dyadic turn taking training on the number of communicative turns taken by children with complex communication needs in interaction with same-age peers. Two preschool children with complex communication needs and six peers without disabilities participated in this research. A single-subject, multiple probe across partners design with one replication was used to evaluate the effectiveness of the intervention on the frequency of communicative turns expressed by the children with complex communication needs. Parents, teachers, speech-language pathologists, and the children participated in social validation measures. As a result of intervention, Participant 1 showed immediate gains in the frequency of symbolic communicative turns after the first training session across all three partners (average gains of 30–46 symbolic communicative turns per 10-min session across peer partners). Participant 2 showed some initial gains, but they were not maintained over time (average gains of 11–24 turns across partners). Classroom implications and future research directions are discussed. (Light & Therrien , Using the iPad to facilitate interaction between preschool children who use AAC and their peers, 2016)

Augmentative and Alternative Communication for Speaking Autistic Adults: Overview and Recommendations
- Alyssa Hillary Zisk, MS, and Elizabeth Dalton, PhD
Abstract
In recent years, technologies used for augmentative and alternative communication (AAC) have seen increasing development and availability. As a result, more and more autistic people are using AAC. With the increased use of AAC by autistic people, research on autism and AAC has also increased. However, the vast majority of this research focuses on nonspeaking autistic children. AAC use by autistic adults and by speaking autistic people has received limited academic attention. Speaking autistic adults often use AAC and many have publicly shared information about their strategies and experiences. In this article, we provide an overview of the speech differences autistic adults choose to support through AAC, including varying difficulties with speech depending on environment and content. We also discuss the technologies and strategies adopted by autistic adults, including free or low-cost tools that are not specific to AAC, mobile technologies, and signed languages or gestures. We explore barriers to AAC use, including a lack of awareness of relevant options, misconceptions about who AAC supports are for, and the cost of dedicated AAC applications or devices. We then provide suggestions for autistic adults, people supporting autistic adults, and researchers. Overall communication—rather than speech—should be prioritized. Mainstream communication technologies can support communication for autistic adults and a variety of tools can support communication across contexts. Further research into the use and

effectiveness of AAC for autistic adults is needed, as is research on barriers to AAC use. (Zisk & Dalton , 2019)

Effects of Wait Time When Communicating with Children Who Have Sensory and Additional Disabilities

- Nicole Johnson and Amy T. Parker

Abstract: *Introduction:* This study utilized wait-time procedures to determine if they are effective in helping children with deaf blindness or multiple disabilities that include a visual impairment to communicate in their home. *Methods:* A single subject with an alternating treatment design was used for the study. Zero- to one-second wait time was utilized before prompting for a response during three baseline sessions. This was compared to 5-, 10-, and 15-second wait-time increments used during six intervention sessions. Three participants with visual impairments, developmental disabilities, and communication delays participated in the study. One of the participants was deafblind.
Results: All three participants responded twice as often during intervention phases as in baseline sessions. The results showed that 5-, 10-, and 15-second wait times were effective when reciprocally communicating with children who have multiple disabilities with a visual impairment or deaf blindness.
Discussion: The findings of this study determined that wait time was effective and showed promising results for children with deaf blindness or multiple disabilities. The study indicated that such children need time to process what is being asked in order to respond appropriately. Prompting quickly can frustrate the child with disabilities. Limitations of the study included heterogeneity and fragile medical condition of the participants, distractions, and the need for future research on the use of this technique.
Implications for practitioners: By utilizing at least five seconds of wait time, parents and educators may be able to see an increase in appropriate responses from the child. Wait-time interventions could increase opportunities for learning, social interaction, and communication, and are easily implemented with little to no training. (Johnson & Parker, 2013)

The effect of augmentative and alternative communication on the receptive language skills of children with developmental disabilities: A scoping review

- Catherine Alexandra Flores

Abstract

Receptive language skills form the foundation for later expressive use and therefore play an important role in language development. The role of receptive language skills in the field of augmentative and alternative communication (AAC) has received limited attention as, historically, the function of AAC has been to enhance the expressive language skills of persons who rely on AAC. While this is an important role and the primary outcome of AAC intervention, the role of AAC intervention on receptive language skills is equally important. The ability of persons who rely on AAC to understand spoken language ranges from age equivalent comprehension to minimal comprehension. AAC interventions that improve comprehension include a variety of strategies, but a synthesis of the effects of these strategies has not occurred. The aim of this scoping review was, therefore, to map and synthesise the research evidence on the effects of AAC interventions on receptive language skills of children with developmental disabilities. A four-pronged search strategy was used to identify studies that met the inclusion criteria. Twenty-three studies were included in the scoping review. The studies were described in terms of number of publications, participant characteristics, research design, AAC interventions, intervention outcomes, intervention effects, and the quality appraisal. Furthermore the studies were described in terms of three groups of effects: (i) the effect of aided AAC interventions (ii) the effect of unaided AAC interventions, and (iii) a comparison of two types of AAC interventions. The trends and gaps in the literature are highlighted in terms of the use of AAC interventions and the receptive language skills addressed. Directions for future research are posited. Valuable preliminary evidence regarding the

effects of AAC interventions on receptive language skills of children with developmental disabilities was obtained in the scoping review. (Flores, 2017)

"Think-Time" and "Wait-Time" Skillfully in the Classroom. ERIC Digest.
-Stahl, Robert J.
The concept of "wait-time" as an instructional variable was invented by Mary Budd Rowe (1972). The "wait-time" periods she found--periods of silence that followed teacher questions and students' completed responses--rarely lasted more than 1.5 seconds in typical classrooms. She discovered, however, that when these periods of silence lasted at least 3 seconds, many positive things happened to students' and teachers' behaviors and attitudes. To attain these benefits, teachers were urged to "wait" in silence for 3 or more seconds after their questions, and after students completed their responses (Casteel and Stahl, 1973; Rowe 1972; Stahl 1990; Tobin 1987). For example, when students are given 3 or more seconds of undisturbed "wait-time," there are certain positive outcomes: The length and correctness of their responses increase. (Stahl, 1994)

Fostering Emergent Literacy for Children Who Require AAC
- Janice C. Light and Jennifer Kent-Walsh
Abstract: An estimated 2 million Americans have significant communication disabilities and require augmentative and alternative communication (AAC). Literacy skills are extremely important to these individuals because these skills provide a channel for educational assessment and learning, enhance vocational opportunities, promote self-expression, and facilitate independent living. Literacy skills also provide access to increased generative capacity and vocabulary access via AAC systems such as alphabet boards and computer-based speech-generating devices. Finally, literacy skills facilitate access to mainstream technologies such as the Internet that may be used to bypass communication limitations in face-to-face conversations, enhance education, and expand employment opportunities (e.g., tele-employment). Given the critical importance of literacy skills for individuals who require AAC, it is of great concern that most individuals who require AAC experience difficulties in literacy development. Their skills lag behind those of typically developing peers, and these problems persist into adulthood. Clearly, intervention is essential to improve literacy outcomes for individuals with significant speech impairments who require AAC. Although formal instruction in reading and writing is typically not initiated until children reach school, it is now well recognized that important foundations for literacy development are established well before school starts. During this stage of emergent literacy, children are introduced to books and learn about print; they develop language skills that are fundamental to later literacy development; and they learn early phonological awareness skills and may be introduced to sound-symbol associations. This stage of emergent literacy development is crucial for individuals who require AAC to ensure that they are well prepared for more formal reading and writing instruction. (Light & Kent-Walsh , Fostering Emergent Literacy for Children Who Require AAC, 2003)

“I’ve had a love-hate, I mean mostly hate relationship with these PODD books”: parent perceptions of how they and their child contributed to AAC rejection and abandonment
- A. Moorcroft, N. Scarinci and C. Meyer
Abstract: The introduction of augmentative and alternative communication (AAC) systems can enhance the participation of young children with complex communication needs. However, existing literature suggests that the knowledge, skills, and attitudes of the child’s parent may prevent ongoing use of the AAC system. Therefore, this study aimed to explore parent perspectives on the contribution of factors associated with the family unit to the rejection or abandonment of an AAC system for their child with complex communication needs. Methods: Parents of children with complex communication needs who had previously rejected or abandoned an AAC system (N¼12) participated in a semi-structured

interview. Thematic analysis of the interview data was completed. Results and conclusion: Analysis revealed four themes which captured family factors contributing to the rejection and abandonment of AAC systems: (a) parents lacked the emotional readiness and resilience to implement AAC, (b) implementing AAC was extraneous work for parents, (c) the child did not use their AAC system for communication, and (d) parents were not satisfied with the AAC system itself. SLPs must be aware of and account for these factors to enable the successful introduction of AAC systems. (Moorcroft, Scarinci, & Meyer, 2019)

Incorporating a Peer-Mediated Approach into Speech-Generating Device Intervention: Effects on Communication of Preschoolers with Autism Spectrum Disorder

- Kathy Thiemann-Bourque, Sarah Feldmiller, Lesa Hoffman, and Stacy Johner

Abstract: This study examined the effects of incorporating a peer-mediated approach into a speech-generating device (SGD) intervention on communication of 45 nonverbal and minimally verbal preschoolers with autism spectrum disorder (ASD) and 95 peers without disabilities. The SGD was an iPad 2 (Apple) with voice output app. Method: Effects were evaluated using a multivariate randomized control trial design with repeated measures for 4 cohorts across baseline, intervention, generalization, and maintenance phases. Children were randomly assigned to an experimental treatment that trained peers on use of the SGD or a business-as-usual comparison condition with untrained peers. Communication outcomes were measured for both children with ASD and peers. Results: Children receiving the treatment demonstrated significant increases in rates of communication and more balanced responses and initiations (a measure of reciprocity) than children in the comparison group. They were able to generalize improvements and maintain communication gains. Treatment fidelity was high for school staff and peer implementation. Conclusions: Results support positive effects on communication of teaching young children with ASD and peers without disabilities to use the same SGD system in typical preschool activities. SGD interventions that utilize peer-mediated approaches may improve core deficits in communication and reciprocity and allow for greater classroom social participation and interactions with peers. (Thiemann-Bourque, Feldmiller, Hoffman, & Johner, 2018)

A meta-synthesis of team members' voices: what we need and what we do to support students who use AAC

-Yun-Ching Chung & Julia B. Stoner

Abstract: The ultimate goal of AAC provision is to promote students' active participation across settings through interactions involving a variety of partners and functions. To achieve such outcomes, educational teams must collaborate and consider the characteristics of students, their families, and relevant environments during AAC assessment and intervention. To date, AAC team collaboration has rarely been evaluated collectively outside intervention or case study research. In this investigation, a meta-synthesis was conducted to review qualitative studies of perspectives of team members on supporting students who used AAC, ranging in age from kindergarten to post-secondary, in public schools in the United States. Analyses yielded three primary themes necessary for effective AAC services; inputs, activities, and outcomes. Implications and recommendations for service providers and future researchers are described. (Stoner & Chung, 2016)

The most frequently used words: Comparing child directed speech and young children's speech to inform vocabulary selection for aided input

- Nancy Quick, Karen Erickson & Jacob Mccright

Abstract: Transactional theories of communication development focus on the interplay among child, caregiver, and environmental variables. Typically, this interplay involves symmetry between receptive and expressive modes (i.e., speech), but is asymmetrical for children with complex communication

needs who hear speech but use graphic symbols expressively. Aided input, during which a communication partner points to graphic symbols while talking, may increase symmetry, but it is challenging to determine which words to represent with graphic symbols to ensure adequate aided input is provided. In this study, secondary analysis of transcripts of 16 mothers who interacted with their children with typical development across six time points (between 9 and 15 months) revealed 267 words that comprised 80% of the 257,480 words the mothers used. This list of words that mothers used most frequently was compared to three existing lists of the expressive vocabulary used most frequently by 65 toddlers and preschoolers with typical development, indicating substantial overlap. The results suggest that there is a common set of frequently occurring words that mothers use in their daily interactions with infants and toddlers, and that these same words also comprise a significant proportion of the words most frequently used by young children. Implications for representing these frequently occurring words with graphic symbols on the communication systems of children with complex communication needs are discussed. (Quick, Erickson, & Mccright, 2017)

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