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Effects of Augmentative and Alternative Communication on Language Acquisition and Expression In Young Children

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EFFECTS OF AUGMENTATIVE AND ALTERNATIVE COMMUNICATION ON LANGUAGE ACQUISTION AND VERBAL EXPRESSION IN YOUNG CHILDREN

by

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A Research Paper
Submitted in Partial Fulfillment of the Requirements
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EFFECTS OF AUGMENTATIVE AND ALTERNATIVE COMMUNICATION ON LANGUAGE ACQUISTION AND VERBAL EXPRESSION IN YOUNG CHILDREN

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Fulfillment of the Requirements

for the Degree of

Masters of Science

in the field of Communication Disorder and Sciences

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Augmentative and Alternative Communication (AAC) devices are a controversial topic in the field of speech pathology. There can be concerns that accompany the use of AAC, especially in regards to using such devices to supplement language acquisition and expression in young children. Parents also tend to have negative views about the use of AAC devices, and fear using AAC will prevent their child from speaking or make them unmotivated to use speech (Romski & Sevcik, 2005 p. 176).

AAC is merely a way to provide children and adults with a means of communicating when they have an impairment of communication. AAC is explained in an article written by the American Speech-Hearing-Association (ASHA) as a process that can be temporary or permanently used, can include aided or unaided AAC devices, but is used to help maximize functional communication (American-Speech-Hearing Association, 2002). AAC does not have to be permanent. For example some children can begin using AAC to supplement language (e.g., manual signs) and then once they are older use verbal communication as a primary communication medium. A few examples of ACC devices include manual sign language for nonverbal children, a device that produces digitalized speech for highly unintelligible children, or it could be a communication board.

This is a literature review of the effects of AAC on language acquisition and verbal expression in young children. AAC provides many opportunities for children with developmental delays. There is evidence in the literature that utilizing AAC can improve functional communication in emerging communicators and reduce negative behaviors. If speech-language pathologists (SLPs) are aware of the evidence supporting the use of AAC, then they can counsel families regarding the benefits of use with the hope of decreasing negative perceptions of the use of AAC.

Relationship Between AAC and Language Acquisition

Although the common goal of AAC is to provide an output mode for communication, AAC can have a positive effect on language acquisition and verbal expression in young children. The National Scientific Council on the Developing Child (2007) reported that early learning experiences during the first three years of life can help develop a strong foundation for later brain development. Therefore, early learning lays the foundation for later brain development or later learning of such things like language or linguistic concepts (National Scientific Council on the Developing Child, 2007 p. 4). This would indicate that introducing an AAC device at a young age

could help supplement language acquisition, by providing early introduction of important linguistic concepts.

During pre-linguistic development, there are opportunities for young children to develop a firm language foundation (Romski & Sevcik, 2005 p. 176). For example, language learning occurs before spoken language, because children can communicate by simply using vocalizations or facial expressions, before they use speech. Opportunities arise that can help enhance this stage of early development. One opportunity is to communicate via gestures, manual signs, or symbols. These early experiences are important for later language development (Romski & Sevcik, 2005 p. 176). One might choose to do this if they know their child has a developmental delay at birth, and are planning to use AAC as an early intervention strategy.

The previously held belief, that AAC should be introduced only after all other options to achieve natural speech have failed, is slowly diminishing. Research is now indicating that a combination of AAC and speech therapy, often referred to as a multimodal approach, can have positive results. Ballinger (1999) emphasizes that it would be most beneficial if a child continues to receive speech therapy during AAC intervention, since natural speech is the ideal mode of communication. Sedey, Rosin, and Miller

(1991) (as cited in Romski & Sevcik, 2005 p. 179) reported that manual signs in conjunction with speech therapy had been taught to young children with Down Syndrome, and the families were able to discontinue using signs after the children got older and began talking or their speech became more intelligible. The participants included 46 young children with Down Syndrome, who had a mean age of about three years, eleven months. Of those 46, 80% were taught manual signs and began talking after introduction.

Adamson and Dunbar (1991) (as cited in Romski & Sevcik, 2005 p. 179) introduced manual signs with a two-year-old girl who had a tracheostomy tube which prevented verbal speech. After removal of the tube, the girl attempted speech and quit using manual signs. Use of manual signs reported by Adamson and Dunbar (1991) as well as Seday and colleagues (1991) offered language before a child could use verbal skills with verbal skills emerging later. This helps to refute the common myth that introducing AAC at a young age will make children unmotivated to use natural speech (Ballinger, 1999).

Millar, Schlosser, and Light (2006) conducted a research review targeting the impact of AAC intervention on the speech production of individuals with developmental disabilities. Twenty-three studies were initially chosen

for review, but they eliminated seventeen of them due to no experimental control. However, Millar et al. (2006) stated that the remaining six studies showed the majority (89%) demonstrated gains in speech after AAC intervention. These are successful studies that support the claim that AAC has a positive effect on language acquisition, and does not impede natural speech production. "In fact, it may enhance the development of spoken communication, which should be a simultaneous goal for intervention" (Romski & Sevcik, 2005 p. 179). Romski and Sevcik, 2005, stated that many children with various disabilities may use AAC at some point during early developmental stages to augment natural speech in order to communicate using appropriate language skills (p. 176). Introduction of AAC in the early stages of life may initially seem unnatural. However, as children begin to develop and learn appropriate language skills through a means that has been adapted to their special needs, they can begin to use those skills functionally. Regardless of whether a child talks or not, AAC interventions should be viewed as a way to foster the early language skills needed for vocabulary development (Romski & Sevcik, 2005 p. 178).

Autism and AAC

Children with autism represent a population that has strongly benefited from the early use of AAC, and which is

supported with empirical research and evidence based practice. One such study that supports this claim was conducted by Ganz and Simpson, 2004. Ganz and Simpson (2004) included three participants all under the age of seven years two months who either had autism or a developmental delay with autistic characteristics. They hypothesized that the Picture Exchange Communication System (PECS) would increase the ability of the children to use a functional communication system, increase verbal requests, increase utterance complexity, and decrease non-word vocalizations. The children, parents, and teachers were all provided training regarding the PECS system. The children were all followed within the natural environment of their classroom to help facilitate functional communication. All three of the participants were reported to have some verbalizations but none of them consistently used the words functionally. The participants were taught the first four phases of the PECS system and were trained until mastery criteria was met for all four phases. During each phase the participant's verbalizations were noted and progress was documented. Participant one was reported to average about .36 words during phase one, .65 words during phase two, .13 words during phase three and then showed dramatic growth in phase four averaging about three words per trial (Ganz &

Simpson, 2004 p. 402). This participant progressed from little to no recognizable speech during phase one to significantly more speech in phase four, including verbal requests. Participant two demonstrated a similar increase in the number of intelligible spoken words; however, his did not increase until phases three and four. He increased from using one and two word utterances to using three and four word utterances in phase four. Participant three actually increased his number of non-intelligible utterances, however, researchers reported that he has a tendency to mumble, but he did show an increase in verbal requests and protests. These results from Ganz and Simpson's (2004) study indicate that PECS is a beneficial AAC device used in the autistic population to increase verbalizations and functional communication such as requesting and protesting. It also suggests that there are no negative effects on verbal expression while using the AAC device, PECS.

Branson and Demchaks (2009) reviewed investigations of AAC use and reported that seven of twelve studies provided conclusive evidence proving improvement in child communication following AAC intervention. They used both aided and unaided AAC devices throughout those 12 studies, involving 190 participants ageing from 36 months and

younger. While over half of studies reviewed were conclusive the remaining five studies are indicative of the debate the remains over AAC benefit.

One AAC device that can have positive effects on language acquisition and verbal expression in children is the use of symbolic gesturing. Symbolic gestures are simple gestures that can be used to represent an action, request, or condition. The results from the study conducted by Goodwyn, Acredolo, and Brown (2000) concerning the impact of symbolic gesturing on early language development, provides strong evidence that symbolic gesturing does not impede verbal development but could even facilitate verbal skills. Goodwyn et al. (2000) provided the following examples of symbolic gestures in their study; flapping arms for “bird”, smacking lips for “fish”, palms out and up for “where is it”, and palms down going back and forth for “all gone”. The participants included 103 hearing infants, of which, 58 were boys and 45 were girls. Participants were mostly Caucasian and were predominantly from middle-class Northern California. In this study conducted by Goodwyn et al. (2000), two primary groups were formed, one experimental group designated as the Sign Training group (ST), the other was a control group designated the Non-intervention group (NT). After conducting several tests and

gathering ample amounts of data, the results supported the studies hypothesis; symbolic gesturing facilitates the early stages of verbal development. The children that participated in this study were all hearing children that were engaged in "baby signs" with their caregivers. Goodwyn et al. (2000) suggests that symbolic gesturing fosters rather than hinders the development of language comprehension and expression skills. Reliability and validity issues observed in this study included parents contacted by phone and asked to describe in detail the language progression of their child. The problem here is that the parents might not be aware of important communication behaviors such as non-verbal behaviors that their child might be displaying. Also, the parents could be providing false information to the researchers about the progress their infant is making. Overall, however, this was a very detailed study that provided insight into the benefits of using symbolic gesturing as an AAC device to facilitate language acquisition.

AAC and Functional Communication

For individuals with severe communication delays that have to deal everyday with being isolated from peers, AAC can be the intervention that changes their lives. Large or small gain from an AAC device can mean the world to someone

who has complex communication needs. Regardless of communication modality, the ability to communicate functionally should be the number one goal of any therapist. Functional communication can be described as the manner in which children communicate basic wants and needs purposefully. Examples of ways that children use functional communication include requesting, protesting, labeling, and/or interacting. One benefit from introduction of an AAC device in young children could be that it can help facilitate functional communication by incorporating early intervention and addressing the deficits of a child early. Functional communication not only includes the ability of a child to express wants and needs, but also the ability to receive a message (Romski & Sevick, 2005 p. 174-175).

Blischak et al. (2003) reported there are several characteristics of communication that improve with the usage of AAC devices such as, increasing number of conversational turns, increasing number of messages and communication functions, increasing utterance length, reducing physical demands, reduction in pressure to speak, and immediate output. Having a severe communication delay, one might be hesitant to initiate or participate in a conversation with peers. However, Blischak et al. (2003) reports that several intervention studies display

improvement in communication participation including opportunities to communicate, taking turns, and using messages.

Some argue that there should be a minimum threshold of development in order to provide AAC services (Ballinger, 1999). Ballinger (1999) points out that infants make purposeful communication attempts even before they develop language. By focusing on the current abilities of the child, AAC could help enhance those purposeful communication behaviors in young children. Ballinger (1999) suggests that AAC programs should be tailored to each individual client, and must be age-appropriate for developmental capabilities.

Another myth stated in Ballinger's (1999) work, is that a child does not need AAC until they reach school-age. Ballinger responds to this myth by indicating that a child should have already acquired a great deal of communication proficiency by school-age, and introducing an AAC device then might be a difficult adjustment. A child already has several adjustments to make when entering a new environment such as school, and trying to teach the use of AAC at this point could create additional problems for the child. Another concern with using AAC is the cognitive capabilities of a child. Children of all severities and

disabilities can use AAC. When deciding to use AAC, it must be individualized and designed to utilize the strengths of a child (Ballinger, 1999). It could be a long process of deciding which AAC to use, but in the end it all comes down to what the child is comfortable using and what best facilitates their communication needs. There are several resources available to parents and professionals regarding appropriate use of each device.

Children who use AAC systems require a different communication style from their caregivers and/or conversational partners; they must integrate a different mode of communication (Kaiser, Hester, & McDuffie, 2001 p. 145). Their research states that regardless of the specific mode of AAC the child is using and in order to see functional results, the communication strategy of the caregiver and conversational partner will be most important. In order to be most facilitating of the development of communication skills in a young child with developmental delays, the child must be placed in an environment that can provide necessary support for language learning. Often times when children are introduced AAC devices at a very young age they are only engaged in functional communication with their caregiver alone. Learning to generalize and use their AAC device in other

settings with multiple communication partners could be a challenge. Allowing the child to interact with peers giving them the opportunity to observe and use functional communication could help with generalization of skills to other settings.

Using the basic fundamentals of functional communication such as requesting, protesting, and labeling a child can communicate their basic wants and needs. Before children even develop language, they have ways of communicating their basic wants and needs such as crying when they are hungry or cooing when they are happy. When children get old enough to communicate using their words, they talk. However, if a child cannot talk, or has severe communication deficits, AAC provides a way to teach children to use those fundamental communication skills in a manner that gets them what they want and need. If a child has some words but does not always use them functionally or appropriately, AAC can aid in molding and shaping what little verbal communication they have into purposeful communication.

AAC and Behavior Management

Implementation of AAC can help reduce negative behaviors in children who have communication deficits by providing them a means of communication. It can provide

opportunity for positive social interaction among peers in the classroom and home or community environment. As a child, not being able to communicate effectively can be very frustrating. As frustration builds up so do negative emotions and feelings. One way to express those negative emotions is by responding with inappropriate or aggressive behaviors. These mannerisms may be the only way a child knows how to express themselves, unless they are trained otherwise.

AAC systems can help replace these socially unacceptable behaviors with more conventional means of communication (Romski & Sevcik, 2005 p. 177). When children develop an AAC system that works for them, it can be a great relief for both them and their caregiver. It also provided opportunities for children to be engaged with typically developing peers more and not require social isolation from them.

PECS has been an influential intervention for helping decrease problem behaviors in children with autism as indicated in a study completed by Charlop, Carpenter, Le, LeBlanc, and Kellet, 2002. They investigated PECS with three participants; all of which had been previously diagnosed with autism. The effects of PECS training on problem behaviors was one of the domains measured in this

study. Data for the study was collected in two different environments; free play and academic/work setting. A therapist measured problem behaviors before and after the PECS training. Problem behaviors measured included tantrums, grabbing items, getting out of seat, or disruptive behaviors such as throwing or banging toys. Of the three participants, only two exhibited problem behaviors. One participant, prior to PECS training, exhibited tantrums and out of seat 14% of the time at baseline during work setting. Following the training this occurrence decreased to an average of 5%. Disruptions and grabs also decreased following the training from 24 to 9.5 occurrences. During the play-setting, his tantrums decreased from 15% to 2% after PECS training, and his disruptions decreased from 1.7 to 0. The second participant that exhibited problem behavior in baseline, exhibited tantrums and out of seat 7% of the time which decreased to .5% in the play setting following PECS training. His disruptions and grabs decreased from 12.3 to 2.6. In the play setting, his tantrums decreased from 13% to 0%, and his disruptions decreased from 2.7 to 0.2. Overall the results from Charlop et al. (2002) demonstrated that problem behaviors when present, decreased following the introduction of PECS. This decrease in problem behaviors

appears to be related to the increase in communication abilities of the children. The decrease in problem behaviors is beneficial for not only these children but for their peers, caregivers, teachers, other professionals, and communication partners.

In a study by Cafiero (2001) another AAC device was found to reduce problem behaviors. In this study natural aided language was used via activity specific language boards that included age appropriate pictures and symbols of everyday activities and vocabulary. Natural aided language incorporates an important visual aspect or visual language system (Cafiero, 2001 p. 181). An example of natural aided language is one used in this study; a language board. The participant in this study was a thirteen-year-old African-American boy with autism who displayed severe problematic behaviors that were affecting his academic performance. The boy's SLP, teachers, family, and other staff members help generate the content included on the board, and were trained regarding appropriate use with the child. Following AAC language intervention, the participant, Timothy, decreased in bolting away and tantrums. Before intervention (at baseline), Timothy displayed an average of eight occurrences of bolting from an instructional group. This decreased to five occurrences

a day following the initial phase of intervention, and finally to three occurrences a day after two months of therapy. Also, prior to intervention an informal tally of tantrums were recorded and averaged about four incidences per day. This number decreased to two incidences a day following the introduction of natural aided language. Overall, Timothy's problem behaviors were reduced when natural aided language was introduced and implemented in his classroom and everyday environments.

Future Research

There are several unanswered questions concerning this topic of interest in the field of speech pathology. There are several options available for future research, to support the claim that AAC has a positive effect on language acquisition and verbal expression in children. Unfortunately there are few empirical studies regarding AAC and young children that show the results with scientific rigor. There have been several systematic reviews of the literature supporting the use of AAC, however, not as much hypothesis driven research. Conducting research to establish which etiology is more likely to benefit from us of specific AAC devices, would provide parents and therapists guidance when selecting a device. Since most research was conducted only on the English language, a

language bias cannot be ruled out (Schlosser & Wendt, 2008 p. 227). A comparison study of English speaking children using AAC to other languages such as Spanish could provide valuable data. Limitations to consider when conducting research on this topic, is the ability to establish good validity and reliability of a parent report concerning the communication abilities of their child. Incorporating more sessions where a speech pathologist can observe and collect data on the child would help establish strong validity and reliability.

A research study analyzing whether there is an increase in peer social interaction when all the children in a classroom are provided a small amount of additional education regarding a specific student and their mode of AAC, as opposed to providing no additional education to the class. Ideally, if children are educated regarding appropriate communication and interaction skills with a student that is using AAC, than that child will have the opportunity to be engaged in typical social interactions.

Research investigating whether PECS reduces/prevents problem behaviors more if it is introduced earlier could be beneficial to this field. Also, conducting a similar study with other types of AAC devices would provide beneficial information for comparison and effectiveness of the

different devices. It would also be beneficial to do studies on several different children with varied disabilities to ensure increased reliability and validity of results.

Conclusion

Using AAC is a developing trend in the field of speech pathology. AAC is no longer considered the last resort for developmentally delayed children and the research supporting its use continues to grow and develop.Instead it is being used to facilitate early language development and acquisition. Although it might take additional training, education, and time, AAC should be considered as a viable option for families and professionals to use. AAC can be a beneficial way to facilitate verbal expression and language acquisition in young children. It can also increase the use of functional communication to meet basic wants and needs and socially interact with peers. Finally, AAC helps to decrease negative social behaviors or behavior management problems by providing a means of communication. While the field of speech pathology will benefit from future research regarding AAC and AAC devices in young children, I believe it has provided substantial research and data to support the claim that AAC has a positive effect on verbal expression and language acquisition in young children.

There is still one aspect of AAC that I believe can improve its use and frequency of use in our society; increasing awareness to families and professionals. Even with the wealth of knowledge that most professionals have regarding AAC, there are still many who are unaware of its worth and benefits. Increasing awareness and providing family education about AAC will likely increase its use as a communication modality. A team approach, potentially consisting of family members and various professionals should all collaborate and choose an AAC device that is most effective for that particular child. Family involvement is crucial for selection of an appropriate AAC device because they are the most familiar with the child and often times know what would work best. Finally, while there are several different types of AAC and modes of communication used in each one, this research study did not indicate whether there is any greater benefit to using aided or unaided AAC to facilitate language development in any other population other than autism. The AAC device of PECS, has shown to be the most beneficial overall for the autistic population. However, every child is different and will benefit from extensive research to determine which AAC device if any is the most appropriate. The fundamental

message is that AAC, no matter the mode, is beneficial when trained and used appropriately.

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