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Multi-Modal Communication in School-Age Children with Autism Spectrum Disorders

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Running Head: **MULTI-MODAL COMMUNICATION IN CHILDREN WITH AUTISM**

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Abstract

Children with Autism Spectrum Disorder (ASD) have a difficult time communicating on a daily basis. To help enhance and sometimes substitute speech altogether, they require Augmentative and Alternative Communication (AAC) devices. A review of literature found that school-age children with ASD utilize multiple modes of communication. The observation conducted looked at six school-age children, grades 6-8, with ASD and their use of multimodal communication. Each child was observed throughout their school day in settings such as the classroom, lunch/recess, and the speech therapy room. Data was collected for the number of times a child was given the opportunity to use a particular mode of communication within ten minutes, how many times they actually used the particular mode within the ten minutes, who the communication partner was in the exchange, and what pragmatic function the exchange served. The limits of the observation included a small sample size, convenience sampling, and difficulty generalizing data because the observed participants were only observed during school and not in natural environments, such as home and in the community. The most prominent finding revealed that different communicative situations called for different modes of communication that were most functional for the student. Recommendations for future research were provided.

Chapter I

Introduction

Communication is defined as the exchange or expression of messages, information or ideas either verbally or non-verbally through symbols, signs, or gestures. When a typically developing individual has a message they wish to convey, they are able to communicate that to the people around them. People often use multiple modes of communication when expressing and exchanging messages. These modes include speech, sign language, gestures, and other AAC devices. Depending on the situation or the message that is to be expressed, a certain mode of communication or combination of modes used simultaneously may be more functional and efficient for communicating the particular message. However, some individuals do not have the ability to use certain modes of communication due to congenital or acquired disabilities. If an individual is not able to communicate effectively, they are described as having a communication disorder. When an individual has a communication disorder, they are not able to effectively express their emotions, thoughts, wants or needs. Therefore, it is important that these individual's are provided with the tools they need to successfully communicate.

Young children depend on their caregivers for their every need. For this reason, it is imperative that they are able to effectively communicate with their parents, other caregivers, and teachers. For example, not all school-age children are able to make their own meals. When they are hungry, they must be able to convey the fact that they are hungry to their parents. The parents will then provide them something to eat. Typically developing, school-age children can communicate when they are hungry, when they need to use the restroom, when they are tired, when they are hot, cold or uncomfortable. They are able to express when

they are sad, happy, lonely, angry, scared or frustrated. Typically developing children can participate in social interactions and social communication successfully as well. However, not all children develop typically.

In 2010, the Center for Disease Control and Prevention used a surveillance system, known as the Autism and Developmental Disabilities Monitoring (ADDM) Network, to determine estimates of the prevalence of ASD in children 8 years of age. They surveyed 11 different sites in the United States and found that approximately 1 in 68 children 8 years of age were found to have autism (Baio, 2014). Children who have ASD have varying degrees and types of developmental disabilities with a wide range of characteristics. The most reliable early signs of ASD are social and communication impairments, and repetitive behavior is a later developing characteristic of ASD. The average age of an autism diagnosis is 6 years and is very difficult to detect in children under the age of 3. However, the earlier the diagnosis, the better the prognosis for developmental progress (Mooney, Gray, Tonge, 2006).

Typically developing children imitate facial and body movements from birth. However, children with ASD don't typically watch and observe people when they talk, they have difficulty listening when they are being talked to, and therefore are not able to effectively learn meanings of words and how to carry on a conversation (Browne, 2006). If infants and toddlers do not watch, listen and imitate language as infants, they will experience language delays later on. Not only are imitation skills a good indicator of language ability, but play skills are as well. In play, social communication is an integral part of this type of interaction. Expressive and receptive language ability correlates with children's participation in symbolic and functional play (Munson, Toth, Meltzoff, Dawson, 2006). Children with

autism, however, demonstrate significant impairments in participating in symbolic and functional play as early as 18 months old (Munson, Toth, Meltzoff, Dawson, 2006).

Children with ASD typically tend to have difficulty producing language due to motor and cognitive deficits, difficulty independently initiating speech, and participating in meaningful communication. Due to these communication delays, it is a constant challenge for children with ASD to communicate with their parents, teachers, peers and professionals from whom they receive services.

Professionals who work with children with ASD may include autism specialists, developmental-behavioral pediatricians, child and adolescent psychiatrists, speech-language pathologists, occupational therapists, physical therapists and behavioral therapists. These professionals have different approaches to communication with children with ASD. My interest lies in the services provided by speech-language pathologists (SLPs) to school-age children with autism. The scope of practice for an SLP includes the assessment of the child for possible communication disorders, diagnosis of the disorder, and intervention and treatment of the disorder. Treatment may include introducing alternative modes of communication to children with ASD so that they are able to be functional and independent communicators.

The modes of expressive communication I will be focusing on include verbal speech and AAC. The use of AAC supplements or replaces natural speech through aided (speech generating devices, voice-output approaches (VOCA) and non-electronic communication boards) or unaided (gestures, manual signing) approaches (Schlosser, Wendt, 2008). An AAC device or system may be used on its own or simultaneously with other modes of communication in order to successfully convey a message. A child may need his or her AAC

device or system for more than just having a conversation. They may need it to participate in activities at home, work or school, to continue their language and academic development, to establish and maintain their social roles, and to remain safe.

An SLP works with children with ASD to help them learn to use different modes of communication so that they are implementing the most functional mode of communication in each communicative situation. It is the responsibility of an SLP to assist individuals in finding an AAC device or system that best fits their communication needs. An SLP needs to evaluate a client's level of functioning in language, behavior, cognition, and motor skills in order to determine which AAC device or system would be most suited for the client.

This literature review will provide support for the importance of utilizing multiple modes of communication to ensure the most functional and appropriate means of communication for school-age children with ASD. In addition to the literature review, I have observed six children in a school setting with ASD grades 6-8, and will note instances when they used verbal speech, manual sign or American Sign Language (ASL), gestures, communication boards, Picture Exchange Communication System (PECS) or VOCA. None of the children will be identified by name. Based on the data gathered, it should hopefully reveal that the children utilized multiple modes of communication at different times throughout the day when using purposeful communication.

Chapter II

Review of Literature

Many children with ASD rely on pre-linguistic acts, non-verbal means of communication developed prior to linguistic communication, to communicate something to their communication partner (Franco, Davis, 2009). These acts may include reaching, pointing, eye gazing, using facial expression, or guiding their partner's hand toward an object in order to request. (Sigafoos, Drasgow, Halle, O'Reilly, Seely-York, Edrisinha, Andrews, 2004). Without the intervention of an SLP to introduce alternative modes of communication, children with ASD may continue to rely on these pre-linguistic acts to communicate. However, there may be time where this is not socially appropriate or acceptable, for example when communicating with a stranger. Relying on these pre-linguistic acts may also result in frequent communicative breakdowns. These breakdowns occur when the request is unclear, unnoticed, or not reinforced by the communication partner (Sigafoos, Drasgow, Halle, O'Reilly, Seely-York, Edrisinha, Andrews, 2004). As a result of a breakdown in communication, the child may become aggressive, shut down, become unresponsive, or fail to interact at all. In these cases, in order to prevent future communicative breakdowns, AAC may be introduced to supplement the child's existing pre-linguistic acts in order to fulfill pragmatic functions such as requesting objects, seeking attention, rejecting or protesting, responding, and commenting. The different AAC devices that can be used to supplement pre-linguistic behavior include anything other than verbal speech, such as gestures, manual sign or American Sign Language (ASL), picture-based communication boards, PECS, and VOCA (Sigafoos, Drasgow, Halle, O'Reilly, Seely-York, Edrisinha, Andrews, 2004).

Voice-Output Communication Aids

A VOCA is a type of aided, electronic AAC device that has provided many advantages for children with autism. The first, and most obvious feature is the voice-output feature, providing a more natural and understandable message to the communication partner. It translates simple, nonverbal acts such as "pressing a picture, lexigram or other symbol on a device board" into a digitized or synthesized verbal message (Cuvo, Sigafoos, O'Reilly, Singh, Didden, Lancioni, 2007). A lexigram is a symbol used to represent a word (lexigram (n.d.)). For example, a green check mark could represent the word "yes." Also, it is more likely to gain the attention of the listener, increasing the probability that the listener will attend to the child's attempt at communicating, reducing the frustration caused when the child's communicative attempts go unnoticed (Sigafoos, Drasgow, Halle, O'Reilly, Seely-York, Edrisinha, Andrews, 2004). A VOCA device can be used to generate communicative functions such as greeting, answering questions, asking questions, expressing thoughts, ideas, and when conveying emotions (Van Der Meer, Rispoli, 2010). Numerous studies have been done to evaluate whether or not VOCA devices establish basic communication skills in children with developmental disabilities and are effective at increasing independent and functional communication.

A study done by Brady (2000) involved two school-age children with autism who made progress in requesting items needed for routine situations such as making a picture, playing a tape, and making a snack (Cuvo, Sigafoos, O'Reilly, Singh, Didden, Lancioni, 2007). The study specifically showed the student's use of a VOCA device as a repair strategy when there was a communicative breakdown when requesting the item mentioned before. The children were able to successfully and independently request the items by pressing the picture of the items on the VOCA device.

According to Van Der Meer and Rispoli, a combination of studies conducted between 1998 and 2009 involving 51 participants showed that only one participant did not learn to use a VOCA device over the course of the study. All other participants were able to use their VOCA device to successfully convey messages in a number of communicative situations. Targeted communication skills included requesting preferred items, activities, actions and locations, conversation and social commenting, spelling, increasing natural speech, and answering questions (Van Der Meer, Rispoli, 2010). In this group of studies, eighty-seven percent of students reported positive outcomes for targeted communication skills and none of them reported negative outcomes.

The literature I reviewed relating to VOCA devices all showed similar outcomes and agreed with each other that VOCA devices were successful at promoting functional, self-initiated communication in school-age children with autism. The literature all stated that VOCA devices were able to adequately supplement or replace speech in order to meet the communication needs of children with ASD. This also agreed with my findings in my observation that the children were able to use their VOCA device to communicate a range of communicative functions to their partners at various times throughout the school day. These findings support the idea that it is important to utilize multiple modes of communication. Because of the results of the research done on the use of VOCA devices, I would introduce this type of AAC device in treatment as an SLP who plans on working with school-age children with ASD. I believe this mode of communication could yield positive outcomes in therapy and assist in repairing communicative breakdowns as well as offering a more functional mode of communication when a child has the necessary cognitive capabilities to operate the VOCA device properly and functionally during various communicative situations.

Picture Exchange Communication Systems

PECS is a picture-based, aided AAC system that assists individuals with ASD who are primarily non-verbal. PECS has been demonstrated to improve functional communication skills, speech skills, play skills and behavioral skills (Ganz, Goodwyn, Boles, Hong, Rispoli, Lund, Kite, 2013). PECS could be a board or book with a collection of pictures or symbols representing words or phrases as well as sentence strips frequently used by the client using the PECS to request or comment. A study done by Ganz, Goodwyn, Boles, Hong, Rispoli, Lund, and Kite (2013) looked at five children with ASD and their one-on-one SLP who instructed the children on the use of PECS each day for 2.5 hours, four days a week. The children met all of the following requirements: a diagnosis of ASD or appearance of characteristics of ASD, complex communication needs, prior experience and mastery of at least one phase of PECS protocol, and the children were between the ages of 2 and 5 years. The observers recorded the frequency of which therapists presented PECS opportunities in a five-minute time period during therapy. PECS opportunity was described as the therapist ensuring the child that PECS was within five feet and enticing the child with an item, prompting the child to use PECS to request the item. The opportunity ended when the SLP put the item down, tried to entice the child with a different item, or the child made a successful picture exchange. An independent picture request made by the child was described as independently and spontaneously taking a picture and handing it to the SLP. There was a positive correlation between PECS opportunities presented by the therapists and the children's use of PECS to request an item. The study showed that PECS is effective in increasing functional communication via AAC, but stated that there was not enough PECS implementation in typical communicative situations.

A meta-analysis done by Flippin, Reszka, and Watson (2010) looked at current empirical evidence for the use of PECS and its effects on communication and speech outcomes for children with ASD. There are six phases when conducting PECS training. Phase I is described as a single picture of a highly desired item is chosen by the child and handed to the communication partner in order to request the desired item. The communication partner then gives the item to the child while naming the item. Phase II is described as a communication book being introduced to the child and an increase in the distance between the child and the communication partner. The child must get the picture from the communication book and travel to their partner to hand them the picture to request an item and increase spontaneity. In phase III, the child is required to discriminate between two picture symbols and determine which is the more highly desired item. Phase IV consists of the child being required to use a sentence starter (i.e. "I want") plus a second picture symbol to represent the preferred item. Phase V is described as the communication partner using the verbal prompt, "What do you want?" and prompting the child to use the "I want" picture symbol until the child is able to answer the question without prompt. Finally, phase VI consists of the child exchanging sentence strips to answer their communication partner's questions.

The meta-analysis looked at numerous studies, including one done by Bondy and Frost (1994), which showed significant gains in the development of spontaneous communication and speech with and after the use of PECS. The improvements in communication and speech were also documented over a relatively short period of time, 6 to 14 months. The quality of the evidence gathered in the meta-analysis of PECS was found to be adequate in quality (Flippin, Reszka, Watson, 2010).

According to a study done by Bondy and Frost (2001), PECS has been found to increase independent and spontaneous communication uniquely within a social framework in children with ASD (Jurgens, Anderson, Moore, 2009). They also found in 1994 that 59% of children developed independent speech following the use of PECS. Studies have shown that PECS also shown improvement in non-targeted behaviors such as improvements in verbal language, nonverbal social communication, decreases in negative behaviors and increases in social play (Jurgens, Anderson, Moore, 2009). A study done by Kravits looked at a 6-year-old girl with autism and her use of PECS in her home and school environments. She demonstrated an increase in verbal language and use of PECS for requesting and initiations and her length of interaction with her peers increased (Jurgens, Anderson, Moore, 2009). The article by Jurgens, Anderson and Moore suggests that the effectiveness of PECS may be due to the program teaching only one communicative function at a time, required by children with autism, through its six phases. The article also suggests that PECS targets pivotal behavior changes that result in more widespread, non-targeted behavioral changes, such as increases in verbal speech, mean length of utterance (MLU), and functional play.

The literature I reviewed pertaining to PECS all showed that this particular AAC system is an effective mode of communication and proves to increase spontaneous and functional communication in children with ASD. My observation also agreed with the literature, showing a positive correlation between PECS opportunities presented and the actual number of communication occurrences using PECS in functional communicative instances. Also, my observation also showed a general increase in independent, spontaneous communication occurrences when using PECS. This system would be beneficial to introduce to my future client's with ASD in order to help them communicate basic pragmatic functions

of requesting and commenting. After the use of PECS, I would expect to see my clients have similar gains in independent, spontaneous communication and increased likelihood of spontaneously using verbal speech to request or comment.

Sign Language and Gestures

"ASL is a visual language with its own vocabulary, pragmatics, and grammar (Donne, 2013)." Approximately 30% of children with autism are nonverbal, and could benefit from using sign language rather than relying purely on speech from receptive and expressive language development. Research shows that the use of sign language to acquire vocabulary and speech development can prove beneficial for individuals with intellectual disabilities. In sign language training, individuals are trained to sign in order to request, preferred items and engage in conversation (Tincani, 2004). In a study done by Hodges and Schwethelm (1984), 52 nonverbal children with ASD were taught to use sign language and PECS. Participants were taught to use signs to request preferred objects and were taught to use PECS, assembling picture symbols into sentences. Sign language training was found to "produce more rapid acquisition and more correct responses" then PECS (Tincani, 2004).

Numerous studies show that the imitation of gestures and the use of spontaneous, meaningful gestures in quality and quantity are significantly impaired in children with autism (Ingersoll, Lewis, Kroman, 2007). These impairments are directly related to the lack in utilization of gestures during social interactions. Some researches say this is due to the fact that gesture and body imitation is related to social development, and not due to an inability to recognize gestures. Reciprocal Imitation Training (RIT) is a natural imitation intervention designed to teach language skills in a natural environment. RIT was developed to increase imitation in children with autism during ongoing play interactions. A study conducted by

Ingersoll, Lewis, and Kroman (2007) observed five male students diagnosed with ASD during social play with a partner. Treatment techniques used during RIT intervention consisted of contingent imitation, linguistic mapping (running commentary of the actions the child and therapist were performing), following the child's lead, physical prompting, and conditional reinforcement. Results found that one hundred percent of participants increased their use of spontaneous descriptive gestures after the onset of treatment. Non-target behaviors also increased including appropriate play, social engagement and language use.

There is a known relationship between children with autism and imitation deficits (Carmo, Rumiati, Siugzdaite, Brambilla, 2013). Imitative ability plays a role in normal communication development, used by infants to acquire and master new behaviors. However, children with ASD have been found to have slightly more difficulties with imitating communicative gestures, such as waiving a hand for hello, than typically developing children. A study done by Carmo, Rumiati, Siugzdaite, and Brambilla (2013) took 13 high-functioning children with autism, and 14 typically developing children and presented them with an imitation task lasting about an hour. Stimuli consisted of 12 transitive gestures without an object, 12 transitive gestures with an object, 12 intransitive symbolic gestures, and 24 meaningless gestures. It was found that the high-functioning autistic children recognized 74.36% of the gesture and the typically developing children recognized 85.61% of the gestures. The two groups did not differ significantly enough, supporting the fact that children with ASD only slightly differ from that of typically developing children when it comes to gesture recognition.

In the 1970's, the first forms of AAC systems included sign language and communicative gestures to increase expressive communication. Some studies have found that

using sign language exclusively or paired with speaking was more effective at teaching receptive and expressive communication to children with autism than just speaking alone (Kurt, 2011). A study done by Kurt (2011) was conducted on two male students with autism. One student was given therapy with verbal instruction visual support using gesture and sign language, the other student was given therapy with only verbal instruction. The study found that the student, who was given therapy with verbal instruction and visual support, using gestures and sign language, was found to display receptive and expressive skills at 96% accuracy. The second student, who was given therapy with only verbal instruction, was found to display receptive and expressive skills at 30% accuracy. In conclusion, the study found positive outcomes for communication receptive and expressive skills in children with ASD when using sign language and communicative gestures.

According to Wong and Kwan (2010), recent training for children with ASD is focusing more on the social pragmatic approach to teaching communication skills such as joint attention, eye contact, initiation of social interactions, and appropriate content of speech. Wong and Kwan (2010) conducted a study in which they had parents introduce an intervention program, “Autism 1-2-3 Project,” at home with their children with ASD over a two-week period. The easy, three-step program consisted of (1) “eye contact,” (2) “gestures,” and (3) “vocalization or words.” These steps were used when the parents would communicate with the children, training the children to also use eye contact, gestures, and vocalizations when they wanted to interact with the parents. The intervention group differed from the control group in that the intervention group showed significant improvements in requesting and symbolic play. Overall, the results of the study found that the program, “Autism 1-2-3 Project,” which involved the use of communicative gestures paired with eye contact and

vocalizations, increased the participant's involvement in social interaction and communication by increasing their use of vocalizations, pointing, and requesting. The findings in this study suggest that pairing communicative gestures with other modes of communication has positive outcomes in improving communication skills for children with ASD.

After reviewing the literature pertaining to manual sign language and communicative gestures, I have learned that using these modes of communication with children diagnosed with autism has been found to have a significant impact on increasing independent expressive communication and also improving receptive language skills. The findings of the literature correlated with the findings in my observation, where I saw an increase in communicative occurrences when prompted to use manual sign or gestures. If I were to introduce these modes of communication to my future client's diagnosed with ASD, I would expect to see similar gains in their expressive and receptive communication, improvements in their ability to socially interact, and an increase in independent, spontaneous communication. Manual sign and communicative gestures could significantly improve functional communication in children with autism.

Communication Boards

While oral speech is the primary mode of communication used and preferred by most people, approximately 50% of people with autism are nonverbal (Winner, 1993). Because of this, visual communication systems have been developed to supplement oral speech. A communication board is a type of visual communication, which displays pictures, symbols, words/phrases, or a combination of these (Communication Boards, 2002). A child with adequate visual and motor skills will simply point to the picture, symbol, or word/phrase on

the board that they wish to communicate, easing the frustration and stress often faced by children with ASD who cannot express themselves verbally. Typically, it is necessary for multiple communication boards to be developed in order to provide children with a range of vocabulary needed for different topics and communicative environments.

Cafiero and Meyer (2008) followed Nicholas, a 6-year-old boy with autism and his use of a communication board. Nicholas suffered many communicative breakdowns with his family, teachers, and peers as a result of his language deficits associated with ASD. As a repair strategy, Nicholas was taught to use a communication board to help his family, teachers, and peers communicate with him. His mother printed and laminated communication boards for different rooms throughout the house and for him to take to school. A board was placed on the refrigerator in his home to give him easy access to a spontaneous and functional mode of communication. This board helps Nicholas's mother know what he would like to eat or drink without the frustration of guessing what he is requesting. A communication board is placed in the bathroom of his home that displays vocabulary related to grooming, in his bedroom to communicate during bedtime story, and in the car to help with transitions (Cafiero, Meyer, 2008). After Nicholas and his family began using the communication boards, they began to see an improvement in Nicholas's behavior, an increase in his spontaneous interactions, and an overall improvement in functional and social communication between Nicholas and his communication partners at home, at school, and in the community.

Children with autism generally demonstrate and interest and show abilities in activities that offer visual stimuli. Visual cues and reminders are often helpful for a child with ASD who has difficulty with short-term memory, because they improve language processing and comprehension. Children with autism are more likely to make effective choices when

provided with picture symbols and cues. Communication boards help an individual with autism to communicate effectively in unfamiliar settings with unfamiliar communication partners, because visual symbols are more easily understood (Cafiero, 1998). Communication boards can be specific to one environment with related vocabulary that may include descriptors, expletives, nouns and verbs to provide a rich selection of language (Cafiero, 1998). Communication boards help with both receptive and expressive language and can increase both these language skills. Because communication boards are used as receptive language training, more symbols may be placed on the board than what the child currently understands. With repetition and reinforcement, a child with autism may increase their receptive and then expressive use of the symbol by pointing or even verbalizing (Cafiero, 1998). When creating a communication board for a child to use in the school setting, it is important to include the teacher, other assistants or aids, and peers that the child typically interacts with on the board. Using a communication board in natural settings, such as at home will increase a child's use of this mode of communication at school (Cafiero, 1998).

The literature pertaining to communication boards suggest that this mode of communication has been found to aid in self-monitoring of children with ASD, improve behavior, and increase receptive language ability and provide more expressive language opportunities. I believe more research should be done on the use of communication boards of children with autism because there is such a prevalence of this mode being used for them to effectively communicate. I have seen, first-hand, the successful use of communication boards in therapy and there has been much valid research done that has proven that communication boards are an effective mode of communication for children with ASD. Introducing this AAC

system to my future clients with autism would be evidence-based practice, and I would expect to see positive outcomes in the intelligibility and overall communication skills of my client's.

Chapter III

Observation and Results

The students who were observed for this project were selected based on the requirements that they must be diagnosed with ASD and be in grades 6-8. Two students were then chosen from each grade. Data collected included the pragmatic function the communication occurrence served, the mode of communication used, the environment or setting in which it took place, the number of opportunities presented to the students within a ten minute time period, and the actual number of communication occurrences within the ten minutes. An opportunity is defined as the student being prompted by the communication partner to use a particular mode of communication or combination of any of the modes. The pragmatic functions observed included requesting of a person, object or action, denial or rejection of a person, object or action, responding to adult initiated questions, responding to peer initiated questions, responding to adult initiated social communication, responding to peer initiated social communication, asking an adult a question or commenting, asking a peer a question or commenting, initiating social communication with an adult, and initiating social communication with a peer. The modes of communication observed included speech, ASL, gestures, VOCA, PECS, and communication boards. The environments/settings observed included the speech therapy room, classroom, and lunch/recess.

Initials of Child, Grade, Age	Pragmatic Function	Mode of Expressive Communication	Environment (Speech room, Classroom, Lunch)	Number of Opportunities Presented in 10 minutes	Number of Actual Communication Occurrences in 10 minutes	Percentage of Actual Occurances
MAB, Grade: 6, Age: 12 years.	Request person, object or action	Speech	Speech Room	5	1	20%
			Classroom	3	0	0%
			Lunch/Recess	5	0	0%
		ASL	Speech Room	5	4	80%
			Classroom	4	1	25%
			Lunch/Recess	5	0	0%
		Gestures	Speech Room	5	3	60%
			Classroom	4	2	50%
			Lunch/Recess	5	3	60%
		VOCA	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	1	1	100%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
	Deny or reject person, object or action	Speech	Speech Room	5	1	20%
			Classroom	3	0	0%
			Lunch/Recess	5	0	0%
		ASL	Speech Room	5	1	20%
			Classroom	4	1	25%
			Lunch/Recess	5	0	0%
		Gestures	Speech Room	5	3	60%
			Classroom	4	1	25%
			Lunch/Recess	5	0	0%
		VOCA	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	1	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
	Respond to adult initiated questions	Speech	Speech Room	3	1	33.3%
			Classroom	4	1	25%
			Lunch/Recess	4	0	0%
		ASL	Speech Room	3	2	66.6%
			Classroom	4	3	75%
			Lunch/Recess	4	2	50%
		Gestures	Speech Room	3	1	33.3%

			Classroom	4	1	25%
			Lunch/Recess	4	2	50%
		VOCA	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	4	3	75%
			Classroom	3	2	66.6%
			Lunch/Recess	0	0	0%
	Respond to peer initiated questions	Speech	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	1	1	100%
		ASL	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Gestures	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		VOCA	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
	Respond to adult initiated social communication	Speech	Speech Room	2	0	0%
			Classroom	4	1	25%
			Lunch/Recess	0	0	0%
		ASL	Speech Room	3	1	33.3%
			Classroom	4	0	0%
			Lunch/Recess	0	0	0%
		Gestures	Speech Room	2	2	100%
			Classroom	4	2	50%
			Lunch/Recess	0	0	0%
		VOCA	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	2	2	100%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
	Respond to peer	Speech	Speech Room	0	0	0%
			Classroom	2	1	50%

	initiated social communication		Lunch/Recess	2	1	50%
		ASL	Speech Room	0	0	0%
			Classroom	2	0	0%
			Lunch/Recess	2	0	0%
		Gestures	Speech Room	0	0	0%
			Classroom	2	1	50%
			Lunch/Recess	2	0	0%
		VOCA	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	0	0	0%
			Classroom	2	2	100%
			Lunch/Recess	0	0	0%
	Ask adult question or comment	Speech	Speech Room	2	0	0%
			Classroom	3	0	0%
			Lunch/Recess	0	0	0%
		ASL	Speech Room	2	1	50%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Gestures	Speech Room	2	2	100%
			Classroom	2	2	100%
			Lunch/Recess	1	1	100%
		VOCA	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	1	1	100%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
	Ask peer question or comment	Speech	Speech Room	0	0	0%
			Classroom	1	0	0%
			Lunch/Recess	1	0	0%
		ASL	Speech Room	0	0	0%
			Classroom	1	0	0%
			Lunch/Recess	1	1	100%
		Gestures	Speech Room	0	0	0%
			Classroom	1	0	0%
			Lunch/Recess	1	0	0%
		VOCA	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%

		Communication Board	Speech Room	0	0	0%
			Classroom	3	3	100%
			Lunch/Recess	0	0	0%
	Initiate social communication with adult	Speech	Speech Room	3	1	33.3%
			Classroom	2	1	50%
			Lunch/Recess	2	0	0%
		ASL	Speech Room	3	1	33.3%
			Classroom	2	0	0%
			Lunch/Recess	2	0	0%
		Gestures	Speech Room	3	2	66.6%
			Classroom	2	1	50%
			Lunch/Recess	2	1	50%
		VOCA	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	3	3	100%
			Classroom	2	2	100%
			Lunch/Recess	0	0	0%
	Initiate social communication with peer	Speech	Speech Room	0	0	0%
			Classroom	1	0	0%
			Lunch/Recess	1	0	0%
		ASL	Speech Room	0	0	0%
			Classroom	2	2	100%
			Lunch/Recess	2	1	50%
		Gestures	Speech Room	0	0	0%
			Classroom	2	2	100%
			Lunch/Recess	3	2	66.6%
		VOCA	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%

The student referred to as MAB is 12 years old and is in 6th grade. The observation of MAB showed some obvious patterns in what mode of communication was used to communicate. First, there was a correlation between what mode of communication was used to serve certain pragmatic functions. MAB would use minimal verbal speech when

responding to adult and peer initiated questions or social communication, but would rarely initiate questions or social communication with verbal speech. Instead, MAB would typically use ASL or gestures or use a communication board to initiate. Also, when doing requesting drills in the speech room with the SLP, MAB was more likely to use ASL or gestures to request or deny objects, people, or actions. Second, there was a correlation between what mode of communication was used and what setting the communication occurrence took place in. MAB typically used ASL or gestures to communicate during lunch/recess because there was no communication board available and because of the loud and hectic environment of the setting, MAB rarely used verbal speech to communicate at all during lunch/recess, but instead relied on communicative gestures.

Initials of Child, Grade, Age	**Pragmatic Function**	**Mode of Expressive Communication**	**Environment (Speech room, Classroom, Lunch)**	**Number of Opportun-ities Presented in 10 minutes**	**Number of Actual Communi-cation Occurrences in 10 minutes**	**Percentage of Actual Occur-ances**
NEL, Grade: 6, Age: 11 years.	Request person, object or action	Speech	Speech Room	4	1	25%
			Classroom	4	0	0%
			Lunch/Recess	0	0	0%
		ASL	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Gestures	Speech Room	3	3	100%
			Classroom	2	2	100%
			Lunch/Recess	2	3	150%
		VOCA	Speech Room	4	4	100%
			Classroom	5	5	100%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
	Deny or reject person,	Speech	Speech Room	4	0	0%
			Classroom	4	2	50%
			Lunch/Recess	0	0	0%

	object or action	ASL	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Gestures	Speech Room	3	0	0%
			Classroom	2	0	0%
			Lunch/Recess	2	0	0%
		VOCA	Speech Room	4	0	0%
			Classroom	5	0	0%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
	Respond to adult initiated questions	Speech	Speech Room	3	0	0%
			Classroom	5	0	0%
			Lunch/Recess	4	0	0%
		ASL	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Gestures	Speech Room	3	0	0%
			Classroom	5	0	0%
			Lunch/Recess	4	0	0%
		VOCA	Speech Room	3	4	133.3%
			Classroom	5	5	100%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
	Respond to peer initiated questions	Speech	Speech Room	0	0	0%
			Classroom	2	0	0%
			Lunch/Recess	0	0	0%
		ASL	Speech Room	0	0	0%
			Classroom	2	0	0%
			Lunch/Recess	0	0	0%
		Gestures	Speech Room	0	0	0%
			Classroom	2	0	0%
			Lunch/Recess	0	0	0%
		VOCA	Speech Room	0	0	0%
			Classroom	2	2	0%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication	Speech Room	0	0	0%

		Board	Classroom	2	0	0%
			Lunch/Recess	0	0	0%
	Respond to adult initiated social communication	Speech	Speech Room	3	0	0%
			Classroom	4	1	25%
			Lunch/Recess	0	0	0%
		ASL	Speech Room	3	0	0%
			Classroom	4	0	0%
			Lunch/Recess	0	0	0%
		Gestures	Speech Room	3	0	0%
			Classroom	4	2	50%
			Lunch/Recess	0	0	0%
		VOCA	Speech Room	3	3	100%
			Classroom	4	4	100%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	3	0	0%
			Classroom	4	0	0%
			Lunch/Recess	0	0	0%
	Respond to peer initiated social communication	Speech	Speech Room	0	0	0%
			Classroom	2	1	50%
			Lunch/Recess	0	0	0%
		ASL	Speech Room	0	0	0%
			Classroom	2	0	0%
			Lunch/Recess	2	0	0%
		Gestures	Speech Room	0	0	0%
			Classroom	2	1	50%
			Lunch/Recess	2	0	0%
		VOCA	Speech Room	0	0	0%
			Classroom	2	2	100%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	0	0	0%
			Classroom	2	0	0%
			Lunch/Recess	2	0	0%
	Ask adult question or comment	Speech	Speech Room	1	0	0%
			Classroom	3	0	0%
			Lunch/Recess	2	1	50%
		ASL	Speech Room	1	0	0%
			Classroom	3	0	0%
			Lunch/Recess	2	0	0%
		Gestures	Speech Room	1	0	0%
			Classroom	3	0	0%
			Lunch/Recess	2	1	50%
		VOCA	Speech Room	1	1	100%
			Classroom	3	3	100%

			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
	Ask peer question or comment	Speech	Speech Room	0	0	0%
			Classroom	1	0	0%
			Lunch/Recess	0	0	0%
		ASL	Speech Room	0	0	0%
			Classroom	1	0	0%
			Lunch/Recess	1	0	0%
		Gestures	Speech Room	0	0	0%
			Classroom	1	1	100%
			Lunch/Recess	1	0	0%
		VOCA	Speech Room	0	0	0%
			Classroom	1	1	100%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
	Initiate social communication with adult	Speech	Speech Room	2	1	50%
			Classroom	1	1	100%
			Lunch/Recess	1	0	0%
		ASL	Speech Room	2	0	0%
			Classroom	1	0	0%
			Lunch/Recess	1	0	0%
		Gestures	Speech Room	2	2	100%
			Classroom	1	1	100%
			Lunch/Recess	1	1	100%
		VOCA	Speech Room	2	2	100%
			Classroom	1	2	200%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	2	0	0%
			Classroom	1	0	0%
			Lunch/Recess	1	0	0%
	Initiate social communication with peer	Speech	Speech Room	0	0	0%
			Classroom	2	0	0%
			Lunch/Recess	4	1	25%
		ASL	Speech Room	0	0	0%
			Classroom	2	0	0%
			Lunch/Recess	4	0	0%

		Gestures	Speech Room	0	0	0%
			Classroom	2	1	50%
			Lunch/Recess	4	3	75%
		VOCA	Speech Room	0	0	0%
			Classroom	2	2	100%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	0	0	0%
			Classroom	2	0	0%
			Lunch/Recess	0	0	0%

The student referred to as NEL is 11 years old and is in 6th grade. The observation of NEL showed that she would typically use gestures or her VOCA device to respond to adult and peer initiated questions or social communication and to initiate questions or social communication with adults and peers. Also, when doing requesting drills in the speech room with the SLP, NEL was more likely to use gestures or her VOCA device to request or deny objects, people, or actions. There were a few instances when NEL was prompted to use a communication board, because it was in closer proximity than her VOCA device, and was able to easily do so. There was a correlation between what mode of communication was used and what setting the communication occurrence took place in. NEL typically used gestures or speech to communicate during lunch/recess because her VOCA device was not available to her. This differed from the speech room and classroom setting because she was able to use her VOCA device.

Initials of Child, Grade, Age	**Pragmatic Function**	**Mode of Expressive Communication**	**Environment (Speech room, Classroom, Lunch)**	**Number of Opportun-ities Presented in 10 minutes**	**Number of Actual Communi-cation Occurrences in 10 minutes**	**Percentage of Actual Occur-ances**
SEH, Grade: 7, Age: 13 years.	Request person, object or action	Speech	Speech Room	1	0	0%
			Classroom	2	0	0%
			Lunch/Recess	2	0	0%
		ASL	Speech Room	2	1	50%
			Classroom	2	0	0%

			Lunch/Recess	1	0	0%
		Gestures	Speech Room	1	2	200%
			Classroom	2	2	100%
			Lunch/Recess	3	3	100%
		VOCA	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	5	5	100%
			Classroom	6	4	66.6%
			Lunch/Recess	0	0	0%
	Deny or reject person, object or action	Speech	Speech Room	1	0	0%
			Classroom	2	0	0%
			Lunch/Recess	2	0	0%
		ASL	Speech Room	2	1	50%
			Classroom	2	0	0%
			Lunch/Recess	1	0	0%
		Gestures	Speech Room	2	1	50%
			Classroom	2	0	0%
			Lunch/Recess	3	1	33.3%
		VOCA	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	5	0	0%
			Classroom	6	2	33.3%
			Lunch/Recess	0	0	0%
	Respond to adult initiated questions	Speech	Speech Room	3	0	0%
			Classroom	3	1	33.3%
			Lunch/Recess	2	0	0%
		ASL	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Gestures	Speech Room	3	2	66.6%
			Classroom	2	1	50%
			Lunch/Recess	3	3	100%
		VOCA	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	2	2	100%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	3	3	100%
			Classroom	2	2	100%
			Lunch/Recess	0	0	0%

	Respond to peer initiated questions	Speech	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	1	0	0%
		ASL	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Gestures	Speech Room	0	0	0%
			Classroom	2	2	100%
			Lunch/Recess	3	2	66.6%
		VOCA	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
	Respond to adult initiated social communication	Speech	Speech Room	3	0	0%
			Classroom	3	1	33.3%
			Lunch/Recess	0	0	0%
		ASL	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Gestures	Speech Room	3	0	0%
			Classroom	3	2	66.6%
			Lunch/Recess	0	0	0%
		VOCA	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	3	3	100%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	2	2	100%
			Classroom	4	4	100%
			Lunch/Recess	0	0	0%
	Respond to peer initiated social communication	Speech	Speech Room	0	0	0%
			Classroom	1	0	0%
			Lunch/Recess	1	0	0%
		ASL	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Gestures	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		VOCA	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%

			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
	Ask adult question or comment	Speech	Speech Room	0	0	0%
			Classroom	2	0	0%
			Lunch/Recess	0	0	0%
		ASL	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Gestures	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		VOCA	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	3	2	66.6%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	3	3	100%
			Classroom	3	2	66.6%
			Lunch/Recess	0	0	0%
	Ask peer question or comment	Speech	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		ASL	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Gestures	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		VOCA	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
	Initiate social communication with adult	Speech	Speech Room	1	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		ASL	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Gestures	Speech Room	1	1	100%
			Classroom	0	0	0%

			Lunch/Recess	0	0	0%
		VOCA	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	2	2	100%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	2	2	100%
			Classroom	1	1	100%
			Lunch/Recess	0	0	0%
	Initiate social communication with peer	Speech	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	1	0	0%
		ASL	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Gestures	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		VOCA	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	0	0	0%
			Classroom	1	1	100%
			Lunch/Recess	0	0	0%

The student referred to as SEH is 13 years old and is in 7th grade. The observation of SEH showed that he would typically use gestures or a communication board to respond to adult and peer initiated questions or social communication and to initiate questions or social communication with adults and peers. Also, when doing requesting drills in the speech room with the SLP, SEH was more likely to use his communication board to request or deny objects, people, or actions. There were a few instances when SEH was prompted to use a speech and was able to produce a few one-word utterances. Also, the SLP prompted the use of a PECS system with SEH primarily when they were having a social interaction or when initiating and responding to questions and comments. There was a correlation between what

mode of communication was used and what setting the communication occurrence took place in. SEH typically used gestures to communicate during lunch/recess because his communication board was not available to him. This differed from the speech room and classroom setting because he was able to use his communication board.

Initials of Child, Grade, Age	**Pragmatic Function**	**Mode of Expressive Communication**	**Environment (Speech room, Classroom, Lunch)**	**Number of Opportun-ities Presented in 10 minutes**	**Number of Actual Communi-cation Occurrences in 10 minutes**	**Percentage of Actual Occur-ances**
MNF, Grade: 7, Age: 13 years.	Request person, object or action	Speech	Speech Room	0	0	0%
			Classroom	2	0	0%
			Lunch/Recess	2	0	0%
		ASL	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Gestures	Speech Room	1	1	100%
			Classroom	2	2	100%
			Lunch/Recess	2	2	100%
		VOCA	Speech Room	5	5	100%
			Classroom	4	4	100%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
	Deny or reject person, object or action	Speech	Speech Room	0	0	0%
			Classroom	2	0	0%
			Lunch/Recess	2	0	0%
		ASL	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Gestures	Speech Room	1	0	0%
			Classroom	2	0	0%
			Lunch/Recess	2	0	0%
		VOCA	Speech Room	5	0	0%
			Classroom	4	0	0%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%

			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
	Respond to adult initiated questions	Speech	Speech Room	2	1	50%
			Classroom	1	1	100%
			Lunch/Recess	1	0	0%
		ASL	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Gestures	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		VOCA	Speech Room	3	3	100%
			Classroom	2	2	100%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
	Respond to peer initiated questions	Speech	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	1	1	0%
		ASL	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Gestures	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	1	0	0%
		VOCA	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
	Respond to adult initiated social communication	Speech	Speech Room	3	1	33.3%
			Classroom	1	0	0%
			Lunch/Recess	0	0	0%
		ASL	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Gestures	Speech Room	1	1	100%
			Classroom	1	1	100%
			Lunch/Recess	0	0	0%

		VOCA	Speech Room	2	2	100%
			Classroom	1	1	100%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
	Respond to peer initiated social communication	Speech	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		ASL	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Gestures	Speech Room	0	0	0%
			Classroom	1	0	0%
			Lunch/Recess	0	0	0%
		VOCA	Speech Room	0	0	0%
			Classroom	1	1	100%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
	Ask adult question or comment	Speech	Speech Room	2	0	0%
			Classroom	3	0	0%
			Lunch/Recess	0	0	0%
		ASL	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Gestures	Speech Room	2	0	0%
			Classroom	3	0	0%
			Lunch/Recess	0	0	0%
		VOCA	Speech Room	2	2	100%
			Classroom	3	3	100%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
	Ask peer question or comment	Speech	Speech Room	0	0	0%
			Classroom	2	0	0%
			Lunch/Recess	0	0	0%
		ASL	Speech Room	0	0	0%

			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Gestures	Speech Room	0	0	0%
			Classroom	2	0	0%
			Lunch/Recess	0	0	0%
		VOCA	Speech Room	0	0	0%
			Classroom	2	2	100%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
	Initiate social communication with adult	Speech	Speech Room	1	1	100%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		ASL	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Gestures	Speech Room	1	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		VOCA	Speech Room	2	3	150%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
	Initiate social communication with peer	Speech	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	1	0	0%
		ASL	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Gestures	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	1	1	100%
		VOCA	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	0	0	0%
			Classroom	0	0	0%

			Lunch/Recess	0	0	0%

The student referred to as MNF is 13 years old and is in 7th grade. The observation of MNF showed that she would use minimal verbal speech and gestures or she would primarily use her VOCA device to respond to adult and peer initiated questions or social communication and to initiate questions or social communication with adults and peers. Also, when doing requesting drills in the speech room with the SLP, MNF was more likely to use gestures or her VOCA device to request or deny objects, people, or actions. There were a few instances when MNF was prompted to use verbal speech and was able to respond with one and two-word utterances. There was a correlation between what mode of communication was used and what setting the communication occurrence took place in. MNF typically used gestures or speech to communicate during lunch/recess because her VOCA device was not available to her. This differed from the speech room and classroom setting because she was able to use her VOCA device.

Initials of Child, Grade, Age	**Pragmatic Function**	**Mode of Expressive Communication**	**Environment (Speech room, Classroom, Lunch)**	**Number of Opportun-ities Presented in 10 minutes**	**Number of Actual Communi-cation Occurrences in 10 minutes**	**Percentage of Actual Occur-ances**
DKA, Grade: 8, Age: 13 years.	Request person, object or action	Speech	Speech Room	2	2	100%
			Classroom	3	3	100%
			Lunch/Recess	2	2	100%
		ASL	Speech Room	2	0	0%
			Classroom	3	0	0%
			Lunch/Recess	2	0	0%
		Gestures	Speech Room	2	2	100%
			Classroom	3	3	100%
			Lunch/Recess	2	2	100%
		VOCA	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%

		Communication Board	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
	Deny or reject person, object or action	Speech	Speech Room	2	0	0%
			Classroom	3	1	33.3%
			Lunch/Recess	2	0	0%
		ASL	Speech Room	2	0	0%
			Classroom	3	0	0%
			Lunch/Recess	2	0	0%
		Gestures	Speech Room	2	1	50%
			Classroom	3	0	0%
			Lunch/Recess	2	0	0%
		VOCA	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
	Respond to adult initiated questions	Speech	Speech Room	2	2	100%
			Classroom	2	2	100%
			Lunch/Recess	1	1	100%
		ASL	Speech Room	2	0	0%
			Classroom	2	0	0%
			Lunch/Recess	1	0	0%
		Gestures	Speech Room	2	2	100%
			Classroom	2	1	50%
			Lunch/Recess	3	3	100%
		VOCA	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
	Respond to peer initiated questions	Speech	Speech Room	0	0	0%
			Classroom	1	1	100%
			Lunch/Recess	0	0	0%
		ASL	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Gestures	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		VOCA	Speech Room	0	0	0%

			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
	Respond to adult initiated social communication	Speech	Speech Room	2	2	100%
			Classroom	1	1	100%
			Lunch/Recess	0	0	0%
		ASL	Speech Room	2	0	0%
			Classroom	1	0	0%
			Lunch/Recess	0	0	0%
		Gestures	Speech Room	2	1	50%
			Classroom	1	1	100%
			Lunch/Recess	0	0	0%
		VOCA	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
	Respond to peer initiated social communication	Speech	Speech Room	0	0	0%
			Classroom	3	3	100%
			Lunch/Recess	4	3	75%
		ASL	Speech Room	0	0	0%
			Classroom	3	0	0%
			Lunch/Recess	4	0	0%
		Gestures	Speech Room	0	0	0%
			Classroom	3	0	0%
			Lunch/Recess	4	1	25%
		VOCA	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
	Ask adult question or comment	Speech	Speech Room	1	1	100%
			Classroom	2	2	100%
			Lunch/Recess	2	2	100%
		ASL	Speech Room	1	0	0%
			Classroom	2	0	0%

			Lunch/Recess	2	0	0%
		Gestures	Speech Room	1	1	100%
			Classroom	2	0	0%
			Lunch/Recess	2	0	0%
		VOCA	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
	Ask peer question or comment	Speech	Speech Room	0	0	0%
			Classroom	1	1	100%
			Lunch/Recess	1	1	100%
		ASL	Speech Room	0	0	0%
			Classroom	1	0	0%
			Lunch/Recess	1	0	0%
		Gestures	Speech Room	0	0	0%
			Classroom	1	0	0%
			Lunch/Recess	1	0	0%
		VOCA	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
	Initiate social communication with adult	Speech	Speech Room	1	1	100%
			Classroom	2	2	100%
			Lunch/Recess	0	0	0%
		ASL	Speech Room	1	0	0%
			Classroom	2	0	0%
			Lunch/Recess	0	0	0%
		Gestures	Speech Room	1	0	0%
			Classroom	2	1	50%
			Lunch/Recess	0	0	0%
		VOCA	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	3	3	100%
			Classroom	2	2	100%
			Lunch/Recess	0	0	0%

	Initiate social communication with peer	Speech	Speech Room	0	0	0%
			Classroom	2	2	100%
			Lunch/Recess	2	2	100%
		ASL	Speech Room	0	0	0%
			Classroom	2	0	0%
			Lunch/Recess	2	0	0%
		Gestures	Speech Room	0	0	0%
			Classroom	2	1	50%
			Lunch/Recess	2	1	50%
		VOCA	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%

The student referred to as DKA is 13 years old and is in 8th grade. The observation of DKA showed some patterns in what mode of communication was used to communicate. First, there was a correlation between what mode of communication was used to serve certain pragmatic functions. DKA would use primarily use verbal speech with minimal gestures when responding to adult and peer initiated questions or social communication, but would not initiate questions or social communication as frequently. Also, when doing requesting drills in the speech room with the SLP, DKA was more likely to use verbal speech paired with gestures to request or deny objects, people, or actions. Second, there was a correlation between what mode of communication was used and what setting the communication occurrence took place in. DKA typically used speech paired with minimal gestures to communicate in the speech room and in the classroom because the adults and peers prompted the use of speech more from him than when he was at lunch/recess.

Initials of Child, Grade,	**Pragmatic Function**	**Mode of Expressive Communication**	**Environment (Speech room, Classroom,**	**Number of Opportun-ities Presented**	**Number of Actual Communi-cation**	**Percentage of Actual Occur-ances**

Age			**Lunch)**	**in 10 minutes**	**Occurrences in 10 minutes**	
JCS, Grade: 8, Age: 14 years.	Request person, object or action	Speech	Speech Room	5	5	100%
			Classroom	4	4	100%
			Lunch/Recess	3	2	66.6%
		ASL	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Gestures	Speech Room	5	3	60%
			Classroom	4	2	50%
			Lunch/Recess	3	3	100%
		VOCA	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
	Deny or reject person, object or action	Speech	Speech Room	5	0	0%
			Classroom	4	0	0%
			Lunch/Recess	3	0	0%
		ASL	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Gestures	Speech Room	5	0	0%
			Classroom	4	0	0%
			Lunch/Recess	3	1	33.3%
		VOCA	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
	Respond to adult initiated questions	Speech	Speech Room	3	3	100%
			Classroom	4	4	100%
			Lunch/Recess	1	1	100%
		ASL	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Gestures	Speech Room	3	1	33.3%
			Classroom	4	3	75%
			Lunch/Recess	1	0	0%
		VOCA	Speech Room	0	0	0%
			Classroom	0	0	0%

			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
	Respond to peer initiated questions	Speech	Speech Room	0	0	0%
			Classroom	2	2	100%
			Lunch/Recess	3	3	100%
		ASL	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Gestures	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		VOCA	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
	Respond to adult initiated social communication	Speech	Speech Room	2	2	100%
			Classroom	3	3	100%
			Lunch/Recess	1	1	100%
		ASL	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Gestures	Speech Room	2	1	50%
			Classroom	3	2	66.6%
			Lunch/Recess	1	0	0%
		VOCA	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
	Respond to peer initiated social communication	Speech	Speech Room	0	0	0%
			Classroom	2	2	100%
			Lunch/Recess	5	3	60%
		ASL	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%

		Gestures	Speech Room	0	0	0%
			Classroom	2	1	50%
			Lunch/Recess	5	1	20%
		VOCA	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
	Ask adult question or comment	Speech	Speech Room	1	1	100%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		ASL	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Gestures	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		VOCA	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
	Ask peer question or comment	Speech	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	1	1	100%
		ASL	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Gestures	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		VOCA	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
	Initiate	Speech	Speech Room	2	1	50%

	social communication with adult		Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		ASL	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Gestures	Speech Room	2	1	50%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		VOCA	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
	Initiate social communication with peer	Speech	Speech Room	0	0	0%
			Classroom	1	2	200%
			Lunch/Recess	3	3	100%
		ASL	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Gestures	Speech Room	0	0	0%
			Classroom	1	1	100%
			Lunch/Recess	3	3	100%
		VOCA	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		PECS	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%
		Communication Board	Speech Room	0	0	0%
			Classroom	0	0	0%
			Lunch/Recess	0	0	0%

The student referred to as JCS is 14 years old and is in 8th grade. JCS would use verbal speech with minimal gestures when responding to adult and peer initiated questions or social communication. JCS was less likely to use gestures when initiating questions or social communication with adults and peers. Also, when doing requesting drills in the speech room with the SLP, JCS was more likely to use verbal speech paired with gestures to request or deny objects, people, or actions. Second, there was a correlation between what mode of

communication was used and what setting the communication occurrence took place in. JCS typically used speech paired with minimal gestures to communicate in the speech room and in the classroom because the adults and peers prompted the use of speech more from him than when he was at lunch/recess. The opportunities presented to the student to use a particular mode of communication showed a slight decrease when peers were presenting the communicative opportunities, and also when the setting was at lunch/recess.

Chapter IV

Conclusion

The results of the observations indicated that the students were more likely to engage in communication when provided with more opportunities. The observations also showed that the number of communication occurrences varied according to the type of communication partner. The communication occurrences initiated by and in response to adults were more frequent than those initiated by and in response to peers. This is due to the fact that the peers were either non-verbal or extremely limited in their ability to communicate with others who also had language deficits. Also, there were no communication occurrences between the student and peers when in the speech therapy room because they were one-on-one sessions. Similarities found between the students observed were that they were more likely to communicate during speech therapy using verbal speech and their individual AAC devices or systems. The difference between the students was the type of AAC device or system that they primarily used. This was due to their different levels of cognitive functioning, motor abilities, language abilities, and differences in what AAC device or system they used at home.

A variable that affected this observation included the familiarity of the communication partner with the different modes of communication. Some of the adults in the school setting, such as the principal or lunch lady, may not be familiar enough with any or all of the modes of communication used by children with ASD. This can also be seen with peers at school who are typically developing and do not have any experience using an AAC device or how to communicate with a student who requires an AAC device. If the communication partner is not familiar with an AAC device or system, they may not provide positive

opportunities for the AAC user to use that mode of communication. This will decrease the likelihood of that mode being used to communicate or for the student to communicate at all, resulting in a communicative breakdown.

Another variable that affected this observation was the availability of some of the AAC devices or systems. Results showed that the setting in which the communicative occurrence took place had an effect on how many opportunities were presented and how many were completed by the AAC user/student. Settings observed included the speech room, the classroom, and lunch/recess. More structured settings such as the speech room and the classroom provided more opportunities for the student to use any of the modes of communication because the aided AAC devices or systems (VOCA, PECS, and communication boards) were always available to the students as well as speech and the unaided AAC devices or systems, such as ASL and gestures. Modes such as VOCA, PECS, and communication boards were not available to the students during lunch/recess.

The findings of my observations supported the ideas from the literature that was reviewed. My observations and the literature showed that children with ASD require multiple modes of communication depending on the communicative partner and the setting.

Recommendations for future research would be to conduct studies that show the use of multimodal communication across all settings, natural and structured in order to get more accurate and reliable data that shows the frequency of use of all modes of communication for school-age children with autism in all communicative instances. With this information, SLPs may benefit from seeing the pattern of what mode of communication is more typically used in a particular setting, suggesting it is a more functional and effective mode of communication in that setting.

An implication of this literature review and my observational findings support that in the school setting, adults who interact with children with autism should be familiar with the use of AAC devices and systems with support from the SLP. If these adults were trained to become familiar with the different AAC devices, this would create more opportunities for those children to use their AAC device or system. More opportunities or prompting to use their AAC device or system is shown to increase the number of time the child actually uses the device or system. In turn, this would help promote expressive and receptive language skills in children with ASD and would help repair communicative breakdowns that threaten these interactions.

Another implication of this literature review and findings from the observations on SLPs is that the findings provide evidence that the use of multimodal communication is the recommended in therapy for children with autism. The findings of the literature and observation correspond with each other in that children who used more than one mode of communication were more functional communicators, were more effective in getting their message across to their communication partner, encountered less communicative breakdowns, and showed significant improvements in language development. In my future career as an SLP working in the school system with children with autism spectrum disorders, I now plan on providing therapy to my client's by implementing a multimodal approach to communication in order to enhance my client's quality of life by improving their ability to be effective, functional, and independent communicators.

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