Facilitating communication in a developmentally delayed child

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FACILITATING COMMUNICATION IN A
developmentally delayed
child

by
Ryan Finlay

A Thesis

Submitted in partial fulfillment of the requirements of the
Master of Arts in School Psychology Degree
of
The Graduate School
at
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Approved by ______________________________

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The purpose of this study was an attempt to facilitate the communicative capabilities of a developmentally delayed child. Specifically, the target goal was to have the student mand (request) the word “juice.” Aspects of four intervention techniques were implemented. The four techniques included; Easy Does it for Articulation: An Oral Motor Approach, Total Communication (TC), Augmentative and Alternative Communication (AAC), and Verbal Behavior Analysis (VBA). The participant was a 7 year old developmentally delayed female student at a small school for special services in southern New Jersey. The study was conducted in five phases. Data was collected during the second (baseline) phase and the third (intervention) phase. The target goal was not accomplished however, it is felt that with more intervention sessions the student would have reached the target goal.
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CHAPTER 1

Introduction

The Need

Through language we communicate our innermost fear, pain, and joy. The anxiety, agony, and frustration must be tremendous for a parent who has a child that cannot talk. Trying to imagine what it must be like to have a child who cannot tell you that they are too hot or too cold, or that they have a stomach ache, or what they want to eat is a scary thought.

If one thinks about the complexities of language it is truly an amazing aspect of the human condition. When learning to talk we must take the specific sounds of letters and combine them with other letters to form a word. We then take that word and combine it with others to form sentences. This sequencing of symbols and sounds must be done in a particular order so the person we are communicating with can respond. Not only must a child who is learning to speak learn how to effectively use words, they must also learn to use those words in socially appropriate ways. Knowing when to speak or when to listen while having a conversation, and knowing when to use eye contact or the appropriate body language all tie into being an effective communicator. Taking all of the complexities that make up language into consideration, it is astonishing that any of us learn to talk or communicate at all.
This study is needed because as educators we must be able to help children learn how to communicate effectively. “When we are children, we learn to communicate by discovering how language works for us. That is, when we learn that words can be used to easily attain objects, or gain attention, objects acquire names. These words become essential tools, and these tools are behaviors that affect both listeners and speakers.

They are a distinctive kinds of behavior that requires a distinctive treatment, and we use them to communicate to others and mediate our world through the actions of others. Verbal behavior is the cornerstone of human learning. For most children, verbal behavior seems to be acquired with little apparent effort and becomes the means for them to operate their world” (Greer & Ross, 2008 p1).

However, for the child with developmental delays who does not acquire basic language skills the challenges life has to offer will be compounded by their inability to communicate effectively. Delayed verbal development in early childhood will have negative impacts in a child’s future. These impacts will effect areas of a child’s life such as; their academic success, their social lives, and their career goals. Having the ability to communicate is crucial to the survival of the individual and our species. As social creatures we must be able to convey our wants and needs to others at the earliest age possible.

“It is estimated that only about one half of children with autism and related disorders will acquire some speech as a mode of communication” (Lord & Paul 1997, as cited in Lerman, 2005). In other words there is another half that can acquire some speech or alternative means of communication.
The Purpose

The purpose of this study was to increase the communicative capabilities of a developmentally delayed child who was classified as communication impaired and has Childhood Apraxia of Speech (CAS). The researcher attempted to increase her ability to speak and use other modes of communication (i.e. sign language and augmentative devices) through an intervention using aspects of Easy Does it to Articulation: An Oral Motor Approach, Total Communication, Verbal Behavior, and Alternative and Augmentative Communication.

Specifically, the researcher used Whole Body Wake Ups as an antecedent and establishing operation along with positive reinforcement and modeling to have the child mand (request) the word juice.

However, before this the researcher had to first determine if the student had listener status in her verbal repertoire. According to Greer and Ross (2008), there are “five simple programs designed to teach the child attentional prerequisites to learning true listener responding: sitting, sitting still, eye contact, generalized imitation, and imitation. These are standard procedures in effect since Lovass (1977) introduced them in his seminal program of research on teaching children with autism” (Greer & Ross, 2008 p73). Once it was determined that the student could pay attention for a long enough period of time, the work of getting her to request or mand the target word juice could begin.
Hypothesis

The hypothesis of this study was that the researcher would be able to have a developmentally delayed child with limited verbal capabilities mand (request) the target word “juice” by combining aspects of the following four intervention strategies:

1) Easy Does it to Articulation: An Oral Motor Approach
2) Total Communication (TC)
3) Verbal Behavior Analysis (VBA)
4) Augmentative and Alternative Communication (AAC)

Operational Definitions

Childhood Apraxia of Speech (CAS): “Apraxia, or the absence of speech, has been defined as the inability to articulate sounds necessary for successful speech or language production” (ASHA, 2007 as cited in Beathard & Krout, 2008).

The American Speech Language Hearing Association (ASHA) defines CAS as a “neurological childhood (pediatric) speech sound disorder in which the precision and consistency of movements underlying speech are impaired in the absence of neuromuscular deficits, the core impairment in planning and/or programming spatiotemporal parameters of movement sequences results in errors in speech sound production and prosody” (ASHA, 2007, p1 as cited in Gildersleeve-Neumann, 2007).

Easy Does it for Articulation: An Oral Motor Approach: A method designed by Robin Strode and Catherine Chamberlin to help children who have speech delays develop the appropriate skills needed for speech production.
**Whole Body Wake Ups:** One of Strode and Chamberlin’s techniques. “These are a brief warm up of the body during gross motor activities to facilitate and promote alertness, organization, focus, calming, mobility, coordination, normal muscle tone, respiration/breath support and cooperation. This warm up gets all the systems revved to go, just as an engine is warmed up when starting a car. Movement helps provide stability and support for the various systems involved in speech production” (Strode & Chamberlin, 1997).

**Total Communication:** The use of manual sign language with the corresponding spoken word at the same time.

**Verbal Behavior Analysis:** “a subfield within basic and applied behavior analysis that is devoted to identifying and researching sources and instructional procedures that produce functional verbal repertoires when they are missing. It is based on B.F. Skinner’s (1957) Verbal Behavior, a theoretical account of the functions of language or the effects that a speaker has on a listener” (Greer & Ross, 2008)

**Mand:** A verbal behavior term meaning to request something.

**Repertoire:** A tool box of capabilities that a person already knows how to use.

**Listener Status:** an individuals ability to perform “verbally governed behavior” (i.e., come here, do this, now do this). (Greer & Ross,2008 pg.18)

**Establishing Operation:** An event or condition that increases the likelihood of a response to occur (i.e. eating crackers will increase the chances that one will ask for a glass of water).
Limitations

Some limitations of the study include the fact that the researcher used only a single subject. Therefore, any findings from the study will be difficult to generalize to the entire developmentally delayed population because of the individualized nature of each child’s delays. Another limitation was the perplexing nature of oral motor disorders themselves, and how to reliably test for these disorders at an early age. “The fields limited understanding of motor speech disorders in children is demonstrated most powerfully by a lack of agreement on core characteristics that can help guide test construction and validation and lead to the development of a test that can serve as a gold standard” (McCauley & Strand, 2008). A disorder needs to be properly diagnosed before it can be properly treated. Another limitation of this study was the terminology used to classify Apraxia of Speech. Some use the term Developmental Apraxia of Speech (DAS), others use Childhood Apraxia of Speech (CAS), and others use Verbal Apraxia. Much confusion could be avoided if a single defining term could be agreed upon. For this study the researcher used the term Childhood Apraxia of Speech (CAS).

Summary

In the next chapter previous research that has influenced the understanding and treatment of language delays will be discussed. Chapter 3 will explain the design of the study. Chapter 4 will summarize the results of the study. Finally, chapter 5 will include the findings of the study, the limitations of the study and any further thoughts that were evoked by the study.
CHAPTER 2

Literature Review

A significant developmental delay in childhood is in the area of speech and language development. There is no consensus as to why some children acquire language and speech relatively effortlessly in the early years of life, and why some children fail to acquire these skills. Language is a very complex phenomenon. From a linguistic standpoint the five aspects of language include: phonology or how individual sounds make up words, morphology or the study of word formation, syntax the way sentences are structured, semantics the meaning of words, and pragmatics or how language is used in real life situations in order to communicate effectively (Honig, 2007). Early intervention for children with spoken language delays is crucial. The earlier in life we can identify and treat these delays the more success we will have in promoting the communication abilities of young children.

This review of the literature examined Childhood Apraxia of Speech (CAS), the use of Augmentative and Alternative Communication (AAC), and different methodologies and strategies that are used in the treatment of speech and language disorders. We also examined how certain strategies could be combined to achieve the maximum benefit. Definitions are provided along with related research in the field.
Childhood Apraxia of Speech (CAS)

According to the Childhood Apraxia of Speech Association of North America (CASANA, 2008) the act of speaking is a very complicated process. First a person must have a desire to communicate with someone in their environment. Next, the correct word must be retrieved that accurately conveys the thought the person is having. Once the correct word is located, the brain must send the correct electrical signals to the corresponding muscles of the mechanisms used for speech production. These mechanisms are known as the articulators and they include; the lips, tongue, jaw, and soft palate (CASANA, 2008). The articulators work in tandem with the lungs to produce the right amount of air flow to speak a word that is hopefully going to be understood by the person that is being spoken to. In this simplified version of how speech occurs one can see at how many points in space and time something can go wrong while attempting verbal communication.

Childhood Apraxia of Speech is a specific motor speech disorder in which the child has difficulty planning and producing the precise series of movements necessary for speech production (CASANA, 2008). Diagnosing CAS is difficult. For one thing there is no consensus as to what to call the disorder. Some commonly used terms include; Developmental Apraxia of Speech, Verbal Apraxia, or Verbal Dyspraxia. As was mentioned in the limitations section of chapter 1, much confusion could be avoided if a single term could be agreed upon when defining this disorder.

No matter what term is being used to describe the disorder, the key word in all of them is “praxis,” which means planned movement. To further complicate matters there is no consensus as to what is are the defining diagnostic criteria for CAS.
In a survey of 75 Speech and Language Pathologists 50 different items were mentioned as characteristics of CAS (Forrest, 2003). Furthermore, there are few reliable tests to be used in the diagnostic process of CAS. According to McCauley and Strand (2008), there is a need to examine the content and psychometric characteristics of tests that are designed to assess speech and non-speech oral motor function in young children.

How than, one might ask, is a diagnosis of CAS made? To date the most reliable way is through intensive evaluations by a Speech and Language Pathologist (CASANA, 2008). These evaluations include such things as an examination of the child’s developmental history. For example, what was the pregnancy like? Where there any complications in utero? Working one on one with the child is important. Interacting and talking to them while trying to get a sense of their language capabilities at the present time is important. Can they understand speech? Determining this can be accomplished through simple games such as Simon Says (i.e. Simon Say “touch your head”), if the child touches their head without any visual cues on the behalf of the therapist there is a good chance the child understands spoken language.

Also, according to CASANA the child’s oral structures and oral cavities must be examined along with the respiration to see if there is enough air flow for vocalization to occur. A complete list of sounds, and words the child makes should be documented. This list can be used to compare against typically developing peers. Stanley Greenspan (2007), a prominent doctor in the field of child development notes that it is important to see if the child can carry out multistep motor tasks such as; copying shapes or throwing and catching a ball. Observations and case histories are important, however, they are not enough. Standardized tests must be developed that can reliably diagnose CAS.
Treatment of CAS

Interventions of many types have been implemented in children with speech motor delays. One such intervention is Integral Stimulation Approach. It is often considered the “watch me, listen, do as I do approach” (Gildersleeve-Neuman, 2007). According to Christina Gildersleeve-Neuman (2007), “the overall focus in Integral Stimulation needs to be on learning how to make the speech movement, rather than the absolute success on individual sounds or isolated syllables. The approach is based on six steps:

1) The child watches and listens and simultaneously produces the stimulus with the clinician.
2) The clinician models, then the child repeats the stimulus while the clinician simultaneously mouths it.
3) The clinician models and provides cues and the child repeats
4) The clinician models and the child repeats with no cues provided.
5) The clinician will elicit the stimulus without modeling, such as by asking a question with the child responding spontaneously.
6) The child produces stimuli in less directed situations with clinician encouragement, such as role play or games.

According to Gildersleeve-Neuman (2007), the Integral Stimulation Approach has shown to be successful in the treatment of children with CAS. It teaches children to think about their motor movements and plan them in an orderly fashion. This approach is also useful in determining the individuals level of support needed.
No matter what approach is used in the treatment of children with CAS it may take a long time with much instruction, practice, and repetition as the child slowly develops language or speech (Beathard, 2008). Patience is very important when working with this population. Results are not going to happen over night. According to CASANA, children with CAS need frequent one to one therapy and lots of repetition of sounds, sound sequences, and movement patterns to make these changes become automatic.

Stanley Greenspan (2007) says, when working with a child who has delayed speech it is important to assess their ability to focus and attend to social signal. Determining if the child can sit, listen, and focus is very important before interventions of any sort can begin. All sensory modalities should be observed according to Greenspan. This includes the senses of touch, sound, sight, hearing, and movement. Over and understimulation should be watched out for. Sometimes a problem in one or more areas may be related to a child’s oral motor difficulties.

Some strategies that Greenspan has employed while working with CAS children include using engaging imaginative play with lots of back and forth conversation. Therapists must be keen observers to fine motor difficulties. For example, can the child draw, dance, catch and throw a ball” (Greenspan, 2005)? Greenspan also emphasizes the importance of integrating the language delayed child with peers who can communicate. “The rhythm of interaction is critical for language development, so it is very important for the child to have communicative and verbal peers” (Greenspan, 2005).

Integrating intervention techniques is useful when treating the child with oral motor and other language delays. Greenspan (2007), says sign language can be used, pictures to label objects or to indicate desired items.
For some children with severe oral motor problems Greenspan recommends computer based systems in which a child can press a symbol or button and the machine will talk for the child.

Augmentative and Alternative Communication (AAC)

The use of computer based picture programs and other assistive technology or augmentative devices can be very useful for the child with delayed speech. The Individuals with Disabilities Act Amendments of 1991 (IDEA) defines an assistive technology device as, “any item, piece of equipment, or product system, whether acquired commercially, off the shelf, modified or customized that is used to increase, maintain, or improve the functional capabilities of children” (Panette & Murdick, 1998).

Assistive technologies can range from something as complex as a computer based language system to something as simple as a straw that bends. According to the Rehabilitation Engineering and assistive technology Society of North America (RESNA), “Supplementary aids and devices, or modifications to the regular education program must be included in the child’s IEP” (RESNA, 1992).

One alternative communication system in use today is the Picture Exchange Communication System (PECS). This technique was designed by Lori Frost and Andy Bondy at the Delaware Autistic Program. The technique gives children and other with speech impairments a means to exchange information. According to Roskoski, children using PECS are taught to approach and give pictures of desired items to a communicative partner in exchanged for that item. The PECS system is not designed to facilitate speech, it is simply an alternative means of communication using pictures and social exchanges for reinforcement.
When considering the use of an AAC one must take into account the importance of contextual fit. "The term contextual fit refers to the compatibility between an intervention and a variety of variables, including characteristics of the person for whom the intervention was developed, characteristics of the individual who implements the plan, and features of the environment within which the intervention will be implemented" (Albin, Lucyshyn, Horner, & Flannery, 1996 as cited in Johnston, 2006 p101). An intervention that is designed well but is not practical for the environment and context could be causing more problems than it is helping. Take for example a nonverbal child who uses assistive talk boards in school. This talk board has 32 individual squares that accommodate different pictures of different subject matter (i.e. colors, shapes, and numbers). Each subject has its own card with a corresponding number. For example, the card with colors is number 1 and there is a switch that is turned on the device to match the number on the card. Once the card is inserted the switch can be matched to the card and the child can communicate her colors.

This seems like a relatively effective system, however, it is very time consuming and could be very frustrating for a child. It takes time to find the correct card, insert the card, and find the corresponding number. All this must be done while the rest of the class is involved in the lesson plan and moving ahead. This is an example of poor contextual fit.

Treatment Approaches for Speech and Language Disorders

An integrative approach using many different forms of treatment allows the therapist to have more tools in their kit to treat speech and language difficulties. This is useful because of the complex and individualized nature of each child’s communication problems. One treatment might work for a particular child, but not another.
When considering the many different techniques and combinations of those techniques that can be used it is important to remember on crucial element when working with a child. Keep it fun! Stanley Greenspan has said, “to be sure to make it fun and a natural outgrowth of play, not something that evokes anxiety by demanding performance” (Greenspan, 2007 p27). Keeping treatment fun is also an effective way to keep the child motivated during the treatment process.

The remainder of this literature review will focus on four intervention techniques; Easy Does it for Articulation: An Oral Motor Approach, Total Communication (TC), Picture Exchange Communication System (PECS), and Verbal Behavior Analysis (VBA). These techniques will be explored individually and how they may be combined to form an effective treatment when dealing with speech and language delays.

Easy Does it for Articulation: An Oral Motor Approach

This technique was designed by Robin Strode and Catherine E. Chamberlin. It emphasizes specific oral motor techniques to assist children acquire more functional motor control, precision, strength, and coordination. Children of any age and level of delay can benefit from this technique. According to Strode and Chamberlin, some that can benefit the most are those who have CAS, those with Down’s Syndrome, those who have gross and fine motor problems along with speech disorder, and those who lack awareness of the articulators and articulatory placement, or those who have difficulty following auditory and visual directions.

The technique is broken down into individual sounds. Sounds with similar articulatory placement such as p/b/m are grouped together. All sounds are taught in the same fashion. It begins with whole body wake ups to prepare the child for speech. It than moves on to prepare the structures that are used for speech by using positioning,
jaw stability, facial wake ups, vocal warm ups, taste and food activities, and direct facilitation methods.

The therapy manual was very helpful. It provided many illustrations and procedures to follow. Each chapter includes a tracking sheet to document progress, and speech practice work sheets. There is also a workbook that accompanies the therapy manual which includes many activities. More information on this technique can be found at http://linguisystems.com.

Picture Exchange Communication System (PECS)

As mentioned in the previous section PECS is a communication system designed by Frost and Bondy that allows children with communication impairments to express their wants and needs through the exchange of pictures. It is a multi phased intervention technique that is designed to help with communication. However, it is not designed to facilitate speech production.

Total Communication (TC)

TC is the most often employed method of teaching sign language to children with autism and other developmental disabilities (Carr, 1979 as cited in Carbone, 2006). In a recent article by Vincent Carbone and colleagues it is explained that TC involves the use of manual signs with the corresponding spoken word simultaneously. According to Carbone (2006), this technique has been shown to be more effective when working with developmental delays than teaching verbalization alone.

Verbal Behavior Analysis (VBA)

VBA is a subfield of Applied Behavior Analysis. Its primary focus is on developing functional verbal capabilities when they are missing. This is achieved through pairing antecedent events with reinforcers. “Intervention based on operant
learning theory have been shown to be highly effective in teaching communication skills to children with developmental disabilities” (Maurice, Green, & Luce, 1996 as cited in Lerman, 2005 p309). Many treatment facilities throughout the world use verbal behavior techniques in their interventions.

In his 1957 book, “Verbal Behavior,” B.F. Skinner clarifies that, “verbal does not mean vocal; rather verbal included any topography that is use for verbal function. By verbal behavior, Skinner meant communicative behavior in all its forms, which includes speaking, sign language, or gestures, pictures or symbols, Morse Code, and electronic speaking devices” (Greer, 2008 p10).

According to Skinner’s theory there are six functions of verbal behavior that allow us to be effective communicators. According to Frost & Bondy (2006) and Greer (2008 p4) these functions include the:

1) Mand: (from command or demand) a mand is a request
2) Tact: (from contact) a tact is naming something in one's environment
3) Intraverbal: verbal response that is the product of a response to other verbal behavior. For example, an adult would say, “Mary had a little...” and the child would respond “lamb.”
4) Echoic: imitations of words or phrases that occur in response to other verbal behavior.
5) Autoclitic: modify mands, tacts, intraverbals, and echoics. For example, “Please pass the salt.” Please modifies the mand pass the salt.
6) Textual Responding: verbal behavior under the control of written words (i.e. a student sees the written word juice and says juice).
These verbal functions help us interact and communicate in our environments. As children develop there are different milestones or stages that must be met in order for the child to become a higher order communicator. These stages were referred to as developmental cusps by Rosales & Baer, (1996). These cusps according to Greer (2006) include;

1) pre-listenter status
2) listener status
3) speaker status
4) speaker - listener exchange with others
5) speaker as own listener
6) reader status
7) writer status
8) writer as own reader status
9) verbal mediation for problem solving

Each of these cusps must be met in a hierarchical fashion. For example, if a child cannot sit and listen attentively to a teacher they will have difficulty learning how to become an effective speaker. Therefore, listener status must be established before speaker status and so on. Using behavioral techniques such as modeling and reinforcement functional language can be achieved. Although a child with a disorder such as CAS may not be able to reach true speaker status because of physical limitations they can still become an effective communicator through alternative topographical forms.
Integrating the four techniques

By combining the Oral Motor Approach for Articulation, PECS, TC, and VBA a child may stand a better chance of developing functional communication than by using any of the techniques by themselves. Combining strengths of different methods is an effective means of intervention. For example, Ticani (2004) measured increases in vocal responding by comparing the effects of PECS training and Total Communication (sign + vocal) training on the development of vocal manding. He found that both systems produced an increase in vocalization, but TC training led to more vocal responding than did PECS. So why not join their forces together? Perhaps by combining different interventions into one cohesive unit the outcome will be more successful than by using a single method alone.
CHAPTER 3

Design

Introduction

A combination of techniques was implemented during an intervention with a developmentally delayed child. The researcher was employed as a one to one aide at the school she attended. MB was selected because the frustration she was facing due to her difficulty communicating her wants and needs during the school day were obvious to her teacher and the researcher. The intervention took place in five phases at a small school for special services in southern New Jersey. MB’s teacher and teacher’s assistant were present throughout each session to assist with the study.

Participant

MB was a 7 year old girl who was enrolled at a school for special services. She was classified as communication impaired. According to her IEP she demonstrated significant expressive and receptive language delays as well as having Childhood Apraxia of Speech (CAS). She used a 32 point augmentative communication voice output low tech device to attempt communications. The device was old and not easy for her to use. Sometimes it caused frustration for her, there was not a good contextual fit between the device and the student. During the writing of this study she was awaiting an augmentative communication evaluation to find the most appropriate device for her. Aside from the delays in language and CAS, MB was in generally good health. She was an apparent happy helpful child who had language delays that caused her much frustration and difficulty.
Research Design

The intervention took place in five phases;

1) Rapport Building Phase
2) Listener Status Determination Phase
3) Baseline Phase
4) Intervention Phase
5) Closing Phase

The sessions took place three days a week Monday, Wednesday, and Friday at different times each day. During the four weeks or 12 sessions of the intervention phase the researcher met with her 20 minutes each session. Each intervention session took place in her classroom with either MB’s teacher or teacher’s aide present for assistance.

Phase One: Rapport Building

The first five sessions were rapport building sessions. During these five days fun was the main focus. Different games and activities were played including; dancing to Wiggle’s music, riding tricycles, playing drums, drawing shapes and letters on a table using shaving cream, running around the gym, playing the harmonica, a cutting shapes out of paper. These first five sessions laid the foundation for a good therapeutic relationship.

The first of the rapport building sessions took place in MB’s classroom on a Monday. It lasted for approximately twenty minutes. Activities using shaving cream designs “drawn” on a table top were used. This preferred activity by MB was brought to the researcher’s attention by her teacher, so it was decided to be used as our first rapport building session. This first session laid the ground work for the development of a good therapeutic relationship.
The second rapport building session took place on a Wednesday. This time it was held in the gymnasium. Due to bad weather MB’s class was not able to go outside for recess. The entire class, researcher included, rode tiny tricycles around the gym.

Also during the session the researcher established what could be used as positive reinforcement during the next phase of the study. MB was given the choice between cheese puffs, yellow raisins, and stickers. She choose the raisins.

Overall the second rapport building session went well. The entire class had an enjoyable time, and the therapeutic relationship continued to grow.

The third rapport session did not take place until the Monday after the long weekend due to the Thanksgiving break. The researcher was interested to see how MB would react after so many days off. Her school holds 4-H clubs for their students every other Monday. MB’s club was a drumming circle that took place in the gym. The researcher decided to use this opportunity as the third rapport building session. MB enjoyed playing the drums. The particular drum she used had a mirrored shell surrounding it. MB not only enjoyed playing the drum, she also enjoyed looking at her reflection in the mirrored shell. These two activities were also identified as possible positive reinforcers.

The fourth rapport building session took place in MB’s classroom on a Wednesday. This session included dancing around the room to Wiggle’s music and “drawing” shapes in shaving cream on the table. MB was able to copy a circle shape that the researcher modeled for her in shaving cream on the table. This was a big step, at our first session she did not copy any shapes that were modeled for her. At the end of this session MB insisted on helping the researcher clean up the mess that was made.
The fifth and final rapport building session took place in MB's classroom, it was on a Monday. This final session consisted of start/stop dancing to the Wiggles. Progress was made in our five sessions; however, it was time to move on to the next phase of the study. It was felt that a good therapeutic working relationship had been established.

Phase Two: Listener Status Determination

The second phase was conducted to determine if MB had listener status in her verbal repertoire. Could she sit still, pay attention and listen for a long enough period of time for intervention to take place was the question at hand. The number of sessions during this phase was to be determined by how long it took MB to achieve listener status. However, if it took longer than 10 sessions listener status acquisition would have become the primary focus of the study. Sessions took place 3 days a week M/W/F for 20 minutes each. The sessions took place in five steps. Each step needed to be completed before moving on to the next. These steps included;

Step 1) The researcher asked MB to “sit,” if she did the behavior was reinforced in the form of 3 yellow raisins.

Step 2) The researcher asked her to “sit still,” if she sat there and did not get out of her seat for 3 seconds she received 3 more raisins. This was repeated ten times. MB needed to respond correctly ten out of ten trials before moving on to step three. If she got out of her seat at any time we started from the beginning.

Step 3) This step was the “look at me” step. MB was asked to “look at me” she had to keep eye contact with the researcher for 3 seconds to receive a reinforcer. She needed to be successful for five consecutive trials before moving on.

Step 4) Imitating verbal gestures: The researcher asked MB to “do this” before each
modeled gesture. The researcher asked her to “do this” and nodded his head, “do this”
the researcher touched his nose, “do this” the researcher touched his head, “do this” the
researcher lifted his right arm, “do this” the researcher lifted his left arm, “do this” the
researcher lifted both arms.

After each modeled gesture the researcher waited three seconds for a response. If
MB responded with the correct gesture she received three yellow raisins. Five successful
consecutive trials were needed before we could move on to the next step.

Step 5) Imitating nonverbal gestures: The same steps took place as did in step 4,
however, the verbal prompt of “do this” was not given before each modeled gesture.
Again, the researcher waited three seconds before a correct response was reinforced.
Five out of five successful trials were needed.

The number of sessions was to be determined by how long it took MB to master
each step. If it took longer than ten sessions listener status acquisition would have had to
become the focus of the study.

This was not the case however, MB completed this phase in five sessions. The
first session lasted twenty minutes. The first step “sit” was completed right away. The
researcher asked MB to sit and she did. She could understand verbal commands. The
next step was sit still. MB was asked to “sit still.” As long as she remained in her seat
for 1...,2...,3 seconds she received three yellow raisins. This was the preferred item she
choose during the previous phase. MB completed five out of five successful three second
trials during the first session of phase two. This was enough to move on to the third step.

The third step was the look at me step. It was more difficult for MB to complete
than the previous steps. This step took place during the second session of determining
listener status. MB needed to maintain eye contact with the researcher for three seconds
for five consecutive trials. The researcher asked MB to “look at me.” If she maintained eye contact for 1...,2...,3 seconds she received three yellow raisins. In order to feel she successfully completed this step, MB needed to do this five times in a row. This was difficult for her and it took the entire twenty minutes of the second session to complete. However, she did successfully complete step 3. Now it was time to move on to step four.

After the successful completion of the “look at me” step, the fourth step was the imitation of verbal gestures. Before proceeding, the researcher provided MB with a choice of edibles. Out of the options of goldfish crackers, cheese puffs, and yellow raisins she once again choose the raisins.

This session lasted for approximately twenty minutes. The first gesture was the head nod. The researcher asked MB to “do this” as he nodded his head. She imitated and she received three raisins. Next, she was asked to “do this” as the researcher touched his nose. MB imitated and the gesture was reinforced. Next, “do this” and the researcher touched the top of his head. MB imitated and received three more raisins. Next, the researcher asked to “do this” and raised his right arm in the air, MB imitated and received reinforcement. Next, was right arm raised in the air and MB imitated and her imitation was reinforced. Finally, both arms were raised, MB was asked to “do this” she imitated and her imitation was reinforced. She had no trouble completing this fourth step of determining listener status. It was now time to move on to step five. Imitating nonverbal gestures.

Once again MB was given a choice of reinforcers. This time she picked goldfish crackers. The same steps were taken in step five as they were in step four. However, the verbal prompt of “do this” was not included. MB had difficulty completing this step. It took her longer to complete this step than any of the other ones. It took two entire twenty
minute sessions in order for her to complete five consecutive successful trials.

All in all the listener status determination phase went well. MB took fewer sessions to establish listener status than was anticipated. The next phase of the study began by establishing a baseline of MB’s ability to mand (request) juice. During this baseline phase and the next intervention phase data was collected by recording tally marks of each of the three sets of five trials. This data can be found in the Appendix A.

Phase Three: Baseline

A baseline of MB’s ability to mand the word juice was done at the first two sessions of phase 3. After ten minutes of whole body wake ups including jumping jacks and start/stop dancing, MB was asked to sit at a table in her classroom. A PECS card with the picture of a juice box was placed in front of her and an actual juice container was placed on a table beside the researcher. MB could see the container, but she could not reach it. The researcher asked MB “what do you want,” and waited three seconds for a response.

These two sessions were done to establish a baseline of MB’s ability to mand juice with no modeling on the part of the researcher. Results after two days indicate no attempt on MB’s part to mand juice. There were no approximations or verbal attempts made by MB during baseline.

Phase Four: Intervention

This phase took place three days a week M/W/F for 20 minutes a session. Intervention lasted for four weeks or 12 days. Three sets of five trials were implemented at each session. The target goal was to get MB to mand the word juice. Verbal approximations, sliding of the PECS card to the researcher without physical guidance, or
the use of the manual sign for juice were all acceptable forms of manding.

The first ten minutes of each session were whole body wake ups (i.e. jumping jacks, running in place, start/stop dancing) this was done as an establishing operation and antecedent to increase the likelihood of responding. The additional ten minutes involved the researcher modeling the word juice. A small box of grape juice was placed within MB’s field of vision, but it was out of her reach. The researcher sat directly across from her at the table.

During this time the researcher verbally modeled the word “juice” while simultaneously guiding MB’s right hand with his left hand to slide the PECS card to him. At the same time the researcher also modeled the sign language sign for juice with his right hand. After each modeled attempt MB was immediately asked “what do you want?” The researcher waited three seconds for a response. If MB responded with any of the acceptable responses she received a small Dixie Cup with juice in it. If there was no response the researcher started over again. Five out of five consecutive successful trials were needed in order to feel MB had learned to mand the word juice.

Twelve sessions of intervention took place. The target goal of MB successfully manding juice for five consecutive trials was not reached. The most successful day of intervention was on the tenth day in which MB successfully used signs to mand juice on three consecutive trials. Graph 4.1 shows the average successful trials per daily session.

Phase Five: Closing

The fifth and final phase was the closing phase. This was done as a symbolic ending to our sessions. A small party was held in MB’s honor with cake, ice cream, and of course juice.

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Data Collection

Data collection forms using tally marks were used during phase 3 and phase 4. + signs indicate a successful trial, - signs were used to designate unsuccessful trials. This data can be found in the appendix.
CHAPTER 4

Results

This study was conducted as an attempt to facilitate the communicative abilities of a developmentally delayed child (MB). It was hypothesized that by combining aspects of four different intervention techniques; (An Oral Motor Approach to Articulation, Total Communication, Augmentative and Alternative Communication, and Verbal Behavior Analysis) that MB would be able to mand (request) the word juice.

The first phase (rapport building) went well. During the five days a good working therapeutic relationship was formed. The second phase (listener status determination) went much smoother than was anticipated. It was determined that MB had acquired listener status in only six sessions. The two days of baseline during phase three indicated no attempts on MB’s behalf to mand juice.

The fourth phase (intervention) lasted for twelve sessions. The target goal of five out of five successful trials of manding juice was not met. The most successful day of intervention occurred during the tenth session. At this session MB manded juice on three consecutive trials using sign language. The average successful trials per session can be found in graph 4.1.

The fifth and final phase was done to end the sessions. A small party was thrown in MB’s classroom. It was a nice symbolic way to symbolize the ending of our sessions together.
Graph 4.1 Daily Trials

average successful trials per daily session

Session
CHAPTER 5

Review, Findings, Limitations, Conclusion

Review

As was mentioned in the literature review section of this study, a significant developmental delay in childhood is in the area of speech and language development. No one knows exactly why some children acquire speech naturally while others do not.

The purpose of this study was an attempt to facilitate the communicative capabilities of a developmentally delayed child with limited vocal ability and Childhood Apraxia of Speech.

Four intervention techniques were combined in this study they included;

1) Easy Does it for Articulation: An Oral Motor Approach
2) Total Communication (TC)
3) Augmentative and Alternative Communication (AAC)
4) Verbal Behavior Analysis (VBA)

The researcher hypothesized that by combining aspects of these four techniques that the student would be able to mand (request) the target word juice on five consecutive trials.

Findings

The target goal of the study was not achieved. MB did not successfully mand the target word on five consecutive trials. Although the goal was not met, each phase of the study went well. A good therapeutic working rapport was established during the first
five sessions and MB achieved listener status during fewer sessions than was originally anticipated.

The researcher found that by combining these four intervention techniques it was more likely that progress was made than if any of the four techniques was used alone. For example, by combining the PECS card with Total Communication (TC) MB had more options in which to respond. On the tenth day of intervention MB responded with the manual sign for juice three times in a row. If the researcher did not include this option of responding in the study MB may not have responded at all.

The majority of her correct responses came in the form of sign language. No verbalization attempts were made during any of the sessions. MB responded by sliding the PECS card to the researcher only 4 times during the duration of intervention. An emergent behavior came about because of the PECS card. During one of the earlier intervention sessions the card was slid to MB. She jokingly threw it across the room. She thought this was funny and she laughed. Inadvertently the researcher must have reinforced this behavior because it happened again during later sessions, and it was just as funny for her than as it was the first time.

Another finding that favors the combination of techniques is the inclusion of the whole body wake ups. These wake ups helped keep the rapport strong and it kept intervention as fun as possible for MB. Keeping it fun is an essential ingredient if therapy is going to be effective. By keeping it fun she was more inclined to participate in intervention. It was more like a game to her than therapy. The researcher feels this had to do with the successes that did happen in the study. Although the target goal was not met, the study was an overall success. With more sessions it is felt there is a good possibility the goal would have been accomplished.
Limitations

Some limitations presented themselves during the course of this study. These limitations may have contributed to the inability to reach the target goal.

First of all there were not enough interventions sessions. Twelve days of intervention was not enough. This was due to the difficulty the researcher faced while coordinating a time every Monday, Wednesday, and Friday to meet with MB. Part of the difficulty coordinating had to do with the fact that the researcher worked as an aide in a different classroom. Therefore, trying to find time to leave his class and go work with MB was not always easy. Another aspect that made coordination difficult was the fact that MB’s class had many different specials throughout the week (i.e. gym, swimming, art, music) all of which needed to be scheduled around. The researcher also needed to schedule around MB’s Speech Therapy she received once a week. It was often difficult to find twenty minutes during the day to set aside for intervention. Despite the difficulty scheduling, intervention took place on twelve sessions. Moreover, it is felt that more than twelve sessions would have been beneficial. Perhaps with more sessions the target goal could have been reached.

Another limitation to the study was that sessions could not be held at the same time each M/W/F. If the researcher was able to meet with MB at a consistent time during the day throughout the week the results would most likely have been more successful. Some days intervention took place during the morning after MB had eaten breakfast. By that time she was already satiated and juice became a less effective reinforcer. Other sessions took place in the afternoon after lunch, again juice became a less effective reinforcer. Other intervention sessions took place after gym or swimming, and these sessions were usually ineffective because MB was usually very hyper after these classes.
which made it difficult for her to concentrate during intervention. It also made the whole body warm ups a less effective motivating operation because she was already warmed up.

Although not directly related to this study, another limitation was the long time it took for MB to receive an evaluation for a new Augmentative communication device. It was difficult for the researcher to watch MB continually get frustrated due to the fact she was using an old cumbersome device.

Something that would have added to the reliability and validity of this study would have been to include a fellow researcher who could have recorded data as the primary researcher conducted intervention. However, due to limited staffing at the school there was no one available to assist the researcher. This inclusion of a co-researcher would have added interobserver reliability to the study.

Another factor that hampered the effectiveness of intervention was the classroom noise from the other students during intervention sessions. MB's attention span was not long to begin with and when her classmates started an activity that was loud MB became very distracted. These distractions happened on numerous intervention sessions.

Although data was collected during phase three baseline and phase four intervention, there was no data collected during phase two listener status determination. This lack of data collection was also due to the fact that there was only one researcher. It is felt that having another researcher, and collecting data during phase two would have been useful things to have during this study.

One more limitation to the study was the lack of planning on how to generalize any skills MB learned during intervention sessions to real life situations. One possibility would have been to teach MB to mand juice in the classroom and then let her use this new skill by requesting juice in the cafeteria.
Conclusion

Combining the strengths of different therapeutic interventions is a valuable avenue to pursue. No two individuals are the same, therefore, no two individuals will respond the same to similar interventions. Tailoring intervention to the needs of the individual client is a crucial element for success. What works well with one may not work at all with another.

This study was a valuable learning experience for the researcher. It will help in the design and implementation of interventions for clients throughout his career. It was a pleasure working with all those involved.

The researcher highly recommends combining these four techniques, and will continue to do so in the future. However, research and interventions continue to evolve. There are many effective techniques out there. It is our responsibility as professionals to keep up to date on the latest and most efficient and effective techniques available. It is also the therapists responsibility to find the right therapy for each and every client served. Parents and caregivers should be an active part of their child’s therapy. Therapists can train parents how to have the beneficial effects of intervention carry over to the home environment.
REFERENCES


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