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A Multi Function Communication Analysis with a Child with Autism Using Skype® to Assess Treatment and Generalization

Leah Brushwein[1], M. Ed.
Department of Special Education
Gonzaga University, Spokane, WA 99258-0015
Anjali Barretto[2], Ph. D., Full Professor
Department of Special Education
509 313-3492
Gonzaga University, Spokane, WA 99258-0025
Brittany Poff[3]. M. Ed
Gonzaga University, Spokane, WA 99258-0025
T. F. McLaughlin[4], Ph. D. Full Professor
Gonzaga University, Spokane, WA 99258-0025
509 313-3508
Gonzaga University
K. Pierce[5]
Lewiston, ID
and
C. Pierce[6]
Lewiston, ID

Abstract: In this study we examined the effects of functional communication (FCT) to decrease aberrant behavior across multiple contexts. The participant was 6 years old and diagnosed with autism and speech delays. He engaged in severe aberrant behavior, which included self-injury, aggression, and destruction. Assessment and treatment were initially conducted in the behavioral assessment lab setting and transferred to the parents. Generalization to the home was conducted via Skype® consultation since the family lived 106 miles from the university. All assessment and treatment sessions including Skype® sessions, were videotaped and coded using a 6-s partial interval recording system. Two independent observers achieved 86% agreement over 82% of the sessions. Results showed an increase in manding and a decrease in aberrant behavior across all settings.

***Keywords**:* Skype®, autism, aberrant behaviors, FCT, in-home training, generalization, parents

INTRODUCTION

Autism and autism spectrum disorders (ASD) are developmental disorders with the onset of symptoms before the age of 3 years. Autism is characterized by qualitative impairments in social interaction and communication. Many young children with Autism experience significant

communication delays (Heward, 2013). It is said that approximately 25% to 61% of learners with autism present with little or no functional speech (Schlosser & Wendt, 2008) and that no more then 25% of children with Autism have language in the normal range. Language development varies widely among children with ASD and often includes deficits in spontaneous language, difficultly with conversational language skills, or lack of spoken language (Ganz & Flores, 2009).

Often times, the inability to communicate wants and needs to caretakers and family members can lead to aberrant behaviors. For children who are nonverbal, aberrant behaviors (such as aggression, self-injury, tantrums, and destruction) serve as an immediate way to gain adult attention, thus getting them the item or attention they desire (Carr & Durand, 1985). Aberrant behaviors are manifested in the form of aggression, property damage, and self-injury. These behaviors constantly test the best efforts of those charged with the habilitation of persons with autism and other developmental disabilities (Durand, 1999). In order to make the children and families lives more enjoyable it is important to teach children with ASD appropriate ways to communicate with others, along with teaching families the how to help carry out this process.

Children with autism, including those who use little or no functional speech, may benefit from communication support in the form of augmentative and alternative communication (AAC) devices (Trembath, Balandin, Tougher, & Stancliffe, 2009). AAC devices come in two forms, aided and unaided. Unaided AAC approaches include gestures, manual signing, and finger spelling. Aided AAC approaches include selection-based methods, such as graphic symbols, non-electronic communication boards, speech-generating communication devices with synthesized or digitized speech output, and exchange-based approaches, such as the Picture Exchange Communication Systems (PECS). The primary aim of AAC interventions is to facilitate a child's communicative competence through the use of multiple communication modalities that are by their very nature supplementing ("augmentative") or replacing ("alternative") natural speech (Schlosser & Wendt, 2008).

Functional communication training (FCT) falls under the umbrella of commonly used AAC devices. Previous research on the implementation of functional communication training (FCT) has been shown to significantly reduce the problem behavior of a variety of individuals (Durand, 1999). The findings from investigations using functional communication training are especially striking because of the speed with which problem behavior is reduced to zero (Wacker et al., 1990). Results of previous studies have determined that the teaching of alternative communicative behaviors that were functionally equivalent to problem behavior reduced the frequency of problem behaviors (Durand, 1999). FCT is effective because the process identifies problem behaviors and works to find more appropriate behaviors to replace them with, allowing children to have access to things they want for positive communication instead of negative communication strategies.

FCT vocal output systems have several advantages over other augmentative systems. There appear to be several reasons for the effectiveness of functional communication training. The results may be a function of the consequences delivered to the children. In other words, if the

children are provided with assistance or praise, where appropriate, on consistent schedule of reinforcement, problem behavior may be reduced (Wacker et al., 1990). It has been found that others may be more likely to respond to vocal output devices over communication boards. Previous research has noted that less than two thirds of the initiations made by students with communication boards (i.e., picture books) are responded to by adults (Wacker et al., 1990). If individuals do not respond to this type of communication, the effectiveness of such an intervention approach for community settings is limited (Calculator & Dollaghan, 1982).

It was determined that micro switches would be the most effective FCT devices to implement. This decision was made because this type of assistive device required minimal skills to operate (Durand, 1999) and produced a vocal sound when activated. Micro switches are technical devices that are designed to enable persons to reach and control stimulus events through simple and feasible responses (Wacker et al., 1990). Switches can be purchased and recorded on, or made from household items. For individuals with greater interaction or communication potential, micro switches could also serve as means for choosing among various environmental stimuli (Durand, 1999). Micro switches can be used in isolation to ask for breaks or can be used together to help promote discrimination and encourage individuals to make choices. One of the most common micro switches on the market are the BIGMack®, they can be purchased for $125 dollars (Review of the *BIGmack*). Due to the high price of these switches many families cannot afford to use them in their homes, or are hesitant to send them to school where the risk of the switch getting damaged increases. As a result of this, parents have become resourceful in creating homemade buttons that are inexpensive and still highly effective.

One way to promote family engagement in early AAC intervention programs is to teach parents to become language intervention agents in their child's natural environments. Parents may function as effective therapists since they spend more time with their children and interact with them in a wider range of communication contexts than an educator or clinician (Nunes & Hanline, 2007). Along with teaching the child how to use the AAC device it is critical that parents and all supporting staff are trained appropriately. Demonstrating a consistent understanding of how and when AAC devices should be used will help reinforce the rules to the child and help reinforce greater opportunities for success. An additional consideration that made micro switches the more appealing choice for this study was the immediate audio feedback provided by the vocal output. Research has shown that although the teachers and community members did not respond instantaneously to the students' requests, the vocal output from the devices appeared to serve as a conditioned stimulus that bridged the delay (Nunes & Hanline, 2007) making students more likely to use their devices as a form of communication.

In more recent years, researchers have shown the usefulness of FCT in natural environments such as the home or school (Dunlap, Ester, Langhans, & Fox, 2006). Because of this families have been recognized as valuable resources in the design of behavioral interventions for many children with special needs (Robbins & Dunlap, 1992). Thus, it is critical that parents are included in the intervention, and training process to give their children as much practice and opportunities to generalize using the AAC device as possible. Recent data showed that mothers

who used the procedures correctly, produced reductions in the children's challenging behaviors as well as increases in their use of communicative replacement skills. In another study, researchers showed the efficacy of using a voice output communication aid (VOCA) as the communication response for functional communication training (Olive, Lang, & Davis, 2008). Research showed that FCT with VOCA successfully decreased the child's challenging behavior and increased VOCA use and the use of correct pronouns. Across these studies, the mothers implemented the intervention with high levels of fidelity. As with other behavioral strategies that emphasize an intervention role for parents, the full benefits of functional communication training are contingent on family members' ability to integrate these teaching strategies into the specific interactions and contexts where challenging behaviors occur and skill deficits are most apparent (Olive, Lang, & Davis, 2008**)**. Daily routines have also become an important focus in the assessment and intervention process with families because they represent the specific contexts in which challenging behaviors occur and interventions are to be applied (O'Donnell, Tharp, & Wilson, 1993). This is why it is imperative to have parents involved in the training process, and allow them to implement treatment into their home routines that they are most likely to continue once training has been completed.

The purpose of this study was to determine the effectiveness of implementing FCT to increase a student with autisms verbal skills and to decrease his aberrant behavior across multiple settings using in-vivo and Skype® for consultation purposes.

Methodology

Participant and Settings

At the time of the study Tyler was a six and a half year old boy diagnosed by a pediatrician with autism and speech delays. He had receptive language skills that enabled him to understand basic directions and transitions. For example, he was able to smoothly transition from classroom activities or locations by being told the next place he needed to go and by being shown a picture of the next activity. At the time of the study Tyler had a very basic level of skills. He was able to feed himself finger foods, drink out of a cup with a lid, turn pages of books, and stack blocks. Based on previous reports by his doctors, the school district, and parents he was considered "low functioning" and lacked functional language and academic skills that were considered normal for his age. He was unable to complete any grade level academic tasks and was not able to communicate his needs in an effective manner, which may have contributed to high rates of aberrant behavior.

Tyler lived in a rural part of the Pacific Northwest with his mother Susan, his father Derek, his 8-year-old sister Jill, and his 16 year old brother Josh. His primary care taker was his mother, Susan. Tyler was enrolled in a full inclusion first grade classroom five days a week at the local public elementary school. He received speech therapy and occupational therapy each day.

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This study was conducted across three settings. The first setting was a Behavioral Assessment Laboratory located in a private university in the Pacific Northwest. Sessions were run in a preschool room. The room contained four child sized tables and chairs, a sink, three closets, one teachers desk, a bean table, one row of shelves containing various toys and puzzles, and a one way mirror. The room was carpeted and a blue padded mat was placed on the floor for safety during sessions. Sessions were conducted with the first and third authors, Tyler, Susan, and on occasion Derek. All other observers remained in the observation room observing through the one-way mirror. Sessions took place at one of the tables, or on the floor, on the mat. This setting has been described elsewhere (Derby, Weber, McLaughlin, Williams, & Goris, 2002).

The second location was Tyler's home. These sessions were conducted in the dining room at the table and were conducted by Susan and Derek. The authors consulted with the parents via Skype®, using iPads. These sessions typically took place in the late afternoon or early evenings.

The third location was Tyler's school. During these sessions Susan, Tyler's special education teacher, and the para educator were present in the special education classroom. Tyler was seated at a table facing the computer and authors consulted and provided feedback via Skype®. All three environments were free of outside noises and distractions.

Materials

Sessions were conducted using a BIGmac® button, and later, three micro switches made by Tyler's father. The switches, or buttons, were made by Derek using tap to touch lights and voices boxes that were programmed to say three different messages: "help", "more", and "break please" (see Appendix A). Each button was a different color to help promote discrimination. Other miscellaneous materials included: a foam mat, a timer, video camera, data collection sheets, pencils, books, memory game cards, dragons, squishy toys, blocks, stacking games, puzzles, fruit snacks, jars, plastic bags, paper, and markers.

Dependent Variables and Measurement

The dependent variables, measured included aberrant behavior (hitting, kicking, biting, head banging, scratching), crying, and manding. Head banging was defined as any time Tyler's head made contact with the floor, tables, countertops, or another person in an aggressive manner. Manding was defined as any time Tyler used his electronic switch to communicate with others without being physically prompted. Three different colored switches were used, each switch had a different recorded message. The three switches said, "Help please," "more please," and "break please." In order for Tyler to gain access to what he was asking for he had to push the switch all the way down, making it play the recorded message. If the recording was not heard, he was prompted to "fix it" by pushing it down again. All sessions were video taped and scored later using a 6s partial interval recording system. Sessions were 5 min. in duration.

Experimental Design and Conditions

This study used a combination of a generalized single case multi-element design (Kazdin, 2010) across multiple settings. Also, the use of in-vivo visits and Skype® consultations were assessed. Skype® consultations allowed parents to take on an active role in implementing and

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generalizing treatment across settings. Sessions were run using home made switches and had three distinguished colors and messages.

Baseline. The first phase of the functional analysis was baseline. During baseline three conditions were conducted, free play, demand, and escape. During free play Tyler had continuous access to adult attention and all items in the behavioral assessment lab. He was given no demands and problem behaviors were ignored. During the demand condition, Tyler was presented with the task of stacking blocks. He was given a two-step verbal prompt (verbal direction and modeling) to complete the task (i.e. there were no programmed consequences for aberrant behavior). If aberrant behaviors occurred he was still expected to complete the task. During the escape condition, Tyler was presented with the task of stacking blocks. Tyler was given a two-step prompt (verbal direction and modeling) to complete the task. If he engaged in aberrant behavior, he was given a break for 10s before the demand was presented again.

Functional communication training (FCT) behavioral assessment lab. All FCT behavioral assessment lab sessions were conducted by the first and third author, with one of the parents present. Each condition was explained to the patents and demonstrated simultaneously. FCT behavioral assessment lab sessions were conducted across gain, escape, and help conditions.

FCT escape (break). Each session began with a 5 min. free play. Tyler was allowed to interact with any object, activity, or person of his choosing. There were no consequences for aberrant behaviors. The switch with the recording of "break please" was used. The first or third author presented Tyler with work (i.e. stacking blocks or writing his name) and the break switch. The first or third author asked Tyler if he wanted to, "work or take a break?" If he did not respond after being presented with the request two times in a row he was required to complete the task using gentle hand-over-hand guidance. After the task was completed the clinicians waited 30s then asked Tyler, "Do you want to work or take a break?" If Tyler pushed the break button, the task was removed and Tyler had access to a preferred person or activity for 30s. If Tyler engaged in any problem behavior while on his break, he was returned to complete the task.

FCT more (gain). Each session began with a 5 min free play. Tyler was allowed to interact with any object, activity, or person of his choosing. The switch with the recording "more please" was used. The first or third author, or Susan would present Tyler with a preferred object or food item. After approximately 30s, the item was removed. After removing the item the first or third author asked the question, "Would you like more? Push the button if you want more." As soon as Tyler pushed the button and the sound of the recording was heard, the first or third author presented Tyler with the desired item or more food. If aberrant behavior occurred, Tyler was ignored and the item was withheld until problem behavior decreased.

FCT help. Each session also began with a 5 min. free play. Tyler was allowed to interact with any object, activity, or person of his choosing. The switch with the recording "help please" was used. The first or third author, or Susan presented Tyler with a preferred object or food in a jar that he could not open independently. Upon giving the jar to Tyler was asked, "Do you need help? Push the button if you need help." If Tyler pushed the button the first or third author would

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partially unscrew the cap and return the jar to Tyler. If he continued to struggle with the jar, the first or third author would ask him, "Do you need more help? Push your button." If aberrant behavior occurred Tyler was ignored until the behavior decreased.

FCT delay. Each session also started with a 5 min. free play. Tyler was allowed to interact with any object, activity, or person of his choosing. The clinicians presented Tyler with a task (tracing the letters of his name). If problem behaviors occurred Tyler was required to complete the task until he remained calm for at least 5s. After the task was completed clinicians asked, "Would you like to work or take a break?" and presented him with the "break" switch. If Tyler did not respond after being prompted twice, he had to complete the work task. If Tyler pushed the button there was a 5s delay then he was released to do a desired activity for 30s before the demand was presented again.

FCT parent training. During parent training, Susan and Derek conducted all of the sessions that were conducted while the clinicians observed and provided feedback and assistance when needed. These conditions were conducted in the same manner as described in the FCT Behavioral assessment lab section.

FCT by parents + Skype® consultation. Skype® sessions were implemented in order to best serve Tyler's family. This method enabled the first and third author to provide services at a distance (Tyler's family lived 106 miles away from the behavioral assessment lab) and helped train Tyler's school staff. These sessions were conducted at home, and at school by Susan. These conditions were conducted in the same manner as described in the FCT behavioral assessment lab section. In addition, FCT Discrimination was added in the home.

FCT discrimination training via skype®. Each session began with a 5 min. free play. Tyler was allowed to interact with any object, activity, or person of his choosing. The "more" and "help" button were used. Each button was placed on the table in front of Tyler, a preferred item was placed behind each button. Tyler had to push the button to determine which item he wanted. Pushing the button resulted in Tyler being presented with the item he requested.

Interobserver Agreement

Data were collected for each 5min. interval Tyler participated in. The first and third author scored data simultaneously but independently while reviewing recorded sessions. Data were scored using a six-second partial interval system. "A" was marked when hitting, kicking, punching, biting, lunging, jumping off objects, or throwing objects was observed. "S" was used to record scratching and head banging. "-" was used to record crying. "M" was used to record when Tyler manded (pushed the button hard enough to make the recorded sound play).

The interobserver agreement (IOA) was collected for 82% of the total sessions. When taking interobserver agreement data the primary and secondary clinicians sat across from one another at a table in a private room to ensure that data were being taken independently. Each researcher had a laptop with a recording of the session. Clinicians watched the videos simultaneously, but separately, then scored for IOA. For each session data was recorded in the same manner as presented in the data collection section. Agreement was determined by

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comparing the two six-second interval sheets and circling the discrepancies then diving them by agreements. The mean agreement score was 86% with a range of 70 to 100 %.

Results

Aberrant Behavior

The top panel of Figure 1 shows the results of amount of aberrant behavior that occurred across the three settings, which was the purpose of the study. In baseline aberrant behavior occurred in 83% t of the sessions with a range of 0 to 44%. In FCT with clinicians, aberrant behavior occurred in 48% of the sessions with a range of 0 to 60%. In FCT parent training in behavioral assessment lab aberrant behaviors occurred in 25% of the sessions with a range of 0 to 20%. In FCT parent training at home using Skype® aberrant behavior occurred in 31 % of the sessions with a range of 0 to 16%.

Crying

The middle panel of Figure 1 shows the amount of crying that occurred across the three settings. In baseline crying occurred in 100% of the sessions with a range of 14 to 87%. In FCT with clinicians crying occurred in 88% of the sessions with a range of 0 to 100 %. In FCT parent training in behavioral assessment lab crying occurred in 3% of the sessions with a range of 0 to 31%. In FCT parent training at home using Skype® crying occurred in 15% of the sessions with a range of 0 to 4%.

Manding

The bottom panel in Figure 1 shows the amount of manding that occurred across the four settings. In baseline manding occurred in zero percent of the sessions. In FCT with clinicians manding occurred in 68% of the sessions with a range of 0 to 22%. In FCT parent training in behavioral assessment lab manding occurred in 9 % of the sessions with a range of 0 to 27%. In FCT parent training at home using Skype® manding occurred in 92% of the sessions with a range of 0 to 32 %.

Discussion

Overall there were several strengths in the study. The first being that the data showed increased manding, and decreased levels of aberrant behaviors, and decreased amounts of crying across the three settings. Another strength of the study was the continuous use of Skype®. It allowed the authors to train the parents and consult with them frequently. Because of this frequent ability to communicate and consult parents were able to independently implement generalization of the micro switches in the home and school.

The parents were very involved in the treatment process and were eager to find ways to help their child become successful with communicating. They also wanted to reach out and help other families who also have children struggling with communication delays. One way they did this was creating home made switches for about $7.00 (see Appendix A). These switches were easy to make, affordable, and can be tailored for a variety of individuals and locations (small/portable switches, along with bigger switches can be made using the instructions

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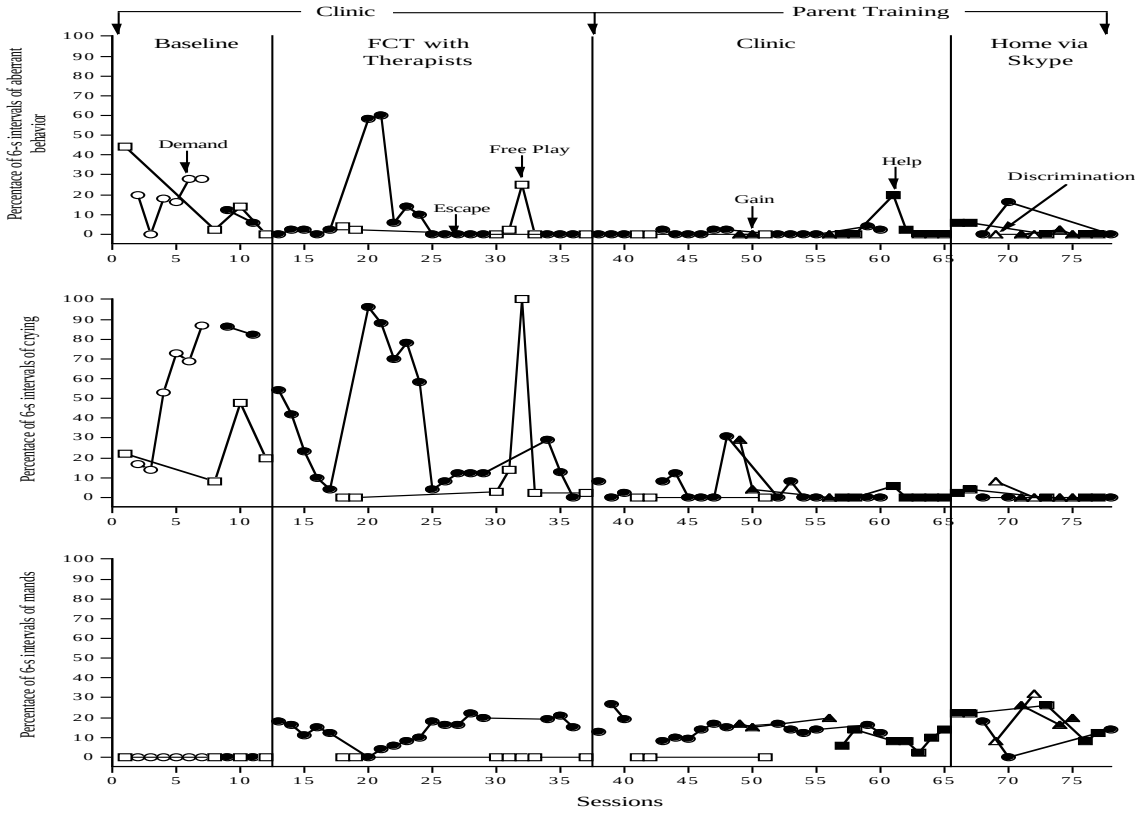
provided).

This study did not include a reversal because of the severity of the participant's behaviors. His parents were referred to the behavioral clinic as a last resort, because of this it was more important to maintain the reduction in behaviors then risk elevating behaviors again. Maintaining less severe behaviors enabled the participant and his family members to remain safe.

Through the course of the study the percent of crying decreased. Crying was never an intervention target behavior. As the manding increased, aberrant behavior decreased. This means the participant had more opportunities to cry, but as he became more successful using FCT, he became a happier child.

Future research on implementing more buttons to allow the participant to ask for a wider range of things would be beneficial. Another beneficial procedure would be running more complex discrimination conditions where the participant would be offered multiple choices at once and he would have to select the desired item using the corresponding switch. This would allow him to continue expanding his skills, and expressive vocabulary in appropriate manner. Once the participant becomes proficient with micro switches transferring his skills to an iPad, or other easily portable communication device could be beneficial to further expand communicative abilities and opportunities.

Figure 1. Percent of abberent behavior, crying, and manding.



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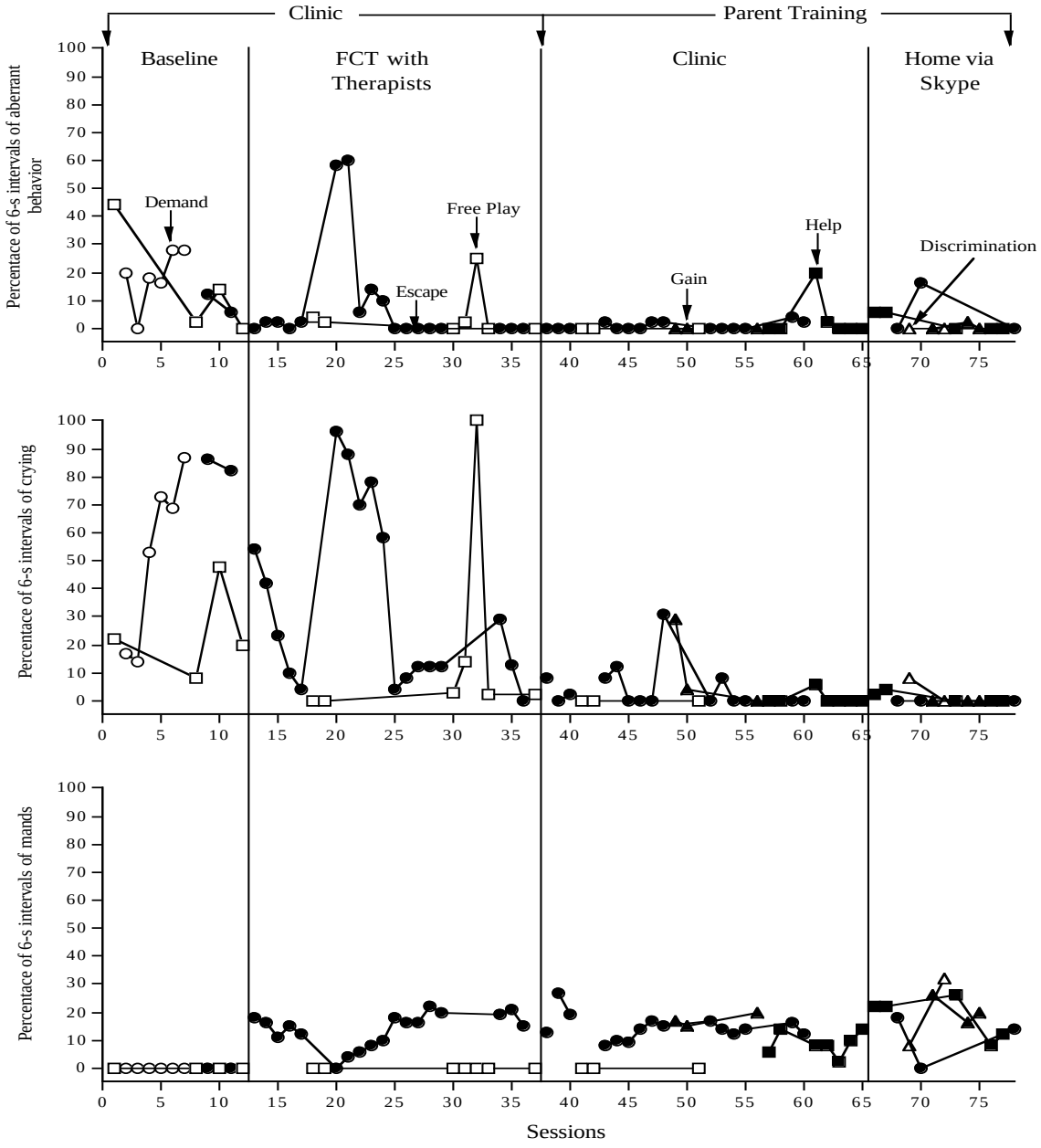
Glendale, AZ. Requests for reprints should be addressed to Leah Brushwein, Department of Special Education, Gonzaga University, Spokane, WA 99258-0025.

Figure 1. Percent of abberent behavior, crying, and manding.



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Appendix A. How to create “E Mac” buttons

Authors Note

I have a disabled child that needed what are called BigMack® Buttons. They play back recorded voices. Usually therapists use them to teach people with speech and cognitive disorders how to communicate without saying anything. The individual just pushes a button with a pre-recorded saying. For example; "Help Me" or "More Please".

These buttons are very expensive. In order to expand my child’s button vocabulary, I would need several buttons with common sayings.

I found using inexpensive items I could make my own.

This is My E Mac Button. I picked that name in honor of my son.

My Instructions should be detailed enough for someone who has the tools and skill using them to make one for less than $7 each.

Step 1: Parts

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- One package of small tap lights (they can be found at the Dollar Store for $1.00).
- 10s sound voice recordable module for greeting cards (these can be found on EBay for $3).
- LED light, microphone, speaker and the electronic board that connects it all together.
- Test all parts before beginning to ensure they are functioning properly.

Step 2: Tools

- Electric Drill and 3/8 inch bore
- Dremmel or some kind of rotary tool and drill bits, sanding drum, cutting disc
- Small screwdriver set with flat head and Philips bits
- Sharp hobby knife or utility knife
- Scissors
- 1/4 inch drill bit to pilot holes
- Dikes or wire cutter
- Hot glue gun and two sticks should be more than enough
- Acetone to help remove the sticky foam from the bottom
- 3 small screws (for feet)

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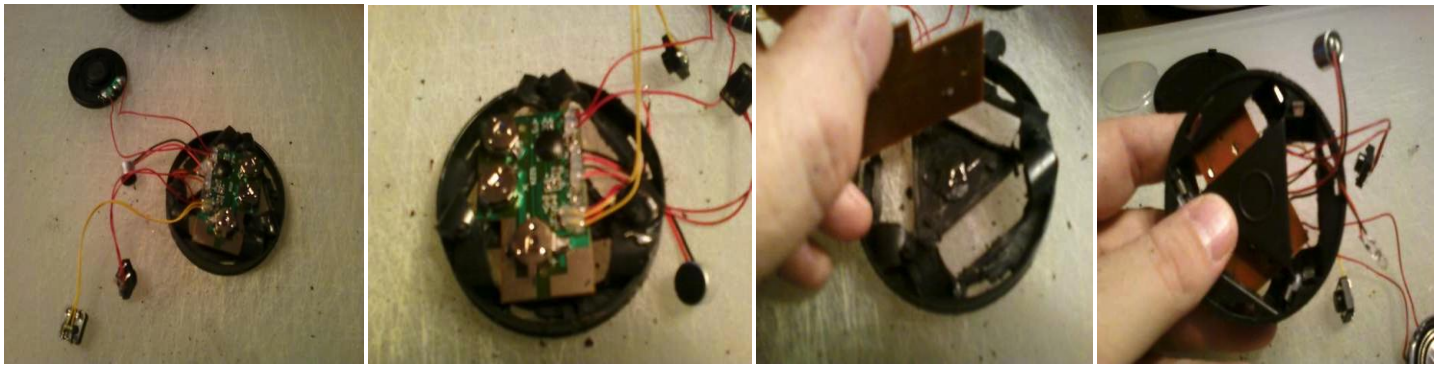
Step 3: Open tap light

- Take the bottom off of the tap light.
- This will expose the battery compartment. Using a thin knife slide between the edge of the outer shell and the battery compartment.
    - Slide it all the way around this should loosen / break the glue that holds them together.
- Pull them apart and set the outer shell, clear button dome and shinny silver thing that sits on top of the LED Lights to the side.
- Take the flat head screwdriver and pry off the circuit board with the LED lights.

Step 4: Construction

- Use the cutting disc and rotary tool, or Dremmel to cut out the battery compartments.
    - This can be done by cutting about a 1/8 of an inch from each end of the battery compartments.
- Then cut along the long sides of the battery compartments.
- Switch to the sanding drum to clean up the edges.
    - It doesn't show it here but cut the triangular piece out all together. It got in the way of the button, microphone and LED light.

Step 5: Fitting the cutting board



- Test fit the circuit board in the new space you cut out off the battery compartments.
    - The corners of the board should rest on a flat spots, which should give plenty of area to hot glue, it in place.
- Route the wires with the record switch, microphone and LED though one of the holes you made when cutting out the battery compartments.
- The playback switch shown here with the yellow wires and speaker should remain out on top for later.
- Once the circuit board and all the wires are assembled take the hot glue gun and glue each corner of the circuit board to the topside of the battery compartment.

Step 6: Naming the button

- Trace the clear button dome that was set aside earlier.
- Cut out the circle.
    - Cut inside the line a little bit, the circle should lay flat inside the clear dome.
    - Take a marker to write the action, saying, or instruction that will be recorded
        - Leave it blank if the recording will be changed frequently.

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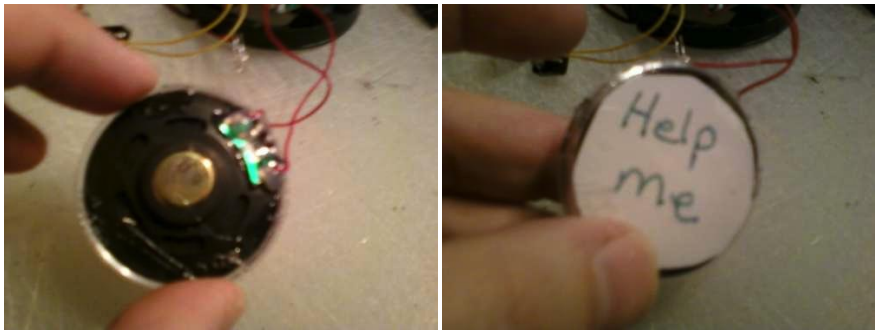
Step 7: Speaker placement



- The speaker should fit nicely inside the button dome.
- Make sure the face of the speaker is inside the dome.
- Put a couple of dabs if hot glue along the seam where the dome and the speaker meet.
    - This will help keep it in place inside the button dome.

Step 8: Modifying the button spring

- Take the shiny thing and cut off the cone shape with the hole where the LEDs fit through.
- Make it as flush as possible.
- The sanding drum can be used to remove the rough edges.

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Step 9: Base plate



- Most of the time the base plate comes with that sticky foam tape, peel off the paper then scratch up the foam tape with a flat head screwdriver.
- Use acetone to loosen and remove the sticky tape.
- Once it's clean, make two holes with the drill using the 3/8 bore
    - Place the holes on opposite sides.
        - Try to place them inside, but close to the line and the teeth that lock the base plate to the battery compartment.
- Make another hole (next to one of the 3/8 inch holes) approximately 1/8 or smaller using the small dremmel drill bit.
    - Start small and work up to the size of the LED light.
- Pre-drill the holes for the feet, make them as triangular as possible while keeping them in side the line.

Step 10: The microphone

- Insert the microphone in the 3/8 inch hole that is near the hole for the LED light.
- Hot glue the microphone on the backside (or inside) of base plate.
    - Do the same for the switch and LED light.
- Let cool then try fitting the base cover.
    - Some cuts or sanding may need to be to made in order to make it fit and lock.

Step 11: Putting it all together

- Make sure the tab is removed from the battery to activate the playback button
- Take the main core of the button with the circuit board, speaker, buttons, and glue the remaining button (play back button) to the center of the circuit board. Wait until it cools.
- Place the shiny silver thing over where the play back button was glued.
    - Try to line up the corners with those little tabs to hold it in place.
- Set the speaker / button dome over the shiny silver thing.
- While holding it all together put the outer shell over the entire assembly.
    - It should come together and still allow the push button to operate.
        - If it doesn't trim off the tabs then try the fit again.
- Hold down the "record" button on the bottom plate while speaking into the microphone.
- Release the Record button when done recording.

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    - The LED light should stay on while recording but flash once when playing it back.
- To play back the recording press the dome button. It should playback.
- If there was no light when recording or playing back and there is no sound, make sure the plastic tab sticking out from one of the batteries on the circuit board.
    - Sometimes the battery needs to be pressed hard to bend it back so to create a good connection.
- Put a dab of hot glue in 3-4 spots around the outside seam where the outer shell and the main base meet.
    - No need to glue the base plate to the unit because it should still slip in to the slots and a slight turn clock wise will lock it in place.

Please follow the following instructions:

- Complete the manuscript in Times New Roman.
- Title (font size 16), Name (s), Headings and sub headings in **Bold,** font size 14.
- Double spaced between the paragraphs.
- Text font size 12 and single spaced.
- All tables and figures (font size 10) should be drawn carefully; size enlargement and reduction should be functional.
- References and appendix font size 11.