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Incorporating Augmentative and Alternative Communication Usage In Functional Therapy For Autism Spectrum Disorder: A Case Study

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The University of Southern Mississippi

INCORPORATING AUGMENTATIVE AND ALTERNATIVE COMMUNICATION
USAGE IN FUNCTIONAL THERAPY FOR AUTISM SPECTRUM DISORDER: A
CASE STUDY

by

Virginia Pampuro

A Thesis
Submitted to the Honors College of
The University of Southern Mississippi
in Partial Fulfillment
of the Requirements for the Degree of
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Abstract

Current research discusses the communicative limitations of individuals with Autism Spectrum Disorder (ASD). This study examined the influence of communicative devices on improving an individual with ASD's functional communicative abilities. This study incorporated a qualitative research methodology, which included a modified ethnographic interview and several hours of clinical observation. This data was then cyclically reviewed for patterns. By incorporating various Augmentative and Alternative Communication (AAC) devices into therapy and daily life, the participant was able to produce longer utterances and clarify his communicative intent and messages. This research adds to the literature by describing the importance of AAC systems in enhancing the functional communication of individuals with ASD.

Keywords: Autism Spectrum Disorder, expressive and receptive communication, functional communication, Augmentative and Alternative Communication

Statement of the Problem

A common impairment in individuals with Autism Spectrum Disorder (ASD) is difficulty with both expressive and receptive communication. These deficits range in severity but can strongly inhibit the functional communication of individuals with ASD. With prevalence rates of ASD now being 1 in 88 children (Centers for Disease Control and Prevention, 2012), there is a crucial need to discover ways to enhance the communication skills of these individuals. Recent studies of augmentative and alternative communication (AAC) have evidenced that usage of these systems can significantly minimize communication deficits. While more research is needed to establish a criterion for using AAC as a means of ASD intervention, there is no denying that the incorporation of AAC devices will improve the functional communication of individuals with ASD. And so, the research adds to the literature by assessing the usage of AAC in ASD intervention as a means of improving functional communication.

Dedication

Ms. Kathy Jones-Pampuro and Ms. Megan Wilkinson

Thank you for your unwavering support and friendship.

You both have challenged me to become who I am today. Your strength and wisdom
inspire me to constantly seek the best within me.

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List of Abbreviations

AAC	Augmentative and Alternative Communication
ASD	Autism Spectrum Disorder
ASHA	American Speech-Language-Hearing Association
CCN	Complex Communication Needs
CPU	Central Processing Unit
DSM-5	Diagnostic and Statistical Manual of Mental Disorders 5 th Edition
PECS	Picture Exchange Communication System
VOCAs	Voice Output Communication Aids

Literature Review

Autism Spectrum Disorders

Recently classified as one disorder in the *Diagnostic and Statistical Manual of Mental Disorders 5th Edition (DSM-5)* (American Psychiatric Association, 2013), Autism Spectrum Disorder (ASD) is growing to be one of the most prevalent disorders in children today. Individuals with ASD will suffer from a range of cognitive and social impairments that will strongly limit their communication abilities. For instance, about a quarter of the individuals with ASD are nonverbal (American Psychiatric Association, 2013). Individuals with ASD experience a range of symptoms including impairments in social skills, deficits in both verbal and nonverbal communication skills, and participation in unusual patterns of behavior (Mirenda, 2009). In regards to communication impairments, some of the diagnostic criteria for ASD include the following: deficits in using communication for social purposes, inability to contextualize language from others, difficulties understanding and conversing with others, and a presence of functional limitation in communication (Autism Speaks, 2013). Subsequently, ASD inhibits purposeful interactions and prevents the individual from conveying needs and ideas.

To assist in the communication efforts of individuals with Autism Spectrum Disorder, researchers and clinicians incorporate various communication systems into the therapy sessions and daily life of the client. More specifically, in the past couple of decades, researchers have been focusing on augmentative and alternative communication (AAC) to enhance communication for individuals with ASD. Although their symptoms and severity vary, many individuals with ASD have made significant improvements in communication through the usage of AAC.

AAC is a relatively recent practice that either supplements or replaces natural speech with systems or devices that mitigate deficits of individuals with communication disorders (Light, Roberts, Dimarco, & Greiner, 1998; Lloyd, Fuller, & Arvidson, 1997). By enhancing their receptive and expressive communication with AAC, people with ASD can improve their functional communication, which allows for more successful and meaningful daily interactions. In the current society where mobile phones, personal computers, and the Internet are central to daily life, the opportunity to connect people with complex communication needs (CCN) to this global world is crucial to their development and efficiency in life (Shane et al, 2012).

While the efficacy of AAC is not yet determined, many researchers agree that these devices and assistive technologies enhance communication of individuals with ASD. The American Speech-Language-Hearing Association's (ASHA) position statement on the usage of AAC by individuals with ASD states that, "Communication is the essence of human life and that all people have the right to communicate to the fullest extent possible" (ASHA, 2005). Subsequently, while a certain criterion for assessing AAC and ASD has not been established yet, ASHA supports the usage of AAC due to its capabilities of enhancing communication and daily life. There is a range of devices classified as AAC, but the current study will focus mostly on low technology systems and high technology systems. While further research is needed to establish an assessment criterion for which AAC device is most applicable to an individual with ASD, recent studies affirm the ability of various AAC devices to compensate for the communication deficits suffered by individuals with ASD.

General Characteristics of AAC

AAC interventions encompass a wide range of devices that aim to enhance communication both in producing speech and understanding speech (Mirenda, 2001). In general AAC can be divided into two categories: aided and unaided. Aided communication includes an external device, whether it is a simple alphabet board or a complex computer (Lloyd et al., 1997). Unaided communication requires no external device and is produced by the individual alone through behaviors such as pointing or gesturing (Lloyd et al., 1997). Prior to the 1980s and 1990s, the usage of AAC dealt mainly with aided, low technology systems through symbols, manual signs, and photographs (Mirenda, 2001). However, towards the end of the century, a transition began towards computers and synthesized speech systems, which are classified as aided, high technology systems (Ogletree & Harn, 2001).

With the emergence and continuous developments of technology, clinical practices today incorporate complex devices into therapy to enhance learning and communication. For instance, voice output communication aids (VOCAs) are portable devices that are computerized to produce synthetic or digitized speech (Mirenda, 2001). However, more complex systems exist that offer more variability as it relates to communicating wants and needs. These types of systems include Android tablets, Apple iPads, Apple iPods, and computers. These devices not only allow individuals to enhance valuable skills in academics and communication, but they also give individuals with communication deficits the opportunity to establish meaningful interactions and connectedness (Kagohara et al., 2013). The advent of these devices allows individuals

with severe communication impairments to join the digital revolution (Shane et al., 2012).

Although these technologies offer a lot of promise to individuals with communication deficits, they still come with their share of obstacles. Some barriers to the success of these devices include an inability of the user to troubleshoot or manage the device, the difficulties encountered by older generations in understanding the function of the device, the high cost in paying for the technology, and the lawmaker's lack of awareness in the potential benefits of these devices for the entire population (Shane et al., 2012). Although efforts to make these devices more accessible to the general public are still in progress, current users of these devices have experienced great success.

Low Technology

Low technology systems are devices that lack an integrated circuit (Wasson, Arvidson, & Lloyd, 1997). These devices can be electronic such as a VersaScan™ or nonelectronic such as a communication necklace that simply hangs from a person's neck to communicate various points through symbols (Wasson et al., 1997). Another popular example of low technology is the Picture Exchange Communication System (PECS; Shane et al., 2012). The main aspects of a low technology device are symbols and displays. There are a wide variety of symbol options, which makes it nearly impossible for one device to meet all possible communication needs (Wasson et al., 1997). In addition, there is a plethora of ways to organize these symbols, and the user and caregivers should contribute their input so that the best system can be developed for the user (Wasson et al., 1997).

While low technology systems are convenient and portable, they limit the user's vocabulary and prevent the user from conveying abstract thoughts (Wasson et al., 1997). Although it offers some limitations, low technology devices are a great starter system for an AAC user and can be created or bought at a minimal cost (Wasson et al., 1997). Furthermore, the user can continue to use his/her low technology device as more complex technologies are introduced, such as high technology systems.

High Technology

With technology continuously advancing, high technology systems exist that offer significantly more opportunities for development in individuals with ASD. The development of the computer is a very intricate process and will only be discussed as it relates to AAC. Subsequently, the central processing unit (CPU), input, and output systems of the computer are the components of the computer that most directly affect AAC (Quist & Lloyd, 1997).

In general, the CPU is the master processing area of information that receives information from an input device, such as a computer, and then processes it for output, which is typically through a monitor or recording (Quist & Lloyd, 1997). VOCAs, as mentioned earlier, are an example of a high system device that uses recordings as a method of output. One of the most popular forms of speech output is text-to-speech synthesis where an individual presses buttons to formulate words and the hardware of the device then converts the text to an audio recording of the words typed (Quist & Lloyd, 1997). Examples of this software can be seen in a plethora of high technology devices such as Apple iPads, Apple iPhones, Android tablets, and computers. Furthermore, the applications in these devices provide the user an opportunity to improve their academic,

communication, leisure, employment, and transitioning skills (Kagohara et al., 2013). These applications are easily affordable and user-friendly, which allows a variety of individuals with various skills to access and utilize them (Shane et al., 2012). Another benefit of these portable devices is that they are socially acceptable. These devices are common in almost every individual's life and would thereby not stand out if used in social settings.

Although a lot of studies illustrate success in implementing high technology devices, there are certain drawbacks to using such complicated devices. For instance, the prices of certain devices are extremely high and unattainable for some socioeconomic classes. However, in the world today, technology is continuously advancing and, as a result, the price and availability of some devices are becoming more easily accessible for users as new and more developed products are released (Quist & Lloyd, 1997). Another concern with complex devices like Apple iPads is that some individuals with low functioning ASD may be unable to navigate to a particular application or requested screen (Kagohara et al, 2013). Although some digital technology systems may be too complicated for certain users, these devices offer a plethora of opportunities for development and education in individuals with communication deficits.

Social Constructivism as a Theoretical Foundation for AAC

After describing AAC and its components, it is essential to note a theoretical foundation that supports the usage of AAC in ASD intervention. It is imperative that instructional practice is based on theory (Duffy & Jonassen, 2013). In general, constructivism deals with how people gather knowledge from their experiences, mental structures, beliefs, and how this knowledge is used to interpret objects and events.

Social constructivism, one of the latest perspectives of constructivism, focuses on the belief that the construction of knowledge is a shared experience as opposed to an individual one (Prawat & Floden, 1994). The majority of social constructivists believe hands-on, project-based approaches are the most successful in establishing knowledge (Prawat & Floden, 1994). The social constructivist theory holds that the learner constructs his or her own knowledge from situations (Pountney, Parr, & Whittaker, 2002). Fosnot (1996) defines the social constructivist perspective of learning:

Learning from this perspective is viewed as a self-regulatory process of struggling with the conflict between existing personal models of the world and discrepant new insights, constructing new representations and models of reality as human meaning-making venture with culturally developed tools and symbols, and further negotiating such meaning through co-operative social activity, discourse, and debate. (p. ix) Social constructivism places a greater responsibility on the learner to construct knowledge based on the experiences and social contexts of their lives. The sharing of these experiences further enhances the opportunities of learning. Especially with the growing dominance of technology, a global society exists that provides online communities, which allow learners to collaborate like never before (Pountney et al., 2002). The Internet alone provides a plethora of ways for learners to explore and develop their knowledge (Pountney et al., 2002). Using digital, hands-on technology in a social-cultural context will provide further opportunities for the user to enhance their learning through social means and collaborative work (Tanner, Dixon, & Verenikina, 2010).

Social constructivism relates to AAC usage in ASD intervention because of the purposeful exchanges AAC creates for the user. AAC devices connect the user to the world around them through speech-generating devices and visual symbols that allow the user to communicate needs and ideas (Pountney et al., 2002). With these devices, individuals with ASD have endless opportunities to communicate regardless of their verbal abilities. In connecting with their families, peers, and educators through these devices, individuals with ASD are better equipped to develop the constructs of their world. Using AAC devices enables the user to form more meaningful relationships through enhancing their communication skills.

Proposed Study

Because of the increasing prevalence of ASD, this study analyzed the potential benefits of AAC in ASD therapy as it relates to the study's participant. The participant of this study is a young adult with ASD who has limited verbal expression and primarily communicates through various nonverbal means. Through observation and interviewing, the researcher investigated the role these devices serve in improving the functional communication of the participant. The researcher analyzed videotapes of the client's therapy sessions and interviewed the participant's parent to better understand how the client communicates and the role that various devices play in his interaction with others.

Methodology

The Research Questions

The goal of this case study is to describe how an individual with ASD uses AAC systems to communicate. To accomplish this goal, the researcher video recorded the participant's intervention sessions and conducted a modified ethnographic interview with the participant's guardian regarding how the participant utilizes AAC and its effectiveness. Video recordings and the interview were transcribed and then analyzed. In this study, the researcher hopes to ascertain the role each of the AAC systems play in improving the participant's function communication.

The Qualitative Research Paradigm

A qualitative research paradigm was chosen for this study because qualitative research is well suited for description of complex social phenomenon such as the topic of interest (communication via AAC; Simmons-Mackie & Damico, 2003). Use of this paradigm enabled the researcher to obtain descriptive data on the participant's usage of AAC. The inquiry was accomplished through an ethnographic method of inquiry, via collection of video recording data and modified ethnographic interviewing. Rather than seeing how often or how much the participant uses the devices, this study is more directed towards understanding the process of using AAC and how incorporating these devices effects the participant's communicant skills. Qualitative studies allow a researcher to observe in a natural setting, which aids in the overall goal of understanding behavior in social settings (Simmons-Mackie & Damico, 2003). In studying the role of AAC in the participant's interaction with others during intervention sessions, the

qualitative data acquired provides insight into how AAC may be used and the potential benefits these devices play in a social context for learning language.

Participant

For this case study, a young adult male diagnosed with ASD who uses more than one AAC device was studied. This participant was selected from a university clinic in the southeastern United States. For the purposes of this study, the participant was given the pseudonym “Jack.”

Data Collection Procedures

The main source of data for this study was video recordings of the participant’s intervention sessions. The participant and clinician participated in intervention sessions as usual, incorporating the usage of AAC devices as appropriate. The data included about six hours of intervention sessions.

The researcher additionally conducted a modified ethnographic interview with the participant’s guardian. The purpose of this interview was to obtain information regarding the participant’s communicative strengths and weaknesses as well as to discuss the role AAC plays in his life. The researcher followed Spradley’s (1979) method for conducting modified ethnographic interviews. Rather than focusing on predetermined questions, the researcher conducted the interview by using four types of questioning strategies. The first strategy, descriptive questions, focused on more *grand tour questions* to allow the interviewee to share information about a broad experience (Westby, Burda, & Mehta, 2003). For instance, one question was “Can you tell me the role technology plays in Jack’s daily life?” Another was “Describe Jack’s communication skills based on AAC.” The second strategy was *mini tour questions* that are descriptive but with a more

narrowed focus (Westby & et al., 2003). An example of this type of question is “Tell me how Jack uses his alphabet board in a typical day.” Subsequently, once the interviewee began to share broad topics, the interviewer then asked *example questions* and *experience questions* to elaborate on areas that need more attention or explaining (Westby & et al., 2003). For instance, when the informant talked about the participant’s frustration, the researcher might say, “Give me an example of a time that Jack was frustrated.” By using descriptive questions to lead into more specific questions, the interview allowed for open discussion and sharing of information.

In accordance with University of Southern Mississippi Institutional Review Board, all data was locked in a filing cabinet in the supervisor’s office until the data was entered in to the researcher’s computer. All information has been kept confidential regardless of format. Computer passwords prevent access to those not involved with the study.

Data Analysis Procedures

Following the collection of data, the researcher analyzed the data for patterns relating to the usage of AAC devices. The researcher cyclically reviewed the transcripts and eventually coded them and determined salient findings (Morse, J.M. & Richards, L.R., 2002). The primary data for this study were the transcriptions of the hours of observation. The secondary source of data is the modified ethnographic interview. The purpose of this interview was to help contextualize and validate the findings in the primary data. These findings are detailed in the Results section.

The process of data analysis began with the researcher reading through all data several times. This stage of data analysis allowed the researcher to gain a general

knowledge of the data (Creswell, 1998). During this stage, general notes were made in the margins of the transcriptions. In this stage, the researcher noted the different ways the participant communicated, the complexity of the message, and how successful or unsuccessful the participant was in being understood. This stage of data analysis allowed the researcher to understand the data and detect salient topics. After several reviews of the data, the researcher categorized the data into themes and patterns. After quantifying the themes and patterns, the findings were lastly compared to the themes and patterns found in the modified ethnographic interviews. All findings are outlined and quantified in the results section.

Results

In order to determine the role AAC plays in the functional communication of an individual with ASD, the investigation focused on the particular usage of each AAC device. As discussed above, the transcribed observations were the primary data in this study and basis for analysis. This data was cyclically reviewed, coded, and quantified to illustrate how the participant used various forms of AAC to communicate, when each form was used, and the purpose of each device in functional communication. The modified ethnographic interview was also analyzed in order to determine the purpose of AAC in the participant's home life and the function AAC plays in general for the participant.

This interview also allowed for a triangulation of data to verify primary findings. First, general parameters of the transcriptions provided an overview of the observations and the amount of communicative attempts. Then, the themes and patterns found were identified and quantified to reveal subsequent findings. Finally, the conclusions from the modified ethnographic interview were compared and contrasted to the findings of the primary data.

The amount of data observed was six hours. These hours of observation were then transcribed and yielded 1,016 lines of actual text between the participant and his clinician. The transcription of the hours observed are found in Appendix A. In general, the client communicated using head gestures, vocalizations, handwriting, pointing on an alphabet board, and typing on an iPad. In order to determine the role of each form of communication, each communicative form was quantified. Table 1.1 illustrates the

frequency of each communicative attempt. These findings reveal the variety of communicative attempts made by the participant.

Table 1 Frequencies of Communicative Attempts

	Head gesture	Vocalization	Written	Alphabet Board	iPad	Total
Frequency	66	67	11	165	92	335

The data was then systematically reviewed to unveil salient findings related to the participant’s functional communication. In general, structural and functional patterns were observed. The participant used the alphabet board to communicate simple responses. These responses ranged from one to four words. Additionally, the client used the iPad to communicate messages with a similar word count. The key difference noted while cyclically reviewing the data is the participant communicated sentences or questions only on the iPad. The alphabet board was only used for a couple words at a time but not a full sentence. Below are examples of the abovementioned findings.

Example 1 (Appendix A):

- 293. Clinician: Good, so what’s the last step in making our sandwich?
- 294. Jack: (pointing) B-R-E-A-D
- 295. Clinician: What do we do with the bread?
- 296. Jack: (pointing) M-A-K-E-S-A-N-D-W-I-C-H

This example illustrates how the participant uses an alphabet board for short responses. While line 615 is a longer response on an alphabet board, the clinician understood the message.

Example 2 (Appendix A):

907. Clinician: Good job! One more. The phone is ringing. How do we make that a question?
908. Jack: (typing) IS THE PHONE RINGING?
909. Clinician: Good job! I like how you added a question mark at the end of that one.

Example 3 (Appendix A):

785. Clinician: Alright, tell me what we need.
786. Jack: (typing) I WANT BEANS
787. Clinician: Do we want beans or do we need beans?
788. Jack: (claps once) x
789. Clinician: You have to tell me.
790. Jack: (typing) I NEED BEANS

Example 2 and 3, though elicited responses, illustrate the ease of which a message is understood on an iPad. When using the iPad, the participant types the response with proper spacing and punctuation. Then, the message is read aloud by the system. This format allows the client to get a larger message across to the listener. The iPad also allows the listener to listen without having to watch the client. For any type of response on an alphabet board, more particularly longer responses, the listener should intently watch the participant point on the board. The difficulty of this AAC device is shown in the example below.

Example 4 (Appendix A):

996. Clinician: What do you carry to stay dry?
997. Jack: (pointing) O
998. Clinician: Tell me again. I missed it.
999. Jack: (pointing) O-U-T-S-I-D-E
1000. Clinician: Well, you would need an umbrella, right?
1001. Jack: (pointing) U-M-B-R-E-L-L-A

This example illustrates the difficulty of certain messages being understood on an alphabet board. Especially for those unfamiliar with AAC, an alphabet board may be hard to follow. While the iPad was advantageous when communicating longer messages, it was faulty at times in therapy as seen in the example below.

Example 5 (Appendix B):

477. Clinician: Yeah, that's a dime. How much is a dime?
478. Jack: (types) x
479. Clinician: It didn't speak. Type it again. How much is a dime?
480. Jack: (types) 10

In general, the structural patterns revealed the frequency of each form of communication as well as the length of each utterance in its corresponding format (word, phrase, sentence or question). These findings also revealed the importance of head gestures in signifying a quick response: a nod for “yes” and head shake for “no.” However, it is important to note that sometimes the participant would shake his head to demonstrate confusion. Also, his vocalizations were oftentimes not understood. The clinician understood only 3 of 67 vocalizations of the participant. Since verbal communication is ineffective for the participant, AAC is crucial to functional communication.

The functional findings of the transcriptions reveal one major theme: AAC allows the participant to clarify. Since the participant is low-functioning and unable to vocalize intelligible speech, the participant relied on the alphabet board and iPad to communicate as seen in the previous examples. While AAC allows for functional communication, the participant also used AAC to clarify a previously shared message. Below Table 2 signifies the amount of times the client clarified himself using various AAC devices.

Table 2 Frequency of Clarification

	Frequency
Clarified from voiced to written	1
Clarified from written to alphabet board	1
Clarified from voiced to alphabet board	13
Clarified from voiced to iPad	11

For the majority of clarifications, the participant would first try to verbalize his message. Once it was not understood, the client then used AAC to clarify. Below are examples of the participant using an alphabet board to clarify a message.

Example 6 (Appendix A):

- 733. Clinician: How many days are there in May?
- 734. Jack: (writes) 3-0
- 735. Clinician: In May?
- 736. Jack: x
- 737. Clinician: Tell me how many days.
- 738. Jack: x
- 739. Clinician: On your card.
- 740. Jack: (pointing) 3-1

741. Clinician: Right. There are 21. What day is Mother's Day?

Example 7 (Appendix A):

763. Jack: (pointing) S-U-P-E-R

764. Clinician: SUPER WHAT?

765. Jack: x x

766. Clinician: Tell me again. I missed it.

767. Jack: (pointing) S-U-P-E-R-M-A-R-K-E-T

768. Clinician: Oh, you're going to the supermarket. What are you going to get?

These examples illustrate the simplicity of an alphabet board in clarifying a message. Additionally, the participant also clarified messages using the iPad. The below examples as well as Examples 3 and 5 illustrate the role AAC plays in clarifying a message and allowing the participant another outlet for communicating a message.

Example 8 (Appendix A):

489. Clinician: Well you've got 25, how much is this other coin worth?

490. Jack: x

491. Clinician: How much is a dime worth?

492. Jack: (types) 10

Example 9 (Appendix A):

659. Clinician: Wednesday. What is today?

660. Jack: x x x

661. Clinician: Jack, what is today?

662. Jack: (types) THURSDAY

Thus, the primary data revealed the value of AAC in functional communication. Once this data was analyzed, it was then compared to the findings of the modified ethnographic interview with the participant's guardian (Appendix B). During this interview, the guardian explained the role of AAC in the participant's life. The participant has tried several AAC systems before, and the guardian had both positive and

negatives to say about the various systems. Example 10 reveals a downfall of more complex AAC systems.

Example 10 (Appendix B):

10 - 13 Guardian: He would play with this, but he would get flustered because it's not moving fast enough. Or, making him do it structured like we are now with the 5 sentences. You could push him to a point with all the instructors. If got tired, he would stop.

In contrast, the guardian further shared in line 17, "But he enjoys this system. He knows so much." The guardian discussed how the participant enjoys using AAC especially the iPad. He also stated, "He sleeps with a machine in this bed. He won't let me get rid of them. I put one in the garage, and he went out and got it" (lines 57 – 58). Thus, the participant is attached to the devices and enjoys using them. However, the participant becomes frustrated when the system moves too slowly (line 39) and when they break frequently (line 33). Example 11 illustrates another concern with the iPad.

Example 11 (Appendix B):

76 – 80 Guardian: He used to get mad or throw the devices if we pushed too hard. We'd stop because I didn't want any aggression. We used to do machines hour after hour trying to make them work. I would constantly replace them trying to encourage him. With the iPad, he uses them in therapy. iPad and iPhone are rewards. If not, he goes to traffic and stems on traffic.

In addition to the iPad having its disadvantages, the guardian also explained a negative effect of the alphabet board. This example is shown below.

Example 12 (Appendix B):

193 – 194 Guardian: Um, he’s moving too fast for a lot of folks, and they can’t keep up. If you don’t follow him and he has to do it more than twice, he gets flustered.

The guardian further discussed how the participant uses AAC to communicate desires.

Below are examples of the participant showing intent by using AAC.

Example 13 (Appendix B):

91 – 94 Guardian: Sometimes it’s a Saturday, and I’ll say, “It’s me and you today. What do you want to do today?” All my helpers were busy so it was me and him. He spelt, “Jack and Dad” and I said, “Yeah, man, me and you.” Then he spelt “rest.” He wanted to rest. No speech; he types it.

Example 14 (Appendix B):

182 – 184 Guardian: They say he communicates and spells things out at work. He will spell “music” and “1 dollar” because they play music at work, and he will go pick a song.

Additionally, the guardian shared the difficulty of balancing play and therapy on the iPad. This struggle is shown in Example 15. The guardian recognized the value of AAC but also expressed concerns with the function of the devices outside of communicative purposes.

Example 15 (Appendix B):

108 – 111 Guardian: I didn’t want to get to where he didn’t like the iPad or iPhone. I was gunna put it on the Cool Speak or Speak-To-Me, but he takes it off. I’ll put speech apps on there, and he deletes them. I tried seeing if there was a way to block it. Every one of these he understands. His receptive language is great.

Although the guardian discussed some complications with the devices, he also shared the benefits of AAC. The following examples reveal the communicative purpose of AAC.

Example 16 (Appendix B):

130-133 Guardian: He knows how to make these things speak. He can type on them. I use highways and roads to encourage him to use them. He can spell on here, and he will speak on them. He can do a bunch of words on these if he wants. I'll ask him how to get somewhere, and he uses the device to tell me.

Example 17 (Appendix B):

197 – 199 Guardian: Last Sunday we went to Perkin's. We got there, and he wanted eggs. Lady asked him if he wanted grits or hashbrowns, and he spelt "both." She asked bacon or sausage, and he spelled "sausage." That was awesome!

The interview with the guardian reinforced some of the findings from the primary data such as revealing the value AAC brings to enhancing functional communication. The guardian also revealed downfalls of these devices such as the devices breaking frequently, moving too slow for the participant, or the participant moving too fast for people around him to understand his message. Additionally, the iPad is also used for leisure, which results in the client not wanting to always use AAC for communicative purposes.

Conclusion

As seen in all examples from the primary data, AAC is valuable to the functional communication of this participant with ASD. Whether the participant used an alphabet board or iPad, the participant was capable of communicating and clarifying a message. It is important to note the primary data in this study is a sampling of the participant's behavior. The sampling may be contrived since the setting of the study was in a university clinic with therapy being driven by the clinician. This structure of therapy reduces opportunity for the participant to initiate communication and show intent. While the sampling may reduce the participant's opportunity to initiate, the purpose of this study was to focus on how the individual uses AAC when communicating.

While the primary data revealed the benefits of AAC, the secondary data also unveiled difficulties with AAC such as the participant not being motivated to use the devices for communication. Additionally, the participant may become frustrated if the device failed to work. A finding from both primary and secondary data was the struggle of the participant pointing too fast on the alphabet board, which caused the listener to miss a message. Using the iPad though allowed for longer messages, even sentences, to be communicated. Even though there were some disadvantages to AAC, both sets of data revealed the value AAC offered this individual with ASD.

Although this particular study demonstrated the benefits of AAC in enhancing functional communication, this study included only one individual. Thus, other individuals with ASD may respond differently since ASD affects individuals in various ways. Future studies should include more participants. Including more participants would

allow for multiple responses and thereby greater comparison of the benefits and drawbacks of AAC.

This study was successful in analyzing the role of AAC in functional communication for an individual with ASD. Both simple and complex AAC devices revealed certain strengths and weaknesses for the participant. However, as seen in the data, these devices provided more opportunity for communication. Realizing where the study could be improved will allow for future studies to build on the impact AAC has on individuals with ASD.

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Appendices

Appendix A

- 1
- 2 Legend:
- 3 C – Clinician
- 4 J – Jack (participant)
- 5 R – Rachael (assistant)
- 6
- 7 Thesis Day 1:
- 8
- 9 C: Have a seat. What do you have on your shirt?
- 10 J: (pointing) W-A-L
- 11 C: Walmart. Are you going to Walmart after this?
- 12 J: (nodding)
- 13 C: Where are you going after Walmart?
- 14 J: (rocking in chair)
- 15 C: Are you going to eat?
- 16 J: (shakes head)
- 17 C: Granny's house?
- 18 J: (pointing) O-F-F –G-R-A
- 19 C: Granny's off?
- 20 J: (nodding)
- 21 C: Where does granny work?
- 22 J: (shakes head)
- 23 C: Granny doesn't work?
- 24 J: (nods)
- 25 C: Where does granny work?
- 26 J: (shakes head)
- 27 C: Do you know what she does?
- 28 J: (pointing) W-A-L-M

29 C: Granny works at Walmart? Are you making things up, Jack? Jack, what's on your
30 shirt?
31 J: (takes sunglasses off his shirt and twirls them)
32 C: What are those?
33 J: mine (sounds like muhn) (pointing) S-H-O-P
34 C: Did you go shopping and buy sunglasses?
35 J: (nods)
36 C: is it bright in here?
37 J: (claps hand above and head and rocks a few times in chair.)
38 C: Jack, it's not bright enough in here to wear sunglasses in here.
39 J: (pointing) W-A-L
40 C: Did you buy those at Walmart?
41 J: (nods)
42 C: Yeah? I like 'em.
43 J: (grabs face and makes moaning noise)
44 C: Is it sunny outside?
45 J: (nods)
46 C: I think it's going to rain tonight. Was it cloudy?
47 J: (nods and claps once)
48
49 C: Did you bring your iPad, Jack? We may use it later. What did you do this morning,
50 Jack?
51 J: x
52 C: Tell me what you did.
53 J: (pointing) D-E-M-S-E-P-Y (then smacks lips twice)
54 C: Dempsey's? Is that a restaurant?
55 J: (nods)
56 C: Did you eat it breakfast at Dempsey's?
57 J: (shakes head)
58 C: I don't know what that is, Jack. Jack, what is Dempsey's?
59 J: (pointing) W-A-L

60 C: It's by Walmart?
61 J: (no response)
62 C: Is it a food place?
63 J: (nods)
64 C: What did you get?
65 J: (claps hands above head and moans)
66 C: What did you get at Dempsey's? Alright....(gets out padfolio) What do you know
67 about recycling? What do you recycle?
68 J: (pointing) T-R-A-S-H
69 C: What kind of trash? What kind of things can you recycle? I'll give you one thing. You
70 can recycle paper.
71 J: (pointing) P-A-P-E-R
72 C: That's right. What else?
73 J: (pointing) G-A-R-B-A-G-E
74 C: Yeah but it's a certain kind of garbage. We can recycle paper and cardboard. Can you
75 name something you can recycle under that? What's made of cardboard?
76 J: (pointing) P-A-P-E-R
77 C: What else can you recycle?
78 J: (pointing) C-A-N-S
79 C: cans and tins! What's that on bottom?
80 J: (pointing) G-L-A-S-S
81 C: Alright, so we have 4 categories. I want to see if you can split up objects into the right
82 category. Gotta tell 'em what it is first.
83 Participant grabs object and puts in "paper" category. Picture was of magazines.
84 C: That's right! Good job, Jack! Got another one for you.
85 J: (puts picture in another category)
86 C: What is that?
87 J: (pointing) C-A-M-P-B
88 C: Campbell's...
89 J: (pointing) S-O-U-P
90 C: Do you eat vegetable soup? What about chicken noodle soup?

91 J: (nods)

92 C: Alright I got another one. What is this?

93 J: x (Grabs picture and puts it in plastic category then looks to clinician for confirmation.)

94 C: That's right. It is plastic. Can you tell me what it is?

95 J: (pointing) B-O-

96 C: Box. You're right. Can you tell me what's in that box?

97 J: (pointing) C-H-I-C-K-E-N

98 C: Yeah it could be chicken. It's a type of lunch meat you make sandwiches with. So

99 after you get finished making your sandwiches, you can recycle the box.

100 J: (picks up next picture, puts it in category) (Pointing) S-P-R-I-T-E-C-A-N

101 C: That's a Sprite can. You like Sprite. I know you do. How about this one?

102 J: (puts picture in wrong category)

103 C: Look at it closely.

104 J: x (puts picture in correct category)

105 C: That's right. What is this?

106 J: (pointing) P-L-A-S-T-I-C

107 C: What is plastic? What was in jar? It looks kinda green and yellow like pickles.

108 J: (pointing) P-I-C-K-L-E-S

109 C: That's right! It's a pickle jar. So it's glass! What is a pizza box? This is plastics. What

110 is this?

111 J: x ("eatzuh")

112 C: Right, it's a pizza. What kind of box is it in?

113 J: (pointing) P-I-Z-Z-A-H-U-T

114 C: Is that where you like to eat? This is cardboard. Where does it go?

115 J: (puts picture in cardboard category)

116 C: How about this one? What is that?

117 J: (puts picture in wrong category)

118 C: What's it a picture of?

119 J: (pointing) D-I-S-H

120 C: Yeah, a dish. It's a broken plate.

121 J: (pointing) B-R-O-K-E-N

122 C: So where does it go?
123 J: (points to plastic)
124 C: Well I think this is glass plate.
125 J: (puts picture in glass category)
126 C: Few more. How about this one?
127 J: (puts picture of cereal box in cardboard category)
128 C: That's right! Good job! What is this one?
129 J: (puts picture in can but then moved it to plastic)
130 C: It's plastic. Do you know what that's a picture of?
131 J: (pointing) H-E-A-D-A-N-D-S-H-O-U-L-D-E-R
132 C: Head and shoulders what?
133 J: (pointing) S-H-A-M-P-O-O
134 C: Alright! Is that the shampoo you use?
135 J: (nods)
136 C: I've never used that kind. Alright, here's this one.
137 J: (looks at picture with no response)
138 C: Look at it closely. What is it?
139 J: x ("wuhn")
140 C: Wine. Wine what?
141 J: (pointing) G-L-A-S-S
142 C: Glass right. So we recycle it as glass. 3 more. What's this one?
143 J: (struggles but finds right category)
144 C: What is that?
145 J: (pointing) S-P-R-A-Y x
146 C: Spray what?
147 J: (shakes head)
148 C: It's spray paint
149 J: (pointing) P-A-I-N-T
150 C: Right, spray comes in can. What about a newspaper?
151 J: (pointing) P-A-P-E-R
152 C: You're right so it'll go in paper category. Alright water bottle. What is it made of?

153 J: (pointing) B-O-T-T-L-E
154 C: Right what is it made of?
155 J: (shakes head then points) G-L-A-S-S
156 C: Well, I think it's made of plastic. Good job, Jack! You did well!
157 J: (moves picture to plastic category)
158
159 C: Do you know the states?
160 J: (pointing) N-E-W-Y-O-R-K
161 C: You know where New York is? Show me (pulls out map). What is this?
162 J: (points to New York on map) Nuh Yor
163 C: Well, Jack, what is this? (points to map)
164 J: (pointing) U-N-I-T-E-D-S-T-A-T-E-S
165 C: That's right! This is picture of United States. Show me where New York is again.
166 J: (pointing) H-I-G-H-F-A-L-L-S C-A-M-P H-U-N-I-N-G-T-O-N
167 C: What is High Falls? Is that a city?
168 J: (nods and begins to rock and put hands above head while clapping)
169 C: What state is this?
170 J: (pointing) I-D-A-H-O x
171 C: Right, that's Idaho! Good job! What about this one?
172 J: (pointing) H-A-W-A-I-I
173 C: Yeah it's all the way at the bottom. Have you been to Hawaii?
174 J: (no response)
175 C: Underneath Georgia there is another word. What is it?
176 J: (rocks in chair and moans.)
177 C: What do you get from Georgia? There's a type of fruit they grow in Georgia.
178 J: (pointing) P-E-A-C-H
179 C: Right, Jack. Georgia peach! (Clinician puts down picture of Florida.)
180 J: fuh-lo
181 C: Florida
182 J: (nods)
183 C: What's another name for Florida?

184 J: (pointing) S-U-N-S-H-I-N-E
185 C: Yeah, sunshine state! Alright, how about this one? (Points to Delaware)
186 J: x
187 C: Right it's really small. What's capital of Delaware?
188 J: (pointing) D-O-B-E-R
189 C: Dober, right. Good job! Tell me about this one. What's this? (points to capital of
190 Connecticut)
191 J: Ha-fur (pointing) H-A-R-T-F-O-R-D
192 C: What's that?
193 J: (shakes head)
194 C: It's the capital of Connecticut.
195 J: (points to picture of Colorado)
196 C: Yeah, that's Colorado. Good job! What's Denver? Hartford is the capital of
197 Connecticut. What's Denver to Colorado?
198 J: x
199 C: What is it?
200 J: x
201 C: Tell me
202 J: (pointing) C-E-N-T-E-N-N-I-A-L
203 C: Well yeah that's right, centennial state. But look, Denver is the capital of Colorado.
204 (Clinician shows picture of Kansas.) What is another name for Kansas?
205 J: (pointing) T-O-P-E-K-A
206 C: Oh, that's the capital. What's another name for Kansas?
207 J: (pointing) S-U-N-F-L-O-W-E-R
208 C: Yeah, Jack. The Sunflower state! Oh I know you know this one. (Points to Louisiana.)
209 J: (pointing) L-O-U-I--
210 C: Yeah, Louisiana. What's the state bird?
211 J: (shakes head)
212 C: What's the state bird?
213 J: (pointing) P-E-L-I-C-A-N-S
214 C: Good, what's the capital?

215 J: (pointing) B-A-T-O-N-R-O-U-G-E
216 C: Yeah, that's right.
217
218 C: Now, we are going to do more wants and needs.
219 J: (pointing) W-A-L-M-A-R-T
220 C: We can go there later. Let's do this next activity.
221 J: (types) I WANT PETS.
222 C: That's right. That's a want. What kind of pet do you want?
223 J: (pointing) D-O-G
224 C: I want a dog too. What about this one?
225 J: (pointing) W-A--
226 C: Nope, tell me using a sentence.
227 J: (types) I WANT TOYS.
228 C: That's right. We don't need those. What about toiletries?
229 J: (types) I NEED TOILETRIES
230 C: That's right we need those. What is an example of a toiletry?
231 J: (pointing) B-A-T-H
232 C: Yeah, what do you need when you take a bath?
233 J: (pointing) S-O-A-P
234 C: Yeah, we need soap. What do want to do right now?
235 J: (nods)
236 C: What do want to do?
237 J: (pointing) W-A-L-M-A-R-T
238 C: What are you going to do at Walmart?
239 J: (pointing) C-D
240 C: Yeah, I bet you have lots of CDs.
241
242 Thesis Day 2:
243
244 C: Jack, do you like peanut butter and jelly?
245 J: (nods)

246 C: You want to make a peanut butter and jelly sandwich? (pulls out ipad) What do we
247 need to make a peanut butter and jelly sandwich?
248 J: (hums)
249 C: We have peanut butter. What else do we need?
250 J: (pointing) R-O-U-S-E
251 C: Rouses? I bought mine from Walmart. We've got to have bread. Alright, Jack. What
252 kind of bread do you like?
253 J: (pointing) W-H-E-A-T
254 C: Okay, Jack wants wheat bread. Let's use Germex first. Got to wash your hands!
255 J: (washes hands)
256 C: Okay, Jack, what do we do first? How do we make a sandwich?
257 J: (points to plate)
258 C: Right, what do I put on the plate?
259 J: (pointing) P-E-A-N--
260 C: Well, the peanut butter has to go on the bread first.
261 R: (takes bread out of her bag and puts it on the her plate)
262 C: Watch, Rachael. Can you take your bread out and put it on the plate?
263 J: (takes bread out and puts on plate)
264 C: Great, now how do I get the peanut butter on the bread? What do I use?
265 J: (pointing) J-E-L-L-Y
266 C: Well, we'll do that later. Can I use a knife?
267 J: (nods)
268 C: Okay, show me.
269 J: (takes knife and puts in peanut butter jar)
270 C: Okay, I can help you get more.
271 J: (pointing) N-A-S-C-A-R
272 C: What about NASCAR and peanut butter? Is there someone in NASCAR that
273 represents peanut butter?
274 J: (nods)
275 C: Okay, put it on your bread.
276 J: (tries to put peanut butter on)

277 C: Okay, Jack. Do you want more on your bread?
278 J: (nods)
279 C: (adds more peanut butter) Okay, we have our peanut butter. Now what else do we
280 need?
281 J: (pointing) J-E-L-L-Y
282 C: Yes, I have two kinds of jelly. What is this kind? (Holds up one.)
283 J: x
284 C: Tell me what it is.
285 J: (pointing) G-R-A-P-E
286 C: Yeah, we have grape jelly or this other kind. What is it?
287 J: x
288 C: What is this kind?
289 J: (pointing) S-T-R-A-W-B-E-R-R-Y
290 C: Right, so which one do you want for your sandwich?
291 J: (points to grape packet)
292 C: Okay, well watch Rachael. She's going to put strawberry on her sandwich.
293 R: (puts jelly on her sandwich)
294 C: Can you do that?
295 J: (takes jelly and puts it on his sandwich)
296 C: Good, so what's the last step in making our sandwich?
297 J: (pointing) B-R-E-A-D
298 C: What do we do with the bread?
299 J: (pointing) M-A-K-E-S-A-N-D-W-I-C-H
300 C: And how do we do that?
301 J: x x (puts bread pieces together)
302 C: That's right! Good job! Now, Jack, I want you to cut the sandwich in half.
303 J: (takes knife and tries to cut the bread)
304 C: You have to cut it hard. Let me help you. (Helps Jack cut the sandwich.) Now, how
305 many halves do you have?
306 J: x (pointing) 2
307 C: Yes, you have two halves. How can I make it four? What do I do?

308 J: (points to bread)
309 C: What do I do to bread?
310 J: (grabs knife)
311 C: Yeah, you have to cut it again.
312 J: (cuts sandwich again)
313 C: Now how many do we have?
314 J: x (pointing) 4
315 C: Alright, now let's do something different. Do you want to do shapes?
316
317 C: (takes out book) Now, Jack, you are going to pick out the pieces to fit in this book.
318 Find a big circle.
319 J: (goes through pieces and grabs one big circle)
320 C: We need one more.
321 J: (grabs a diamond)
322 C: That's a not a circle. What shape is that?
323 J: (pointing) D-I-A-M-O-N-D
324 C: Right, that's a diamond. Where would that go?
325 J: (puts in diamond holder)
326 C: Okay now what shape is this?
327 J: (pointing) C-I-R-C-L-E
328 C: No, that's not a circle. What shape is it?
329 J: (pointing) D-I-A-M-O-N-D
330 C: That's right. It's another diamond.
331
332 C: Alright, let's play a game on the iPad. Jack, do you want to play a game with music?
333 J: (shakes head)
334 C: You don't want to play a game with music?
335 J: (nods)
336 C: Okay, well let's pick a category. Tell me what you listen to.
337 J: (pointing) T-A-Y-L-O-R-S-W-I-F-T
338 C: Taylor Swift. What does she sing?

339 J: (shakes head)
340 C: What kind of music does she sing?
341 J: (pointing) C-O-U-N-T-R-Y
342 C: That's right. It's country music. Do you think we can find country music on here?
343 Who else do you like to listen to?
344 J: (stares at iPad with no response)
345 (Music starts to play)
346 C: Okay, Jack. Who sings this song?
347 J: (selects correct answer: Randy Houser)
348 C: That's right, Jack. I didn't know that one!
349 (Jack plays five rounds of this game and gets all song artists correct.)
350 C: Wow, Jack. You got a perfect score! What song did Martina McBride sing?
351 J: (pointing) T-E-E-N-A-G-E-D-A-U-G-H-T-E-R
352 C: That's right. She sings "Teenage Daughter." (moves iPad to where Jack cannot see it).
353 Now what song is Taylor Swift singing right now?
354 J: (pointing) B-A-C-K
355 C: Back what?
356 J: (pointing) T-O-D-E-C-E-M-B-E-R
357 C: Back to December, that's right.
358 (Clinician plays several songs and Jack responds on alphabet board with all correct song
359 titles)
360 C: What's this song?
361 J: X X X X (pointing) F-A-S-T-E-S-T G-I-R-L I-N T-O-W-N
362 C: Jack, you are so good at this! How many albums does Taylor Swift have?
363 J: x (pointing) 4
364 C: Four albums? Can you tell me them?
365 J: (pointing) R-E-D
366 C: Okay, that's one.
367 J: (pointing) S-P-E-A-K-N-O-W
368 C: Speak now. What's the third?
369 J: (pointing) F-E-A-R-L-E-S-S

370 C: Fearless, that's three. What's the last one?
371 J: (pointing) T-A-Y-L-O-R-S-W-I-F-T
372 C: Taylor Swift is the singer. What's the first CD?
373 J: (shakes head)
374 C: Who else do you like, Jack? Do you like Carrie Underwood?
375 J: (nods)
376 C: Can you name one of her songs?
377 J: (pointing) G-O-O-D-G-I-R-L
378 C: Good Girl. I love that one. Do you know what show she was on?
379 J: (pointing) C-M-A
380 C: Yeah, she was on the CMAs. Do you know what that is?
381 J: (shakes head)
382 C: It's the country Music Awards. Okay now before you leave, we have to clean up. Can
383 you put the top on the peanut butter?
384 J: (twists top on peanut butter)
385 C: Thank you. Can you put the rest of the garbage in the bag?
386 J: (grabs plates and throws them in the bag)
387 C: Thank you!
388
389 Thesis Day 3:
390
391 C: Come on in, Jack. Have a seat. Want to use your iPad today?
392 J: (nods)
393 C: What did you do today?
394 J: (shakes head)
395 C: Tell me what you've done today. Can you go to your Speak It To Me app?
396 J: (goes to App)
397 C: Jack, what did you do today? I went to class.
398 J: (types) W-O-R-K
399 C: You went to work? Where do you work?
400 J: x

401 C: Do you work in a restaurant?
402 J: (nods)
403 C: Where? Which restaurant do you work at?
404 J: (types) C-H-I-L-I-S
405 C: Oh, I like Chili's. What do you do there? Do you take orders?
406 J: (nods)
407 C: Well, I have a little activity we can work on. What is this?
408 J: x x x
409 C: What is this? What is protein?
410 J: (points to picture of eggs)
411 C: Yeah, eggs and meat have protein. What is this? (puts another picture down)
412 J: (types) S-N-A-C-K
413 C: Yeah, that's a snack. What do you like to eat for snack?
414 J: (types) B-A-N-A-N-A
415 C: Oh, I had a banana earlier. What kind of food is a banana?
416 J: (types) F-R-U-I-T
417 C: That's right. Good job! What about a vegetable? Can you give me an example of a
418 vegetable?
419 J: (types) C-A-R-R-O-T-S
420 C: I like carrots. What about a drink? What do you like to drink? (places card of a drink
421 on the table)
422 J: (types) S-P-R-I-T-E
423 C: Sprite. I like water! Can you ask Rachael what she likes?
424 J: (types) B-E-E-R
425 C: Beer. You are something else. Not sure if she likes beer. Our last one is a fruit. (Puts
426 the card down)
427 J: (types) A-P-P-L-E
428 C: That's right. An apple and orange are examples of fruit. Now I'm going to give you a
429 card and you tell me what category it goes with. (Gives Jack a card with an egg on it.)
430 J: (Takes card and places it with protein)
431 C: That's right. Now, what about watermelon?

432 J: (takes card and places it with fruit)
433 C: What is that?
434 J: x
435 C: Watermelon is a fruit. You're right. (Gives him a card with picture of juice)
436 J: (puts card with drink category)
437 C: What kind of juice do you like?
438 J: (typing) G-R-A-P-E
439 C: I like grape juice too. What about chicken?
440 J: (places card in protein category and looks to clinician for approval)
441 C: You're right. Chicken is protein. What about steak?
442 J: (places steak in protein category)
443 C: Do they have steaks at Chili's?
444 J: (nods)
445 C: Do you like them?
446 J: (nods) yuh
447 C: What about a cheeseburger?
448 J: (places cheeseburger in protein category)
449 C: That's right. Where do you get your cheeseburgers from?
450 J: (types) W-E-N-D-Y-S
451 C: That's my favorite. I don't like McDonald's. I like Wendy's. Now where would a
452 cupcake go?
453 J: (puts card in snack category)
454 C: Yep, that's a snack. When would you eat a cupcake?
455 J: (types) B-I-R-T-H-D-A-Y
456 C: That's right, on your birthday. What about French fries?
457 J: (puts card under protein)
458 C: Well, that's not protein.
459 J: (puts under snack category)
460 C: Yeah, it can be a snack. What are French fries made of?
461 J: (types) M-C-D-O-N-A-L-D-S
462 C: That's where you buy French fries but what are they made of?

463 J: (shakes head)
464 C: They're made of potatoes! What are strawberries?
465 J: x (places card in fruit category)
466 C: Yeah, it's a fruit.
467
468 C: Now, Jack. Do you like money?
469 J: (nods)
470 C: Well we are going to work with money. (Takes out money sheet) What is a dollar?
471 J: x
472 C: What is this? (points to dollar)
473 J: x
474 C: Yeah, it's a dollar. Now what is this? (points to quarter)
475 J: (types) Q-U-A-R-T-E-R
476 C: How much is a quarter?
477 J: (types) 2-5
478 C: Good, a quarter is 25 cents. What's this? (points to dime)
479 J: (types) D-I-M-E
480 C: Yeah, that's a dime. How much is a dime?
481 J: (types x)
482 C: It didn't speak. Type it again. How much is a dime?
483 J: (types) 1-0
484 C: That's right. A dime is worth 10 cents. Now which coin costs 5 cents?
485 J: x
486 C: Tell me.
487 J: (types) N-I-C-K-E-L
488 C: Yep, that's right. A nickel costs 5 cents. So how much is a penny?
489 J: (types) 1
490 C: Good. So if I want thirty cents, what would you give me?
491 J: (grabs a quarter and dime)
492 C: Well you've got 25, how much is this other coin worth?
493 J: x

494 C: How much is a dime worth?
495 J: (types) 1-0
496 C: Right, so you have a quarter worth 25 and a dime worth 10. I need 30 cents.
497 J: (removes the dime and replaces with nickel)
498 C: That's right. That's 30 cents. Now, find 11 cents.
499 J: x x (grabs dime and a penny)
500 C: Good job! That's 11 cents. Now, let's buy French fries. (Puts picture of French fries
501 on table)
502 J: x
503 C: How much are the French fries?
504 J: (types) 1-6-5-c-e-n-t-s
505 C: Alright, one dollar and 65 cents. Can you make 1 dollar and 65 cents?
506 J: x x (grabs a dollar)
507 C: Now how can I make 65 cents?
508 J: (grabs 2 quarters, a dime, and 5 pennies)
509 C: Good job! Now do you want a hotdog or a cheeseburger?
510 J: x x (grabs hot dog picture)
511 C: Okay, so how much money do we need for a hotdog?
512 J: x (types) 2-2-5
513 C: Two dollars and 25 cents.
514 J: (grabs correct amount of money)
515 C: Alright, so now you've had a hotdog and French fries. But we need something to drink
516 now. What do you want to drink? Do you want juice, lemonade, or soda? (Places
517 corresponding cards on table)
518 J: (Grabs soda picture)
519 C: You want a soda? How much is a soda?
520 J: (types) 1-2-0
521 C: 1 dollar and 20 cents.
522 J: (Grabs a dollar, a dime, and nickel)
523 C: That's 115. We need 120.
524 J: x (grabs another nickel)

525 C: There you go. That's 1 dollar and 20 cents. Can you say "1 dollar?"

526 J: (types) 1-D-O-L-L-A-R-2-0

527 C: 20 cents. Can you say that?

528 J: (types) 1-D-O-L-L-A-R-2-0-C-E-N-T-S

529 C: Now what do you want for dessert?

530 J: (types) B-R-O-W-N-I-E-S

531 C: Can you tell me in a sentence?

532 J: (types) I-W-A-N-T-A-B-R-O-W-N-I-E

533 C: How much is it?

534 J: (Grabs 2 dollars and 20 cents)

535 C: Tell me

536 J: (types) 2-2-0

537 C: 2 what?

538 J: (types) 2-D-O-L-L-A-R-S-2-0-C-E-N-T-S

539 C: Can you give me that amount of money?

540 J: (Grabs 2 dollars and 20 cents)

541 C: What is another way to make 5 cents besides 5 pennies?

542 J: (grabs a dime)

543 C: Well, that's ten cents. We need 5 cents.

544 J: (grabs a nickel)

545 C: Yeah, a nickel is 5 cents. Now what fruit do you want? (places fruit cards on table)

546 J: (grabs picture of banana)

547 C: Tell me in a sentence.

548 J: (types) I-W-A-N-T-A-B-A-N-A-N-A

549 C: Alright, you want a banana. Good job.

550

551 C: Now we have these cards with different words on them. Can you arrange them to

552 make a question?

553 J: (arranges cards)

554 C: What does that say?

555 J: (types) WHEN-IS-YOUR-BIRTHDAY?

556 C: My birthday is May 22. When is your birthday?
557 J: (types) DECEMBER-1
558 C: So your birthday was a few months ago. Ask Rachael when her birthday is?
559 J: (shakes head)
560 C: What question would you ask her?
561 J: (looks at Rachael)
562 C: Write it and tell her
563 J: (shakes head)
564 C: Well let's try another set.
565 J: (arranges cards) x
566 C: When do you go to the doctor?
567 J: (types) PARENTS
568 C: Not who with. But when do you go to doctor?
569 J: (types) WEDNESDAY
570 C: How do you feel when you go to doctor?
571 J: (types) STOMACH
572 C: Yeah. Does your stomach hurt when you go to doctor?
573 J: (claps once and nods)
574 C: Okay, let's try another one.
575 J. (arranges cards)
576 C: Yep. That's right. Where are you going after here?
577 J: (types) WALMART
578 C: What are you going to buy at Walmart?
579 J: (types) CDS
580 C: Who's CDs are you going to buy?
581 J: x x
582 C: What's the name?
583 J: (pointing) C-A-R-R-I-E-U-N-D-E-R-W-O-O-D
584 C: You want Carrie Underwood's CD. Now tell me what you want to do now.
585 J: (pointing) P-A-R-T-Y
586 C: You want to party? Well who would we invite?

587 J: x
588 C: Am I invited?
589 J: (nods)
590 C: Tell me who else is invited.
591 J: (types) D-A-D
592 C: Where do you want to have the party?
593 J: x
594 C: What restaurant do you want to go to?
595 J: (types) C-H-I-L-I-S
596 C: That sounds good to me. What are you going to eat?
597 J: (types) S-T-E-A-K
598 C: What kind of vegetable are you going to get with your steak?
599 J: (types) CARROTS
600 C: What are you going to get to drink?
601 J: (types) SPRITE
602 C: What is Rachael going to order?
603 J: (types) DESSERT
604 C: Okay, you want dessert. What are you going to get at Chili's for dessert?
605 J: (types) CAKE
606 C: What kind of cake?
607 J: (types) CHOCOLATE
608 C: That is my favorite kind of cake!
609
610 C: Jack, what is this? (pull out map of the United States)
611 J: x x
612 C: Tell me what country this is.
613 J: (types) United States
614 C: Name one state that surrounds Mississippi
615 J: (types) ALABAMA
616 C: Good. What's the capital of Alabama?
617 J: (types) MONTGOMERY

618 C: What state is this? (points to Alabama)
619 J: x x
620 C: What's the name of it?
621 J: (types) ALABAMA
622 C: What's above Alabama and Mississippi?
623 J: x
624 C: Tell me which one.
625 J: (types) TENNESSEE
626 C: Jack, where do you go to camp?
627 J: (types) Wisconsin
628 C: When do you go?
629 J: (types) SUMMER
630 C: Who goes to camp with you?
631 J: x
632 C: Who goes?
633 J: (types) POOL
634 C: They have a pool but who goes with you?
635 J: (types) Samantha
636 C: What's another friend?
637 J: (types) Kendall
638 C: Does Lisa ride with you?
639 J: (nods)
640 C: How do you get to Wisconsin?
641 J: (types) FLY (points to sky)
642 C: Well we have five minutes left. Want to play the song game?
643 J: (nods and gets perfect score on all song identifications)
644 C: What song does Toby Keith sing?
645 J: (pointing) R-E-D-S-O-L-O-C-U-P
646 C: Yeah, I'm not a big fan of him.
647
648 Thesis Day 4

649
650 C: Jack, are you going to work tomorrow?
651 J: (shakes head)
652 C: You're not going to work tomorrow. What are you doing in the morning?
653 J: no response
654 C: (points to iPad) Tell me what you're doing in the morning
655 J: (types) Catherine
656 C: Tell me who Catherine is. Is she your friend?
657 J: (nods)
658 C: What are y'all going to do?
659 J: (points) J-O-H-N-S-O-N
660 C: Oh, you're going back to Dr. Johnson in the morning.
661 J: (nods and points) W-E-D
662 C: Wednesday. What is today?
663 J: x x x
664 C: Jack, what is today?
665 J: (types) THURSDAY
666 C: Alright, well today we are going to work on wants and needs. What is something you
667 want?
668 J: (types) TV
669 C: What is something you like to watch on tv?
670 J: (types) MOVIES
671 C: I like movies. What would a video game be? A want or need? Tell me using a
672 sentence.
673 J: (types) I WANT A VIDEO GAME.
674 C: That's right, that's a want because we don't have to have it. What about
675 transportation?
676 J: (types) I NEED TRANSPORTATION
677 C: Good, let's try another one. What is education? Tell me in a sentence.
678 J: (types) I WANT EDUCATION.
679 C: You want an education. Don't you think that's something we need?

680 J: x
681 C: Right, so try again.
682 J: (types) I NEED EDUCATION.
683 C: That's right. You need an education. We want to be smart! What about food?
684 J: (types) I NEED FOOD.
685 C: That's right. Let's try camera.
686 J: (types) I WANT CAMERA
687 C: Right, we want a camera. What does a camera do?
688 J: (types) I WANT CAMERA
689 C: A camera takes pictures. What about housing? Is that a want or need?
690 J: (types) I WANT HOUSE.
691 C: Is that a want or need?
692 J: x
693 C: You say you want it.
694 J: x
695 C: Tell me again.
696 J: (types) I NEED HOUSE
697 C: That's right! You need a house. Now how about money? Is that a want or need.
698 J: x
699 C: Tell me in a sentence.
700 J: (types) I NEED MONEY.
701 C: How about a party?
702 J: (types) I NEED PARTY.
703 C: I don't know if we need a party.
704 J: (types) I WANT PARTY.
705 C: Where would we go for our party?
706 J: (types) BINGO
707 C: Where would we play Bingo?
708 J: (nods and claps once)
709 C: What about a movie ticket? Is that a want or something we need?
710 J: (types) I WANT MOVIE TICKET

711 C: Good job, that's a want. Have you been to a movie lately?
712 J: (shakes head)
713 C: What was the last movie you saw?
714 J: (types) THE LION KING
715 C: That was awhile back! What about vacation?
716 J: (types) I WANT VACATION.
717 C: That's right. It's something we want. Where do you want to go on vacation? I want to
718 go to Hawaii. Where do you want to go?
719 J: (types) BEACH
720 C: Oh, yeah, I love the beach. What about clothes?
721 J: (types) I NEED CLOTHES
722
723 C: Good, now I want to see if you can tell me what each sign means. (takes out board
724 with various signs and labels) What is the place called where you get on a bus?
725 J: x x (places "bus stop" by the sign)
726 C: Which sign means "Do not touch"?
727 J: (points to wet paint sign)
728 C: You're right. Which sign is a bathroom for boys?
729 J: (points to bathroom sign)
730 C: Which one means somewhere is closed?
731 J: (points to "Sorry, we are closed" sign)
732 C: Which sign means you can make a phone call?
733 J: (points to picture of phonebooth)
734 C: Which means "you must stop here"?
735 J: (points to stop sign)
736 C: That's right. When we see those, we have to stop.
737
738 C: How many days are there in May?
739 J: (writes) 3-0
740 C: In May?
741 J: x

742 C: Tell me how many days.
743 J: x
744 C: On your card
745 J: (pointing) 3-1
746 C: Right. There are 31. What day is Mother's Day?
747 J: (pointing) S-U-N-D-A-Y
748 C: What day?
749 J: x
750 C: When?
751 J: (writes) 1-3
752 C: How many days are in one week?
753 J: x x x x x
754 C: How many?
755 J: (writes) 7
756 C: May 17th is on what day of the week?
757 J: (writes) TUESDAY
758 C: Are you sure it's a Tuesday?
759 J: (smacks lips and writes) THURSDAY
760 C: Yeah, it's on a Thursday! What is the day of the fourth Wednesday?
761 J: (writes) 2-3
762 C: That's right! It's on the 23rd! What month comes after May?
763 J: x (writes) JUNE
764 C: That's right. June comes after May.
765
766 Thesis Day 5:
767
768 J: (pointing) S-U-P-E-R
769 C: Super what?
770 J: x x
771 C: Tell me again. I missed it.
772 J: (pointing) S-U-P-E-R-M-A-R-K-E-T

773 C: Oh, you're going to the supermarket. What are you going to get?
774 J: x
775 C: Get your iPad out and tell me what you're getting.
776 J: (pointing) R-O-U-S-E-S
777 C: Okay, what are you getting at Rouse's?
778 J: (pointing) S-T-E-A-K
779 C: Again? You're getting another steak?
780 J: (nods)
781 C: What did you do this morning?
782 J: (shakes head)
783 C: I went to class this morning. What did you do?
784 J: (points) S-U-P-E
785 C: Oh, you went to the supermarket this morning.
786 J: (nods)
787 C: Okay, well we're going to pick what we want for dinner. Can you pick out a recipe out
788 of this book?
789 J: (points to picture of polenta)
790 C: Alright, tell me what we need.
791 J: (types) I WANT BEANS.
792 C: Do we want beans or do we need beans?
793 J: (claps once) x
794 C: You have to tell me.
795 J: (types) I NEED BEANS.
796 C: That's right. We need beans. What else do we need?
797 J: (pointing) R-O-U
798 C: Yeah, we can go to Rouse's to buy these things. But, what else do we need? Look at
799 the picture.
800 J: (pointing) S-T-R-A-W-B-E-R-R-Y
801 C: That's not a strawberry. It's a tomato.
802 J: (pointing) T-O-M-A-T-O

803 C: That's right. We need a tomato. Now we need something to drink. I am going to get
804 water. What do you want?
805 J: (types) SPRITE
806
807 C: Now we are going to describe objects. What can you tell me about shoes?
808 J: (writes) SOCKS
809 C: That's right. You have socks on when you wear shoes. What kind of socks do you
810 wear? Tall or ankle socks?
811 J: x
812 C: Let me see what kind you have on.
813 J: x
814 C: I think I heard you right but tell me what kind.
815 J: (pointing) A-N-K-L-E
816 C: Yeah, that's right. You're wearing ankle socks. What's the next one? When do you
817 swim in a pool?
818 J: (writes) x
819 C: Tell me again.
820 J: (pointing) S-W-I-M
821 C: That's right. You swim in a pool. What season do you swim in?
822 J: (writes) SUMMER
823 C: Yep, we swim in the summer.
824 J: (writes) CAMP
825 C: You swim at camp?
826 J: (nods)
827 C: What else do you do at camp?
828 J: x
829 C: Tell me again.
830 J: (pointing) P-U-Z-Z-L-E
831 C: Y'all play puzzles too! What else do you do at camp? Do you eat lunch?
832 J: (nods and claps once)
833 C: Do they have good food?

834 J: (nods)
835 C: What do you eat at camp?
836 J: (pointing) S-T-E-A-K
837 C: Y'all eat steak. What about pizza?
838 J: (nods)
839
840 C: Now we're going to look at some cards. What can you tell me about this girl?
841 J: (pointing) N-O-S-E
842 C: Yeah, that's her nose. How do you think she feels?
843 J: (pointing) A-N-G-R-Y
844 C: Well, I think she's sick.
845 J: (pointing) S-I-C-K
846 C: That's right. She's sick so where does she need to go. Where does she need to go?
847 J: (pointing) D-O-C-T-O-R
848 C: Yeah, she's sick and needs to go to doctor. What is she holding?
849 J: (pointing) D-O-C-T-O-R
850 C: She's holding a teddy bear. What are these two people doing? Where are they?
851 J: (pointing) M-O-V-I-E
852 C: What are they eating?
853 J: (pointing) P-O-P-C-O-R-N
854 C: That's right. Do you eat popcorn when you go to the movies?
855 J: (nods)
856 C: What do you have to buy before you can go to into a movie?
857 J: (pointing) L-I-O-N-K-I-N-G
858 C: Is that the last movie you went to watch?
859 J: (nods)
860 C: What are they doing in this next picture?
861 J: (pointing) T-I-C-K-E-T
862 C: Yeah, they're buying a ticket so they can see the movie. Now what about these
863 people? Where are they playing?
864 J: (pointing) M-U-D

865 C: Yeah, they're playing in the mud.
866 J: (pointing) D-I-R-T-Y
867 C: Yeah, they're dirty from the mud. What do you do when you're dirty?
868 J: (pointing) C-L-E-A-N
869 C: We need to clean. What do we do?
870 J: x
871 C: We take a ...
872 J: (pointing) B-A-T-H
873 C: What about this picture? What season is it?
874 J: (pointing) F-A-L-L
875 C: Yeah, how do you know it's fall?
876 J: (pointing) L-E-A-V-E-S
877 C: That's right! There are leaves falling. When the leaves fall what do we do?
878 J: (pointing) R-A-K-E
879 C: That's right! We have to rake the leaves. What is the man doing?
880 J: (pointing) C-O-O-K-I-N-G
881 C: That's right. What do you think he's cooking?
882 J: (pointing) B-R-E-A-D
883 C: Well, it has flour in it but I don't think it's bread.
884 J: (pointing) C-O-O-K-I-E-S
885 C: That's right. He's baking cookies! What is he doing in the bowl?
886 J: (shakes head)
887 C: Do you know what that's called?
888 J: (pointing) B-A-K-E
889 C: Well he is baking but right now he is stirring the dough.
890
891 C: Now we are going to try to make questions. So I'll give you a sentence and you make
892 it a question. The sun is hot.
893 J: (types) C-O-L-D
894 C: No, the sun is hot. How can I make that a question?
895 J: (shakes head)

896 C: I would say, "Is the sun hot?" Let's try another one. The leaf is green.
897 J: (types) HOT
898 C: No, we are talking about the leaf. So how can we make that a question?
899 J: (types) SUN
900 C: No, I'll help you with this one. Is the leaf green?
901 J: (types) IS THE LEAF GREEN
902 C: Good. Now you have to examples so you can do the next. The giraffe is tall. Now how
903 can you make it a question?
904 J: (types) IS THE GIRAFFE TALL
905 C: Good job, Jack! Where do you go to see giraffes?
906 J: (pointing) Z-O-O
907 C: That's right you have to go to the zoo! How about "Ben is smiling," how do you make
908 that a question?
909 J: (types) IS THE BEN SMILING
910 C: Close, it would be "Is Ben Smiling?" Two more. The baby is crying.
911 J: (types) IS THE BABY CRYING
912 C: Good job! One more. The phone is ringing. How we make that a question?
913 J: (types) IS THE PHONE RINGING?
914 C: Good job! I like how you added a question mark at the end of that one.
915
916 C: Now you haven't told me what you did this morning. Tell me what you did then you
917 can play the music game.
918 J: (pointing) G-R-A-N-N-Y
919 C: You went to Granny's house. What did y'all do?
920 J: (pointing) A-T-E
921 C: Y'all ate. Did she cook for you?
922 J: (nods)
923 C: Did you help her cook?
924 J: (nods)
925 C: What did y'all make?
926 J: (pointing) C-O-R-N-B-R-E-A-D

927 C: Oh that sounds good. What did you eat with the cornbread?
928 J: (pointing) S-U-P-E-R-M-A-R-K-E-T
929 C: You went to the supermarket before so y'all could make the cornbread.
930 J: (nods)
931 C: Did y'all watch tv?
932 J: (nods)
933 C: What did you watch?
934 J: (pointing) J-E-O-P-A-R-D-Y
935 C: That's my favorite show!
936
937 New Event 4/24 Event 2:
938
939 C: Easter is almost here! Do you know when it is?
940 J: (points to calendar)
941 C: Tell me the date.
942 J: (pointing) S-U-N-D-A-Y
943 C: Yeah, it's on a Sunday. Can you tell me the date?
944 J: (points) 2-0
945 C: Yeah it's on April 20th. What is tomorrow?
946 J: (pointing) F-R-I-D-A-Y
947 C: It's a special Friday. Do you know what the name of it is?
948 J: x x
949 C: It's something Friday.
950 J: (points) G-O-O-D
951 C: Good Friday, that's right! How many days are in April?
952 J: (points) 7
953 C: Well there are 7 days in the week. How many days are in the whole month of April?
954 J: (points) 3-0
955 C: That's right. There are 30 days in April! Now let's do a different activity. I have four
956 different cups can you tell me what they say?
957 J: x

958 C: Tell me again.
959 J: x x x
960 C: I can't understand you. Tell me.
961 J: (pointing) E-X-C-U-S-E-M-E
962 C: "Excuse me." That's right. What does the second one say?
963 J: (pointing) P-L-E-A-S-E
964 C: Good, what is the next one?
965 J: (pointing) T-H-A-N-K-Y-O-U
966 C: And the last one says what?
967 J: (pointing) I-M-S-O-R-R-Y
968 C: "I'm sorry." That's right. Now I'm going to give you a stick and it has something it
969 has on it. Tell me what cup it goes in. If you accidentally burp, you say...
970 J: x x (puts stick in "Excuse me" cup)
971 C: That's right. You spill your drink on someone.
972 J: x x (points to "Excuse me" cup)
973 C: Well, you may say, "I'm sorry" instead. What if you're walking in front of somebody
974 in the hallway. What do you say?
975 J: (points to "Please" cup then points to "Excuse me" cup)
976 C: Right, you'd want to say, "Excuse me." What would someone say if they wanted to
977 see your iPad?
978 J: x x
979 C: Is it please or thank you?
980 J: (puts in "Please" cup)
981 C: You're right. Now let's do some cards.
982 J: (reaches for iPad)
983 C: Yeah, you can use your iPad. Pull up the "Speak It To Me" app. Tell me what you
984 need to brush your teeth.
985 J: (types) MOUTH
986 C: Yeah, you have your mouth. What do you need to brush your teeth?
987 J: (types) PASTE
988 C: That's right, Jack. You need toothpaste! What do you put it on?

989 J: (pointing) D-E-N-T-I-S-T
990 C: Well a dentist cleans your teeth. That's right. We also need a toothbrush. How do you
991 cleanup a spill?
992 J: (pointing) M-E-S-S
993 C: Yeah, it's a mess. How do you clean it up? Would we need a vacuum or paper towel?
994 J: (pointing) V-A-C-U-U-M
995 C: If it's just some water, would need a vacuum or paper towel?
996 J: (pointing) P-A-P-E-R-T-O-W-E-L
997 C: Yeah, that's all you need to wipe it up. What do we need to stay dry when it rains?
998 J: (pointing) W-E-T
999 C: I don't want to get wet. What do I need to put on to keep me dry?
1000 J: (pointing) W-A-S-H
1001 C: What do you carry to stay dry?
1002 J: (pointing) O
1003 C: Tell me again. I missed it.
1004 J: (pointing) O-U-T-S-I-D-E
1005 C: Well you would need an umbrella, right?
1006 J: (pointing) U-M-B-R-E-L-L-A
1007 C: That's right you would need an umbrella to stay dry! What do you have to do to a
1008 banana to eat it?
1009 J: (pointing) F-R-U-I-T
1010 C: That's right! A banana is a fruit. Can you eat the outside of a banana?
1011 J: (pointing) Y-E-L-L-O-W
1012 C: Yeah, they're yellow, but you have to peel them before you can eat them! How do you
1013 catch a fish?
1014 J: (pointing) B-A-I-T
1015 C: That's right! Good job! How do you take a picture?
1016 J: (pointing) D-O-G
1017 C: You're right. That's a picture of a dog. How did they take the picture?
1018 J: (pointing) C-A-M-E-R-A
1019 C: You need a camera. That's right! Do you like taking pictures?

1020 J: (nods)
1021 C: How do you clean up leaves in your yard?
1022 J: (pointing) R-A-K-E
1023 C: How do I unlock a door?
1024 J: (pointing) O-P-E-N
1025 C: To open it, I need to unlock it. What can I do to unlock it?
1026 J: (pointing) K-N-O-C-K
1027 C: Yeah, you can knock. Or, you can use what?
1028 J: x
1029 C: Tell me.
1030 J: (pointing) K-E-Y
1031 C: Last one. How do you wash your hair?
1032 J: (pointing) C-O-M-B
1033 C: Well, you brush your hair with a comb. How do you wash it?
1034 J: (pointing) S-H-A-M-P-O-O
1035 C: That's right! You use shampoo to wash your hair. Now we can play the music game a
1036 little: Tell me who sings this song. (Song starts)
1037 J: (pointing) B-A-N-D-P-E-R-R-Y
1038 C: The Band Perry, that's right. What is the name of this next song? I want the name.
1039 (plays song)
1040 J: (pointing) O-V-E-R
1041 C: Good job. Who sings that song?
1042 J: (pointing) B-L-A-K-E-S-H-E-L-T-O-N
1043 C: Blake Shelton sings it. Good job! Tell me who sings this next song. (song starts)
1044 J: (pointing) T-H-E-S-E-D-A-Y-S
1045 C: Well that's the name of the song. Tell me who sings it.
1046 J: (pointing) R-A-S-C-A-L-F-L-A-T-S
1047 C: That's right! Well, we are out of time. You'll have to get this app for your iPad. Don't
1048 forget to put your things in your backpack first.

Appendix B

1 Legend:

2 I – Interviewer

3 G – Guardian

4 S –Supervisor

5

6 G: -- This is zygote. This worked. He typed with it. It'll speak. These folks are out of
7 Washington. You could be rough with it and it would quit working.

8

9 This one here, Franklin. They're language masters to learn English or Spanish or
10 whatever. He would play with this but he would get flustered because it's not
11 moving fast enough. Or, making him do it structured like we are now with the 5
12 sentences. You could push him to a point with all the instructors. If he got tired,
13 he would stop. We haven't had any aggression here at all, have we?

14

15 S: No, not at all.

16

17 G: No, no aggression at all. But he enjoys this system. He knows so much. He
18 spelled "Basco's" when he was 3. And we would go there all the time in South
19 Louisiana. He's been spelling and understanding, and it's just getting him to
20 communicate.

21

22 Dr. Bradley, is she still alive? Her husband passed away. She was so sweet. She
23 and Dr. Joe -- I mean, -- we used to come here in 96 and we'd label "doorknob"
24 and "light" and he wouldn't move. These people like Dr. Olmee would come to
25 our house. With Dr. Olmee, we tried dieting.

26

27 Little girl made this and had him talking on it. It would say things like "I want a
28 drink." He didn't want me bringing this machine. It had icons on it, and it had five
29 sentences on it: "I want a drink" or "I need to go to bathroom." There was another
30 one...where'd it go (*reaches into bag*). This one here is "Say it Sam." It would

31 work. We took this with him to school. He would take these to school with him.
32 He'd get mad. I bought so many of these. They start out and they are on warranty.
33 He was tough on them, and they would break. We'd send them back, and Franklin
34 and I were on a deal. It would be 49-79 dollars to replace them. The dynavox
35 would break. And, school said they'd pay for it, but they were 7 grand. Some of
36 these are 5 grand, and I'm sending them back because they break. Some of them
37 are 2-3 day turn around and one was always on the way. I still get emails as a
38 preferred customer (*laughs*). He gets mad or throws them because they aren't
39 moving fast enough for him. He will type a sentence. "No, do a sentence." It's
40 more you just got to push him. He's just spoiled. Tell him he's got to use 5-word
41 sentence with iPad. Tell me what you want to eat. We take them to restaurants,
42 and they're great. If we go to restaurant, he will take menu and point. I have to
43 say, "No, tell them what you want." He did raspberry lemonade. He can spell.
44 I've done lost my mind. I can't spell "cat" anymore (*laughs*). Getting him to focus
45 --. He knows everything that's going on and why and what's happening. I'm
46 blown away. This thing he got was in the shed. That's where I keep the old
47 devices. I put them in a box in the shed thinking one day the light will go on.
48 Well, he went out there, got this device, and starts using it. He practiced writing
49 on it when he was 3 or 4. He would type on it, and it would say the letter for him.
50 Then, you could trace and do letters. He would trace the letters in his room. Now
51 his communication thing is 'yes' or 'no' by smacking lips twice: "mwup mwup".
52 He can do that with 1 to 5: "mwup mwup mwup," meaning 3. He will smack if
53 it's one or two. He also will clap to note those things. He does that to
54 communicate.

55
56 He sleeps with a machine in his bed. He won't let me get rid of them. I put one in
57 the garage, and he went out and got it. Now, it's back in his sleep room. He
58 wouldn't let me bring that device so I took a picture of it. Well, we were riding up
59 here on the road, and he had my phone. He deleted that picture because he didn't
60 want y'all to see it. He got on there and was playing then deleted that picture
61 because he didn't want anybody to see it. Are these usable? Do we keep things in

62 case light go on? We can power them up and see if uses them. Some are battery
63 powered. Want to battery them up?

64

65 I: We can try those another time. How does he use an iPad or tablet?

66

67 G: He spells the word or the sentence. Sometimes it's just one word. We started out
68 getting him to type. Roadtrips are his thing. He would type where he wanted to
69 go. He used to call all the Walmarts. He had 4,000 minutes on his phone once. He
70 was calling Walmarts. He made a voice message for his phone when no one
71 answers. He can work every machine. I can't do that. I forgot what all these
72 buttons are. He typed this message for his phone. It's his voicemail. It's
73 directions. I don't know how he did it but he moved this typed message to set as
74 his voicemail.

75

76 S: Back when you were talking about how you'd push him. Can you give us an
77 example of pushing/encouraging him?

78

79 G: Yeah, the other day we were stopping to eat. I told him he needed to say "I want a
80 steak or sandwich." I tell him it's got to be 5 words. He used to get mad or throw
81 the devices if we pushed too hard. We'd stop because I didn't want any
82 aggression. We used to do machines hour after hour trying to make them work. I
83 would constantly replace them trying to encourage him. With the iPad, he uses
84 them in therapy. iPad and iPhone are rewards. If not, he goes to traffic and stems
85 on traffic. He will just watch 4 or 5 traffic maps and not focused. We have to cut
86 things off at 9. iPad and iPhone are 7 to 9 then we cut them off. I got to put them
87 up because at night, he will get up and slip in there. I'll hear him mulling around.
88 Other morning I heard him, went in there and asked how long he'd been up. He'd
89 been up since 2:30 AM just playing on the iPhone playing music low. He had
90 iPad going at cameras. Then, he's got dates in there. There were run down so
91 coming up interstate, I said charge iPhone and iPad. I had one charger so told him
92 to go back inside and get the other. He knew right where charger was, came out,

93 plugged it in to 2 second port. Getting him to write...I haven't pushed him a lot. If
94 we're just sitting there, I'll say "Jack, what would you like?" or "what would you
95 like to do today?" Sometimes, he'll answer. Sometimes it's a Saturday, and I'll
96 say "it's me and you today. What do you want to do today?" All my helpers were
97 busy so it was me and him. He spelt "Jack and Dad" and I said "yeah, man, me
98 and you." Then he spelt "rest." He wanted to rest. No speech; he types it. I told
99 him we'd go to Joe's that night. He spelled, "No Joe's, want to party." And I told
100 him we were going to social thing with Joe. I can get him to do anything. He can
101 do anything you wanted him to do if you just ask. He can do it. He's thinking and
102 focusing. It's 100% me. His caretaker lets him stem or play. We've gotten pretty
103 good about cutting him off if we want him to go do something. He may get
104 wiggged out if he's not ready to cut the iPad off so sometimes it's just better for it
105 not to be there. Things get him wiggged out. It's better for him not to watch. Last
106 week, he started bad. He wanted to go to a Nascar race last week. He wanted to go
107 Las Vegas Motor Speedway. I asked when; he said "now." Friday, Saturday, and
108 Sunday we went to races. Year before last, he said "Daytona" so we took off to
109 Daytona just like Wednesday or Thursday. We came to speech then left. We came
110 home, changed clothes, got our stuff and left. I'm fortunate to work so we can
111 move around.

112

113 I didn't want to get to where he didn't like iPad or iPhone. I was gunna put it on
114 the Cool Speak or Speak-to-Me, but he takes it off. I'll put speech apps on there,
115 and he deletes them. I tried seeing if there was a way to block it. Every one of
116 these devices he understands. His receptive language is great. He knows what you
117 are talking about and can follow along. He can follow the task. I didn't want to
118 wear him out. If you'd give us homework or questions, we can do that. He's read
119 so many books. He's got 6 cubby-holes of books. In the dining room, we have
120 table with laptop and more books. We used to use flashcards to get him to try to
121 say words or numbers. We have all these learning things. I've thought about
122 going back and getting them out again. He can read. He's reading. He was in there
123 last night. He gets books on sports and is reading 2007 or 2009 magazine with

124 Nick Saban as LSU's coach and what it means to win national championship. He
125 was reading some other book about history of college football. If you want to see
126 an adventure, you have to quantitate with him. "Jack, we are going to answer 3
127 questions and we're done." I ask him how many books is he buying today or how
128 many cds. We will say 3 or 5 after speech. He goes in Barnes and Nobles, and it's
129 unbelievable. It may take him hour and half (at least hour). He will buy Charlie
130 Pride and Janice Joplin. He loves instrumental. He covers all spectrums too. I'll
131 ask him how many people are in a stadium if he's reading a book about sports
132 stadiums. He will smack his lips the numbers. He tries to talk. If you ask him
133 something, he blurts it out. We checked his hearing year or two ago. He hears and
134 understands. I wonder what he hears when he speaks.

135

136 He knows how to make these things speak. He can type on them. I use highways
137 and roads to encourage him to use them. He can spell on here, and he will speak
138 on them. He can do a bunch of words on these if he wants. I'll ask how to get
139 somewhere, and he uses the device to tell me. We've stayed in 9 cities in Florida,
140 2 in New York, 2 in Tennessee, 4 in Texas and 2 in California. He will tell me
141 where we stayed and when.

142

143 In 1992, I was hired as guru for Timberland selling land. From 92 to 2007, they
144 would call me, and we'd go look at land. Jack and I would fly or rent a car and
145 check things out. We bought some land in Texas with 6 miles of water and 4
146 miles of highway. I bet my life, you could ask us how to get there and Jack can
147 tell you. He can spell the highway and how to get places. It doesn't matter how
148 many miles we drove. He can tell you how to get there. Used to if you backed out
149 of the driveway, you couldn't leave. Everything for him had to be in complete
150 circle.

151

152 He can do flashcards. He will "pee-pop" with his mouth. He will get so close to
153 saying words. Have you ever noticed he will say a word and then he will make a
154 face saying, "Oh, I said that?" Sometimes, it's like a word just comes out, and

155 he's surprised. Most of the time it's blocked, part of Autism. How can we get him
156 back to saying a word or two? What part of brain controls speech? I asked
157 neurologist if we should brain scan, and they said it was not a good idea. There
158 was a guy in Virginia in jail for fraud saying he'd do brain scans and cure autism.

159

160 We did blood, stool, and urine at nine. They didn't know if it was from
161 vaccinations and mercury. That's when we changed diet. Light came on. We just
162 pushed and pushed. Knowing he can communicate --. He will say some words as
163 good as us then never say it again. He has a thought, and it comes out. Some say
164 with Autism the receptors in the brain are blocked, and there's not a clear
165 connection. Tulane wouldn't study his brain waves. So many people say they
166 won't do it. I was thinking about it. They'll show brain waves and what part is
167 working and connecting. They show it for legalizing marijuana. They talk about
168 how some kids have seizures and some frontal lobe surgery helped. Jack has had
169 so many seizures. That's the most helpless you can be. You can't do anything to
170 help him.

171

172 One day he can say something. He's trying to talk. When he does a real loud
173 voice and shrills, it's not a scream. He's trying to talk. We can do voicebox and
174 MRI. How do we stimulate the right part of the brain? So many people say, "no"
175 to doing scan or brain stimulations.

176

177 S: So when he's at home, how doe she primarily communicate that he needs to go to
178 bathroom or something else?

179

180 G: I will sometimes think for him, but he has his motions of when to signal bathroom
181 or eating. Other night I asked him where he thought missing airplane was. He
182 pointed to India on a map. He points to mouth when he's going to eat something.
183 When I ask if he's ready for bath, he will signal 5 minutes with his lips. He can
184 quantitate things to time with lip smacking. Stairs aren't good for him. He has

185 poor depth perception. Basically, I guess, I'm thinking for him about going down
186 stairs.

187

188 This morning, he clapped two. In two hours, he wants to go somewhere. He will
189 say "bar" at 11 PM. I tell him I'm not going to bar. Or, he will say he's going
190 home at 11. He does a lot of nonverbal gestures for communication. He will look
191 at you for "no" and tries to say "yes." They say he communicates and spells
192 things out at work. He will spell "music" and "1 dollar" because they play music
193 at work and he will go pick a song.

194

195 I: At work, he communicates with his alphabet board?

196

197 G: Yeah, that board he carries around his neck.

198

199 I: What are some benefits or disadvantages of the alphabet board? What have you
200 noticed with that particular communication system?

201

202 G: Um, he's moving too fast for a lot of folks, and they can't keep up. If you don't
203 follow him and he has to do it more than twice, he gets flustered. If he wants to
204 eat, he will make a gesture. He doesn't use the board for that.

205

206 Last Sunday we went to Perkin's. We got there, and he wanted eggs. Lady asked
207 him if he wanted grits or hashbrowns, and he spelt "both." She asked bacon or
208 sausage, and he spelled "sausage." That was awesome! We go there, and he
209 knows them. He's great at manipulating people. He wanted both. They gave him
210 both.

211

212 He will point at menu, but I'll make him tell them so then he uses the board. After
213 therapy one day, he typed "Olive Garden." So, we went there. When we got in
214 there, I told him to think about what he wanted. He spells "salad." The lady asked

215 if he wanted a salad, and he said “yes.” I told him to be respectful to the lady so
216 he then spelled “yes ma’am.” That blew me away.

217

218 We went and sat by bar watching basketball. It was two guys sitting next to us
219 and they asked who we thought would win. Jack nods. Jack picked Arkansas, and
220 they won! He will sit and watch a basketball game. He will watch NASCAR as
221 long as Jeff Gordon is winning. With 4 or 5 laps to go, Gordon got passed and
222 Jack got upset, started jumping up and down.

223

224 Last night, he and his caretaker went walking. When they got back, he ate then
225 was watching Jeopardy. The contestant missed final question and he started
226 jumping. He started refluxing because he got all excited. He’s had couple of bad
227 days recently where he gets out of whack and upset. Saturday he was bad. Sunday
228 I cut the TV off and said it was just a race.

229

230 If I’m not home when I’m supposed to be, he starts pacing. In 2005, after Katrina,
231 my mom was in Panama City. They showed a white car like mine on news that
232 was fatal accident. He wiggled out thinking it was me in my car. Ever since then if
233 he sees a wreck, he gets upset.

234

235 Last night he was upset with Jeopardy. He will sit there, and he watches so
236 intently. It’s like he knows the answers. This morning we were watching and I
237 asked if he knew any. He got upset because they answered too fast. He would
238 shake his head like he knew it but who knows if he’s telling the truth.

239

240 His problem is behavior. That’s more my fault of not pushing him but you can get
241 to a point that he starts squatting. At school, they’d tell me to come get him.
242 Work, opportunity, and life afforded me the opportunity to --. If we heard about
243 something, we tried it. When he was 13, one day at school, the teacher told me
244 Jack couldn’t learn, and he wasn’t smart. I told her “ma’am, he’s smarter than
245 you.” Then we got into it. The school told me he couldn’t learn and that he

246 doesn't need to be in school. Principal made statement that kids like him don't
247 need to be in regular school environment and that kids like him are distraction to
248 good kids. One day I'll prove him wrong. He's still on my mind.

249

250 Nine of them made decision about Jack. We were going to private speech, private
251 OT, private behavior management, and they say he can all learn. This university
252 says he can learn. We don't have any issues here at these places so what is your
253 problem. School answered that they didn't want him there because he was a
254 distraction.

255

256 That next day I had breakfast with chairman of education in the state. I had lunch
257 with state director of special education. The next day I had 9 folks from special
258 education in an office talking. That next week, they had Jack a facilitator, a
259 certified facilitator and other specialists where he finished school with no hiccups.

260

261 At school, they were more baby-sitting. Then, I found people who would work
262 with him. I don't want to push him though to go back where he will get mad.
263 "Jack, you gotta write sentences." He'd throw pencils and say "no." The child
264 now that you see is constantly absorbing and growing. He can do anything you
265 ask him. I don't want to push too much. I don't him to revert to where we walk in
266 here and if it's a bad day we have to leave, 50/50 shot of he'll be in good mood.

267

268 Where do we go with that? How can I push him to communicate or get it out of
269 him? He is intuitive of where and when he's going. It's all a routine for him. He
270 tells you what he wants to do nonverbally. Like if he needs to sit on the pot, he
271 will bring me the adult wipes and walk into bathroom. I know what he needs
272 when he does stuff like that.

273

274 What do you think about pushing him more at home? Everything here is positive.
275 Best thing we've found is lugging these devices around in a store or wherever. If
276 we are going in there to try on pants, he's lost some weight.

277

278 There a fine line to getting him to communicate and keeping it positive without
279 getting him upset. Best thing we found is to make him use these devices. We can
280 do anything with these. If we pushed him enough, he could do 20-words. He can
281 answer these questions but the problem is when he doesn't want to do it. How do
282 we get it to where he wants to do this and it's all good? How do we avoid the
283 frustration?

284

285 *Jack comes in after therapy.*

286

287 G: Jack, come here and sit a minute. Want to ask you a question. Jack, do you
288 remember what year you used this device? What year? (*Jack points on alphabet*
289 *boards 2-0-0-0.*) What year did you use that one? (*Jack nods and points 2-0-0-2.*)
290 Jack, which one do you like the best? (*Jack nods and begins touching various*
291 *devices*). You want me to charge them up?

292

293 S: If you want to try another time, we can charge them up and try.

294

295 G: Y'all just let me know what y'all want me to do. Just email me. If you want me to
296 bring some charged, I can. If y'all want to give us homework, let's do it.

297

298 I: Yes, thank you so much! This has been great.

Appendix C

Parental Permission Form

Dear parent or legal guardian,

We are requesting that you allow your son/daughter _____ to be invited to participate in a research study on how individuals with Autism Spectrum Disorder (ASD) communicate using Augmentative and Alternative Communication (AAC) systems. My name is Virginia Pampuro, and I am a senior honors, undergraduate student at the University of Southern Mississippi in Hattiesburg. Your name was obtained from the speech-language pathologist at your child's clinic. Your son/daughter was selected because he or she has a diagnosis of ASD, is between the ages of 10 and 25, and currently uses an AAC system. I will also ask your child to assent to join in the research study and sign a form for his or her participation.

I will ask your son/daughter for video-recordings of his or her therapy sessions and will also ask you, as his or her guardian, to participate in a modified ethnographic interview regarding your child's communication and their use of AAC systems. The interview should last about an hour and a half. The benefit of participating in this study is a contribution to the literature so that this knowledge may allow speech-language pathologists to provide and implement better service to individuals with ASD. The only risk in this study is an inconvenience of time when participating in the interview portion.

All information gathered will be used in the researcher's undergraduate honors thesis and at no time will the names of you or your son/daughter be made public. All the data, including therapy recordings and interviews, will be locked in either a filing cabinet in the researcher's supervisor's office or on the computer of the researcher, which is also locked with a passcode. Following the completion of this study, the researcher will keep all data under lock and/or passcode for future article submissions and presentations. The results of this study will also be published by the Honors College at the University of Southern Mississippi as the researcher's undergraduate honors thesis. Confidentiality will be maintained with all information, whether it is in paper or on the computer.

Your child's participation in this research study is strictly voluntary and he or she may refuse to participate or stop participation at any point in the study. No problems or biasness from the University of Southern Mississippi will result if you or your child decide to discontinue participation in the study.

If you have any questions about this research or wish to speak with the researcher, please call Virginia Pampuro at 901-355-9879 or Dr. Jennifer Corie at 601-266-5230.

PERMISSION:

I understand that my child's name has been obtained from his or her speech-language pathologist at the clinic at the University of Southern Mississippi. Recordings of my child's therapy sessions may be given to the researcher and kept in a safe place. I also understand that my child is participating voluntarily and may refuse or discontinue participation at any point in the study. I agree to allow the researcher to invite my child to participate in the study.

Name _____ Date:

My relationship to the individual is: _____
I have the legal right to consent for my child to participate in research.

Appendix D

Assent to Participate in Research

I want to do this study.

Yes

No

Appendix E

Adult Consent Form

You are being invited to participate in a research project by Virginia Pampuro, a senior undergraduate student at the University of Southern Mississippi. This study will be conducted to learn about how individuals with Autism Spectrum Disorder (ASD) use technology to enhance to their functional communication. You were selected because you are the guardian of an individual with Autism Spectrum Disorder.

You will be asked to give the researcher permission and access to video-recordings of your son/daughter's therapy sessions. In addition, you, as the guardian, will be asked to participate in an interview with the researcher and her advisor about your child's communication abilities and the usage of technology in his or her communication. The interview may take approximately an hour and a half.

You are under no obligation to participate in this research, and at any point, you may choose to discontinue your participation and leave the study. There will be no penalty from the clinic in which your child receives therapy if decide to not participate or stop participating at any time.

While there is no particular benefit to you in this study, the researcher may gain a greater knowledge of how technology benefits the communicative abilities of individuals with Autism Spectrum Disorder. This knowledge may allow other researchers and speech-language pathologists to apply new or better clinical service to individuals with ASD. The only risk to you in this study is the inconvenience of time in participating in the interview portion.

The findings from this study will be used in the researcher's undergraduate honors thesis but your name and your child's name will never appear in any reports. All data, both from the video-recordings of your son/daughter's therapy sessions as well as the interviews, will be locked away in a filing cabinet in the researcher's advisor's office until the results are entered on the researcher's computer. Furthermore, all information on the computer will be locked by passcode as to protect the confidentiality of the participants. All data will be kept confidential both in the advisor's office and on the researcher's computer. Following the completion of this study, the researcher will keep all data under lock and/or passcode for future article submissions and presentations. The results of this study will also be published by the Honors College at the University of Southern Mississippi as the researcher's undergraduate honors thesis.

If you have any questions about this research or your participation in the study you are welcome to contact Virginia Pampuro at 901-355-9879 or Dr. Jennifer Corie at 601-266-5230.

CONSENT

I understand that I am agreeing to participate in this research study. All information was explained to me in detail, and I understand that I may discontinue my participation any time.

Signed _____
Date _____

Appendix F



INSTITUTIONAL REVIEW BOARD

118 College Drive #5147 | Hattiesburg, MS 39406-0001

Phone: 601.266.5997 | Fax: 601.266.4377 | www.usm.edu/research/institutional-review-board

NOTICE OF COMMITTEE ACTION

The project has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the "Adverse Effect Report Form".
- If approved, the maximum period of approval is limited to twelve months.
Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: 14022601

PROJECT TITLE: Incorporating Augmentative and Alternative Communication Usage in Functional Therapy for Autism Spectrum Disorder: A Case Study

PROJECT TYPE: New Project

RESEARCHER(S): Virginia Pampuro

COLLEGE/DIVISION: College of Health

DEPARTMENT: Speech and Hearing Sciences

FUNDING AGENCY/SPONSOR: N/A

IRB COMMITTEE ACTION: Expedited Review Approval

PERIOD OF APPROVAL: 03/05/2014 to 03/04/2015

**Lawrence A. Hosman, Ph.D.
Institutional Review Board**