THE DEVELOPMENT, IMPLEMENTATION, AND MAINTENTENCE OF AUGMENTATIVE AND ALTERNATIVE COMMUNICATION THROUGH TELEPRACTICE IN PERU

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Abstract

The descriptive study documents the development and implementation of low technology Augmentative and Alternative Communication (AAC) boards in Peru and conducts maintenance sessions through telepractice. The director of the Centro Ann Sullivan del Perú (CASP) selected two individuals with complex communication needs as candidates for the study. Both individuals had not had previous speech language services, access to low or high technology AAC devices, or a consistent or conventional means of communication. The development and implementation of low-technology AAC boards was in Peru. Maintenance sessions were scheduled over the course of four months through telepractice sessions conducted from the telepractice room in the Schiefelbusch Speech-Language-Hearing Clinic in Lawrence, Kansas.

Upon completion, both individuals obtained a means of communication through low technology AAC boards. Parent report through a final survey indicated that AAC helped their child communicate, AAC was easy to use, telepractice maintained intervention, and telepractice was easy to use with assistance. Results from one parent's online Communication Matrix in Spanish (Rowland, 2017) indicated that communication improved. The second parent did not complete the online Communication Matrix in Spanish (Rowland, 2017), due to difficulties with Internet connection.

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Chapter I
Introduction

The World Health Organization's (WHO) Report on Disability proposes that more than 1 billion individuals have a disability (2018). A majority of these individuals do not have access to habilitative and rehabilitative health services, specifically speech language pathology services and access to Augmentative and Alternative Communication (AAC) (Cameron & Markowicz, 2009). Telepractice is an emerging technology used to implement therapy to populations with physical, medical, and communication needs. In the field of speech language pathology, an increased number of clinicians are implementing telepractice to meet the needs of individuals with communication needs (i.e., speech and language) in regions where face-to-face therapy is not available. It is therefore important to explore how to utilize telepractice as a means to conduct assessments, implement therapy, train communication partners, and provide maintenance and sustainability to regions and populations in high need of speech language therapy services (Edwards, Brown, & Houston, 2012).

Augmentative and Alternative Communication (AAC)

Augmentative and Alternative Communication (AAC) is a means of communication developed to augment or replace oral language. The American Speech-Language-Hearing Association (ASHA, 2018) defines AAC as:

> Augmentative and alternative communication (AAC) is an area of clinical practice that addresses the needs of individuals with significant and complex communication disorders characterized by impairments in speech-language production and/or comprehension, including spoken and written modes of communication. (Overview section, para. 1)

AAC can be implemented in two forms: unaided or aided. Unaided forms of AAC include gestures, manual signs (e.g., American Sign Language), facial expressions, vocalizations, verbalizations, and body language. Aided forms of AAC can be either low technology or high technology. Low-technology AAC includes communication boards, concrete objects, pictures, or photographs. High technology AAC includes speech-generating devices (SGD), smart phones, and/or tablets.

The need for AAC can be the result of congenital disorders or acquired disorders. Individuals with congenital disorders can include those with intellectual disability, autism spectrum disorder, developmental apraxia of speech, cerebral palsy, and Down syndrome. Individuals with acquired disorders, primarily due to medical conditions, can include people with aphasia, apraxia, amyotrophic lateral sclerosis (ALS), multiple sclerosis, Huntington's disease, and traumatic brain injury (TBI). AAC can be implemented with various and diverse populations to assist individuals in meeting their daily communication needs.

Beukelman and Mirenda (2013) indicate that approximately 1.3% or 4 million individuals in the United States of America do not "rely on their natural speech to meet their daily communication needs" (p.4). The World Health Organization's (WHO) Report on Disability cites more than 1 billion individuals globally have a disability (2018). However, due to limited knowledge of individuals with disabilities in developing nations and the ineffective means of collecting this data (Fujiura, Park, & Rutkowski-Kmitta, 2005), it is probable that there is an even greater number of individuals with communication needs who do not currently have access to or use AAC.

Augmentative and Alternative Communication (AAC), Instructional Communication Strategies, and Effectiveness

Augmentative and Alternative Communication can support improved communication (Millar, Light, & Schlosser, 2006). Speech language pathologists (SLPs) have roles and responsibilities with respect to AAC. Therefore, it is important for SLPs to have clinical competency in AAC. ASHA states that SLPs "play a central role in the screening, assessment, diagnosis, and treatment of persons requiring AAC intervention" (Roles and responsibilities, 2018). It is additionally important for staff members (e.g., teachers, medical professionals, etc.) and communication partners (e.g., family members and friends) to receive education and training on how to implement AAC intervention strategies (Meadan & Keen, 2006).

Beukelman and Mirenda (2013) discuss eight steps to implement intervention communication strategies. Strategy instruction entails: 1. Defining the goal, 2. Explaining the importance of the intended skill, 3. Showing how to implement the skill or modeling the skill, 4. Discussing an appropriate situation in which the skill could be implemented, 5. Creating opportunities for the participant to implement the skill, 6. Providing guided practice for the participant to implement the skill, 7. Analyzing progress, and 8. Investing the use of the skill to evaluate if generalization is occurring in natural settings. Through the eight steps, several intervention strategies can be implemented to teach the new skill (e.g., learning and using a new word).

Numerous intervention strategies can be used to implement AAC to support effective communication. Specific intervention strategies used to support the development of receptive and expressive communication include: 1. Aided language modeling (ALM). In ALM the

communication facilitator combines the use of symbols with speech during activities that are motivating for the participant (Lynch, McCleary, & Smith, 2018; Beukelman and Mirenda, 2013), 2. Language modeling. In language modeling the facilitator says the word, points to the symbol, and provides the opportunity for the participant to use the symbol in the context of intervention (Beukelman and Mirenda, 2013), 3. Wait time. Wait time is the specified time allowance allotted for the participant to respond. Wait time should vary per individual needs. Individuals with complex communication needs often require extended time to provide a response (Johnson & Parker, 2013), and 4. Motivation. Motivation is an important component during intervention. It is important that the activity/scenario used to elicit communication is preferable for the participant (Brady & Bashinski, 2008). These strategies can be implemented across various populations and in different settings to help clients obtain their goals.

In addition to implementing intervention strategies, it is equally important for communication partners (e.g., caregivers and educators) to receive training on how to provide interventions through the incorporation of these instructional strategies. Communication partners should be incorporated in intervention training to further improve the language and communication outcomes for individuals with complex communication needs (Kaiser & Roberts, 2013). Dunst and Trivette (2009) researched and reviewed six adult communication partner-teaching strategies to better understand which strategies were the most effective in supporting intervention. Results indicated that combining the six strategies of introduction, illustration, practice, evaluation, reflection, and mastery yielded the largest effect. In accordance with these teaching strategies, Roberts, Kaiser, Wolfe, Bryant, and Spidalieri's (2014) research introduced and supported the Teach-Model-Coach-Review instructional approach in which the caregiver supports the individual's expressive language. In the Teach-Model-Coach-Review approach, the

Teach explains the language strategy, the *Model* introduces how to illustrate the real-life scenarios supporting the language intervention, the *Coach* allows the caregiver to practice the strategy, and the *Review* allows the caregivers to review and reflect upon his/her implementation of the language strategy.

AAC can meet the needs of individuals who do not use oral language to communicate (Beukelman and Mirenda, 2013). AAC interventions can be conducted in face-to-face settings (e.g., schools, clinics, etc.), however, when services are not available, AAC interventions can be conducted through video-conferencing technologies (e.g., telepractice).

Telepractice

Telepractice is an expanding means of providing effective speech and language assessments and interventions to individuals in remote locations in the United States when face-to-face services are not available (Mashima, & Doarn, 2008; Edwards, Stredler-Brown, & Houston, 2012; Hall, Boisvert, Jellison, & Andrianopoulos, 2014). ASHA (2018) defines telepractice as, “The application of telecommunications technology to the delivery of speech language pathology and audiology professional services at a distance by linking clinician to client or clinician to clinician for assessment, intervention, and/or consultation." (Telepractice Overview, para. 1) Research was conducted to explore the effectiveness of telepractice in multiple disciplines. Hayes et al. (2015) effectively developed telepractice to assess and implement services in Guam to individuals who were hard of hearing or deaf. Cason (2009) conducted research to support the benefits of delivering early intervention services to individuals through telepractice in rural communities in the United States. In addition to the effective implementation of telepractice, research conducted by Lopresti (2015), supported satisfaction by recipients of telepractice and AAC. Research suggests that telepractice can be used to deliver

effective speech and language therapy to individuals in remote areas, however, there is a gap in the literature-addressing individuals in developing nations.

Beukelman and Mirenda (2013) state that approximately 4 million Americans cannot communicate through natural speech to meet their daily communication needs. In the Tele-AAC Resolution, Anderson, Boisvert, Doneski-Nicol, Morelock, and Cohn, (2012), express the need to develop and further research regarding meeting the needs of AAC users through telepractice. Anderson, Boisvert, Doneski-Nicol, Morelock, and Cohn, (2012), further explain the shortage of services due to limited funding, limited staffing, geographical barriers, and resources (i.e., trained SLPs). Therefore, it is increasingly important to explore, develop, implement, and maintain AAC through telepractice to meet the communication needs of those individuals who cannot meet their daily communication needs. Developing this model can serve as a foundation for other developing nations when assessing and implementing low-technology AAC materials and/or high-technology devices.

Under Represented Regions and Access to Services

Underrepresented regions (e.g., rural areas) in the United States lack services due to distance and geographical barriers. Bauer (2003) states that rural areas have higher percentages of poverty, elderly populations, and chronic illness with a small percentage of healthcare professionals providing these services. Therefore, e-health services (i.e., telepractice) should be explored and implemented to meet these service needs. In addition to rural areas in the United States, developing nations encounter similar medical and service disparities.

In the United Nation's Statistical Annex (2018) the World Economic Situation and Prospect (WESP) report classifies countries into three categories: developed economies,

economies in transition, and developing economies (i.e., developing nations). A majority of developing nations lack educational, medical, and rehabilitative resources including speech and language services (Alant, 1996; Cameron & Markowicz, 2009; Gormley, 2017). Furthermore, individuals living in poverty are predisposed to disabilities and communication disorders due to poor living conditions, no access to vaccinations, limited health education, and limited access to health care (Bolajoko, Ruben, & Parving, 2006). Hartley and Wirtz (2002) explain that primary focus is placed on individuals' survival, not communication services.

Research is being conducted to better understand how to provide country-by-country, individualized AAC assessment and intervention services to developing nations. Due to cultural and linguistic differences, it can be assumed that one model of services will not consistently transfer from one country to the next. It is additionally important to acquire and understand cultural competencies before providing speech and language services to other nations (Hyter, Roman, Staley, & McPherson, 2017). Alant (1996) emphasized the need to understand the attitudes and social structures in the community when implementing AAC in developing nations for services to be successful and sustained. In 2017 Gormley developed an individualized service delivery approach to implementing AAC in areas of poverty in Haiti. Gormley explained, SLPs must "recognize individuals' and families' strengths, evaluate the sustainability of AAC services, and work within a team to empower individuals with complex communication needs" (p.33). Limited research exists in conducting assessments, interventions, and maintenance for AAC in underrepresented areas. Phillips (2017) described assessment and AAC services provided in a school in South Africa, however maintenance sessions were not conducted and communication gains were not documented. Telepractice and alternative forms of technology and applications

(e.g., iPhones with WhatsApp) offer a possible solution to conduct maintenance services and support sustainability.

In accordance with UNICEF (2018), access to education in Peru is limited in which 50% of children in rural areas have access to education and 80% of children in urban areas have access to education. Furthermore, 37% of education is provided in single-teacher schools in rural schools and 27% is single-teacher schools in urban areas (UNICEF, 2018). Therefore, speech and language intervention services, specifically augmentative and alternative communication services are assumed to be non-existent in Peru. Urban areas (i.e., Lima) have specialized centers (e.g., CASP and Tangram), however rural areas have little to no access to speech, language, and communication services.

Due to the limited research in the area of AAC and developing nations, this exploratory study was undertaken due to a need and demand in Peru. The objective was to explore how to develop and implement low-technology AAC boards and later conduct maintenance sessions through telepractice from a remote location.

Chapter II
Methods

This descriptive study documented the development and implementation of low-technology AAC boards in Lima, Peru at the Centro Ann Sullivan del Peru (CASP) and maintenance through telepractice sessions from the Schiefelbusch clinic in Lawrence, KS. The Centro Ann Sullivan del Peru (CASP) is an educational organization founded in 1979 to serve a community of individuals with different abilities (i.e. autism, Down syndrome, cerebral palsy, etc.). The individuals served by CASP do not have speech and language services including AAC despite a great need. The researcher had the opportunity to visit CASP and explore AAC options and support. This study is a result of that visit and the subsequent telepractice support.

Participants

Two individuals with complex communication needs (CCN) and their mothers participated in the study. Two individuals with complex communication needs (CCN) were selected by Dr. Lilliana Mayo, the director of the Centro Ann Sullivan del Perú (CASP) as candidates for the study. Dr. Mayo selected the two individuals due to the lack of knowledge and access to AAC assessment and intervention services at CASP. Ophthalmologists, physicians, physical therapists, psychiatrists, and educators visit the center to conduct research and assist in the improvement of the students' academic and social performances, however speech and language services were not addressed or conducted in the past. Dr. Mayo expressed the need for an effective and a consistent means of communication for the two students at CASP and expressed that the students and their parents were eager to learn how to help their children better communicate in their community. The researcher agreed with Dr. Mayo that the two students would be good candidates for the development, implementation, and maintenance of AAC

through telepractice. Both students had a need for AAC and their parents were eager to participate, collaborate, and learn from the researcher.

Participant 1. Veronica was a 19-year-old female diagnosed with Rett Syndrome. Rett Syndrome is a neurological regressive disorder, primarily seen in females. Rett Syndrome impacts the ability to walk, breath, eat, and speak. Veronica had visual and motor impairments including: leg paralysis and repetitive hand movements (e.g., uncontrolled shaking). Due to the motor and visual impairments, Veronica used a wheelchair for mobility and wore glasses to correct the visual impairment. Veronica's hearing was within normal limits according to parent report. Veronica's mother explained that she understood her daughter's needs due to her familiarity with her daughter and facial expressions of discomfort. However, her mother reported that Veronica did not have a consistent form of communication with familiar and unfamiliar partners. Veronica did not use gestures (e.g., a head nod to indicate yes), physical gestures (e.g., pointing), or vocalizations to communicate consistently. Further parent report indicated that Veronica used a Picture Exchange System (PECS) in the past, but it was unsuccessful and abandoned at school. When asked why PECS was no longer use, Veronica's mother explained that the symbols were confusing and Veronica did not use the PECS board. When asked, Veronica's mother expressed that Veronica enjoyed cooking, painting, and listening to music. Veronica did not receive speech or language therapy services in the past or at the time of the study.

Participant 2. Carlos was a 26-year-old male with traumatic brain injury (TBI) from a cardiovascular accident at 6 years and 10 months of age. Carlos had visual impairments (i.e., cortical vision impairment) and motor impairments (i.e., quadriplegia). Due to the motor and visual impairments, Carlos used a wheelchair for mobility and wore glasses to improve the visual

impairment. Carlos' hearing was within normal limits according to parent report. Lueck & Dutton (2015) define cortical vision impairment (CVI) as, "visual impairment due to damage or disorder of the visual pathways and visual centers in the brain, including the pathways serving visual perception, cognition, and visual guidance of movement" (p.4). The degree of visual impairment varies per individual; therefore, it can be difficult to understand what the individual with CVI actually sees. Carlos wore glasses to facilitate his vision and needed objects to be placed close to his eyes. Carlos' mother explained that she understood her son's needs, but that he did not have a consistent means of communication with unfamiliar partners. Through parent report and observation, Carlos used a consistent means of saying "no" by shaking his head from side to side and protested by pushing unwanted objects away. When asked, Carlos' mother expressed that Carlos enjoyed swimming, bowling, and listening to music. Carlos did not use a form of AAC in the past or at the time of the study. Carlos received speech services at a private practice clinic in Lima. Carlos's speech therapy consisted of the therapist massaging his facial muscles. Expressive and receptive language were not targeted or addressed in Carlos's speech therapy.

Participant 3. Desiree was the mother of Veronica. Desiree spoke Spanish; therefore, a translator, Gabriella, was used during intervention and training sessions. Desiree implemented AAC interventions at her home and at CASP with the researcher. Desiree participated in maintenance sessions with the researcher through a laptop computer at her home. Desiree was the primary daytime caregiver for her daughter, Veronica. For employment, Desiree baked goods with Veronica's help and sold them in the neighborhood. Desiree also attended weekly parent-training sessions at CASP to facilitate her daughter's vocational opportunities.

Participant 4. Evy, was the mother of Carlos. Evy spoke Spanish and English; therefore, a translator was not needed. Evy implemented AAC interventions at her home and at CASP with the researcher. Through applications (e.g., Skype) on her personal cell phone, Evy conducted maintenance sessions with the researcher. Evy was the primary caregiver for her son, Carlos. Evy explained that her husband traveled frequently for work in the United States. Evy attended weekly parent-training sessions at CASP to facilitate her son's vocational opportunities.

Procedures

Consent and communication assessment. The researcher traveled to Lima, Peru for 2 weeks in August 2017 to develop and implement AAC materials. During the first meeting, the researcher obtained consent in Spanish from the parents to participate, informed consent in Spanish from the parents for their children to participate, case histories in Spanish, and facilitated the completion of the online Communication Matrix in Spanish (Rowland, 2017).

The online Communication Matrix (Rowland, 2018) is a communication assessment questionnaire, which gathers information from caregiver report to summarize communication strengths and limitations. Information obtained from the online Communication Matrix (Rowland, 2018) is organized by function (i.e., refuse, obtain, social, and information) (Brady & Keen, 2016) and further organized into seven levels consisting of: 1. Pre-intentional communication, 2. Intentional behavior, 3. Unconventional Communication, 4. Conventional Communication, 5. Concrete Symbols, 6. Abstract Symbols, and 7. Language. Information gathered from the Communication Matrix (Rowland, 2018) can assist in the development of baseline data and the development of goals.

Survey. Desiree and Evy completed a researcher-developed survey in Spanish before the start of intervention sessions. Questions on the survey assessed their knowledge and comfort

with AAC and telepractice. To determine participant satisfaction and learning, the participants completed surveys before intervention. The surveys asked the caregivers to rate six statements as: (1) Strong agree, (2) Agree, (3) Disagree, (4) Strongly disagree, and (5) No opinion (See Appendix I).

AAC development. Information from Desiree and Evy's case history reports and interviews, information from informal observations on Day 1, and information from the online Communication Matrix in Spanish (Rowland, 2017) were used to develop low-technology AAC boards. The researcher selected the Speak Book (Joyce, 2011) for Veronica for trial. The Speak Book (Joyce, 2011) is a free online resource in which the individual uses his/her eye gaze to select a concrete picture, abstract symbols, letters, or words to communicate with the facilitator. Each page of The Speak Book (Joyce, 2011) differs in which one page can have abstract symbols for corresponding words and another page can have letters to spell a specific word. Through parent interview and informal observations on Day 1, the researcher established that Veronica could maintain steady eye gaze. During informal observations, Veronica maintained eye gaze with Desiree when Desiree asked her a question. Due to Veronica's distinctive hand movements (i.e., shaking), direct selection through hand selection was not a viable option at this time. For Carlos, the researcher selected a tactile board with different tactile Velcro textures. Due, to Carlos's visual impairment (i.e., CVI) a tactile, low technology AAC board was selected for trial (Lund & Troha, 2008).

AAC implementation and intervention. Implementation of AAC consisted of 4 days of intervention sessions with durations between 30 minutes to 1 hour. The researcher implemented the pre-made low-technology AAC boards with specific intervention strategies (i.e., language modeling, aided language, and explicit instruction). Intervention occurred with the following

participants in the following locations. Locations were pre-planned to meet the transportation and scheduling needs of the participants.

Table 1

Intervention Day and Location

Intervention Day	1	2	3	4
Veronica / Desiree	Home	CASP	Home	CASP
Carlos / Evy	Home	CASP	CASP	CASP

The instructional strategies used by the researcher in this descriptive study included: language modeling, aided language stimulation, and explicit instruction. These instructional strategies were selected due to their effectiveness (Harris & Reichle, 2004; Beukelman and Mirenda, 2013; Allen Schlosser, Brock, & Shane, 2017; Lynch, McCleary, Smith, 2018). In language modeling, the researcher selected a natural environment, for example the home, to introduce a new vocabulary word. An example of an intervention session is described as follows. In language modeling the researcher pointed to the symbol or picture. For example, the researcher pointed to the picture of music or played music and provided an opportunity for the participant to select the symbol or picture (e.g., You can touch music and I will play music). In aided language stimulation, the researcher reinforced the symbol or picture on the AAC board with verbal input. For example, the researcher asked the participant, "Do you want to listen to music?" The researcher then pointed to the picture of music on the AAC board and said, "Yes, you want to listen to music." In explicit instruction the researcher: 1. Used a stimulus (e.g., the researcher asked the participant, Do you want to listen to music*?*), 2. Implemented a prompt (e.g., the researcher showed the participant a picture of music and a picture of food, then pointed

to the picture of music), 3. The participant pointed to the correct picture (e.g., the picture of music), and 4. The researcher reinforced the individual's choice (e.g., Yes, you want to listen to music, I will play music).

Intervention sessions were scheduled over the course of 4 days. Procedures implemented during the intervention sessions are described in the table below.

Table 2

Veronica Intervention Day and Procedures

Day	Procedures
1	• Obtained assent • Introduced Speak Book (Joyce, 2011) • Introduced and implemented intervention strategies: language modeling, aided language simulation, and explicit instruction • Implemented Teach-Model-Coach-Review instructional approach (Roberts et al., 2014)
2	• Obtained assent • Taught Desiree how to make an eye gaze AAC board with available materials • Implemented intervention strategies: language modeling, aided language simulation, and explicit instruction • Implemented Teach-Model-Coach-Review instructional approach (Roberts et al., 2014) • Discussed modification of eye-gaze board to incorporate concrete pictures
3	• Intervention not conducted due to Veronica's poor health • Modified eye-gaze AAC board by adding Velcro to new concrete pictures (i.e., cooking, sleeping, listening to music). New concrete pictures would be rotated on the eye gaze AAC board in a field of two
4	• Obtained assent • Incorporated new concrete pictures (i.e., sleeping and listening to music) on eye-gaze AAC board • Implemented intervention strategies: language modeling, aided language simulation, and explicit instruction • Implemented Teach-Model-Coach-Review instructional approach (Roberts et al., 2014)

Table 3

Carlos Intervention Day and Procedures

Day	Procedures
1	• Obtained assent • Introduced tactile AAC board • Introduced and implemented intervention strategies: language modeling, aided language simulation, and explicit instruction • Implemented Teach-Model-Coach-Review instructional approach (Roberts et al., 2014)
2	• Obtained assent • Implemented intervention strategies: language modeling, aided language simulation, and explicit instruction • Implemented Teach-Model-Coach-Review instructional approach (Roberts et al., 2014)
3	• Obtained assent • Implemented intervention strategies: language modeling, aided language simulation, and explicit instruction • Implemented Teach-Model-Coach-Review instructional approach (Roberts et al., 2014)
4	• Obtained assent • Carlos responded with "no" • Session ended • Taught Evy how to make tactile AAC cards with materials

Maintenance. Four maintenance sessions for each participant were conducted through telepractice on Skype for Business from the telepractice room in the Schiefelbusch Speech-Language-Hearing Clinic in Lawrence, KS. The researcher used WhatsApp (i.e., an application for free texting, voice calls, and video calls on a smart phone) to schedule days and times. Once the session was confirmed, the researcher sent an email for confirmation through Microsoft Office. During each session the researcher confirmed that the audio and video were working for both parties, asked how the participants' communication was, and asked if they needed help with

the AAC boards. Gabriella participated in each maintenance session with Desiree to assist in translating.

Table 4

Maintenance session date and length

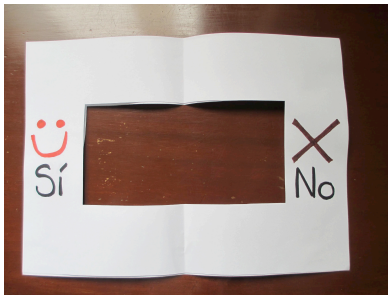
Day	1	2	3	4
Veronica / Desiree	10/27/2017	11/17/2017	12/1/2017	12/15/2017
Total Time	Not obtained	22:29	24:39	51:44
Carlos / Evy	10/24/2017	11/17/2017	Not Available	12/15/2017
Total Time	21:55	26:39	N/A	5:20

Materials and Equipment

Materials were selected in accordance with available and accessible supplies. Telepractice platform equipment was selected in accordance with the University of Kansas's HIPAA policies. The researcher Skyped from the Schiefelbusch Clinic in Lawrence, KS.

Table 5

Materials and Equipment

Material Name	Image
Speak Book (Joyce, 2011)	

Yes/No Board	
Yes/No Tactile Board	 
Skype for Business software	Telepractice sessions occurred in the telepractice room in the Schiefelbusch Clinic at the University of Kansas in Lawrence, KS.
Desktop computer	
Speakers	
Headset with Microphone	

Confirmation of Intervention Strategies

Implementation of the intervention strategies was ensured through a checklist in Spanish during each session. The checklist was introduced and explained in the beginning of each session. At the completion of each session, the researcher asked the mothers if the procedures were performed and if the mothers observed specific behaviors. Each intervention day, data and notes were documented through the table below:

Table 6

Intervention Strategy Checklist and Observations

Procedure	Yes	No	N/A	Comments
Researcher asks for assent				
Researcher models AAC board				
Researcher prompts student to use AAC board				
Researcher uses wait time				
Observations				
Student attends to AAC board				
Student actively participates				
Student uses AAC successfully during activity				
Other				

Chapter III
Results

The purpose of this study was to describe the development, implementation, and maintenance of aided, low technology AAC boards in Lima, Peru.

Veronica

Communication Assessment. The online Communication Matrix in Spanish (Rowland, 2017) was completed with the researcher and Desiree. Results from Veronica's initial online Communication Matrix in Spanish (Rowland, 2017) (Figure 1) profile indicated the following. In Level 1 (pre-intentional communication) Veronica mastered expressing discomfort, expressing comfort, and expressing interest in other people. In Level 2 (intentional communication) Veronica mastered protesting, continuing an action, obtaining more of something, and attracting attention. In Level 3 (understanding communication) Veronica mastered refusing/rejecting, requesting more of an action, requesting more of an object, making choices, and showing affection. In Level 4 (conventional communication) Veronica mastered refusing/rejecting and showing affection. Veronica did not use concrete symbols, abstract symbols, or language to communicate. Veronica's total score was 30/160. Results from the researcher's informal observations agreed with information obtained from parent report from the online Communication Matrix (Rowland, 2017).

Figure 1. Veronica's initial results. This figure depicts Veronica's communication strengths.

AAC Implementation and Intervention. The first intervention day, the researcher visited the participants' homes to better understand how they communicated in their natural environments and how they communicated with their friends and family members. Following interventions day were either held at CASP or at the homes. The researcher additionally confirmed Desiree and Evy's interests to better understand motivating factors. Desiree and Evy both confirmed that Veronica and Carlos enjoyed listening to music. Throughout intervention and maintenance sessions, Gabriella, a CASP staff member, assisted in translating from English to Spanish for Veronica and Desiree.

Day 1. Gabriella traveled to Veronica and Desiree's home to assist in translating. Assent was obtained each time the researcher met with the participants. The researcher obtained assent

(See Appendix B) to Veronica upon meeting and explained that she was there to help Veronica better communicate. Desiree assisted in determining Veronica's reliability of assent through Veronica's facial expressions and body positions. For example if Veronica turned away from the researcher, it was assumed that Veronica was not providing assent. The researcher introduced the Speak Book (Joyce, 2011) to Veronica and Desiree with two abstract pictures (i.e., an x for *no* and a smile for *yes*) with the words sí (yes) and no (no) written below. The researcher then implemented intervention strategies including: language modeling, aided language stimulation, and explicit instruction. In language modeling, the researcher, pointed to the sí symbol and asked, "Do you want to listen to music?" Next the researcher provided an opportunity for Veronica to select the symbol with her eyes (e.g., *You can look at sí and I will play music*). In aided language stimulation, the researcher reinforced the sí symbol on the eye gaze AAC board with verbal input (e.g., *Do you want to listen to music?* The researcher pointed to the sí symbol, and the researcher said, *yes, you want to listen to music.* Then the researcher played music). In explicit instruction, the researcher: 1. Used a stimulus (e.g., the researcher asked Veronica, *Do you want to listen to music?*), 2. Implemented a prompt (e.g., the researcher said, *If you look at sí, I will play music*), 3. Observed Veronica looking at sí for 3 seconds and 4. Reinforced Veronica's choice (e.g., *Yes, you want to listen to music, I will play music*). Throughout intervention, the researcher determined that Veronica needed a minimum of 10 seconds of wait time and that a definite yes/no was when eye gaze was greater than 3 seconds. The researcher then implemented the Teach-Model-Coach-Review instructional approach (Roberts et al., 2014) with Desiree. Desiree *Modeled* the intervention, the researcher *Coached* Desiree, and the researcher *Reviewed* what was successful. The intervention strategies check list implied the following for Veronica: 1. She attended to the AAC board, 2. She actively participated, 3. She

did not use the AAC board successfully during the activity. Desiree stated that Veronica needed more practice to use the eye gaze AAC board successfully. The session lasted approximately 1 hour.

Day 2. The second intervention day occurred at CASP. Gabriella assisted in translating. The researcher taught Desiree how to make an eye-gaze AAC board with the resources (i.e., blank paper, scissors, tape, concrete printed pictures) so Desiree could make new and additional eye-gaze AAC boards in the future. During the intervention, Veronica demonstrated a definite yes/no response when the researcher asked Veronica if she wanted the researcher to play music. A definite choice was considered holding eye gaze for greater than 3 seconds. The researcher implemented the Teach-Model-Coach-Review instructional approach (Roberts et al., 2014) with Desiree. Desiree *Modeled* the intervention, the researcher *Coached* Desiree, and the researcher *Reviewed* what was successful. Desiree stated that she needed more practice with the eye gaze AAC board. During this session Veronica attended to the AAC board, actively participated, and used the AAC board successfully during the activity. At the completion of the session, the researcher and Desiree determined that concrete symbols (e.g., pictures) would be more beneficial for Veronica. Desiree said she would bring in a picture of Veronica eating and a picture of Veronica sleeping. Desiree expressed that she needed Veronica to consistently tell her when she was hungry and when she was tired. With Desiree's input the researcher modified and developed a new board incorporating concrete symbols. The session lasted approximately 30 minutes.

Day 3. The third intervention day, the researcher and Gabriella traveled to Veronica's home. Intervention did not occur this day due to Veronica's poor health and exhaustion. Desiree explained that Veronica had seizures and a fever the previous night and did not sleep very well.

Therefore, instead of implementing intervention, the researcher added Velcro to the new concrete pictures. Concrete pictures included Veronica sleeping, cooking, and listening to music.

Day 4. The fourth intervention day occurred at CASP. Gabriella was present to assist with translating. Desiree put two new concrete pictures on the AAC board with Velcro. The pictures consisted of Veronica sleeping and Veronica listening to music. During the session, the researcher implemented the Teach-Model-Coach-Review and asked Desiree to demonstrate the intervention strategies (i.e., language modeling, aided language stimulation, and explicit instruction) with the eye gaze AAC board. During listening to music activity, Desiree asked Veronica, "Do you want to listen to music or go to sleep," Desiree then waited 10 seconds, Veronica looked at music for more than 3 seconds, and the researcher played music to reinforce Veronica's selection. The researcher commented on and provided feedback for Desiree during the intervention time. For example, the researcher explained the importance of providing 10 seconds of wait time for Veronica to make a selection on the eye gaze AAC board. During this session Veronica attended to the AAC board, actively participated, and used the AAC board successfully during the activity. The session lasted approximately 30 minutes.

Maintenance. Maintenance sessions were initiated from the telepractice room in the Schiefelbusch Speech-Language-Hearing Clinic. The first maintenance session took place 9 weeks after the last face-to-face session. During the 9 weeks, the researcher encouraged the Desiree and Evy to continue the implementation of intervention strategies through the AAC boards.

Session 1. During the first maintenance session Gabriella used Skype for Business to communicate with the researcher and Desiree from her home. Desiree had trouble with the technology (i.e., downloading Skype for Business on her personal home computer); therefore,

Desiree called Gabriella through WhatsApp. Desiree explained that Veronica was having backaches and therefore, she was seated in bed the past week for comfort. The researcher asked how the eye gaze AAC board was working. When asked, Desiree explained that she added two new pictures into the rotation of the existing pictures. The first picture was of Veronica painting and the word, pintar (paint) was written below the picture. The second picture was of Veronica cooking and the word, cocinar (to cook) was written below the picture. Desiree also explained that she consistently used the eye gaze AAC board to ask if Veronica wanted to dormer (sleep) or comer (eat). Desiree also explained that Veronica was consistently using the yes/no board with abstract symbols when choosing between two options. The researcher asked Desiree if she had any questions or if she needed any assistance with the AAC board. Desiree said she did not have any questions and that she did not need any help with the eye gaze AAC board. At the completion of the session, the researcher sent Desiree an email with instructions on how to download Skype for Business. Gabriella also volunteered to travel to Desiree's home to assist with the technology (i.e., download Skype for Business on Desiree's computer) for the next session.

Session 2. The second maintenance session took place 3 weeks after the first maintenance session and lasted approximately 23 minutes. During the second maintenance session, Gabriella traveled to Desiree's house to help her set up Skype for Business on her desktop computer. Due to poor Internet connection, Skype for Business did not download, therefore, Gabriella's computer was used. Throughout the session, the video faded in and out due to the poor Internet connection. Once a stable connection was established, Desiree explained that Veronica was having a little bit of a backache throughout the week. Desiree further explained that Veronica spent much time in bed, because it was painful to sit for long periods in a chair. During the

middle of the session, the video cut in and out, but after 3 minutes the connection was reestablished. When the researcher asked Desiree how the eye gaze board AAC board was working, Desiree explained that she was using the board every time she asked Veronica which activity she wanted to do. For example, Desiree asked Veronica, "Do you want to pintar (paint) or cocinar (cook)" while implementing the board. Desiree further explained that Veronica was doing well with the first series of concrete pictures, so she added new concrete pictures to the eye gaze AAC board. These consisted of pictures of family members: Mom, Dad, Brother, and Sister. Desiree explained it was important to her for Veronica to express which family member she wanted. Desiree demonstrated how she used the AAC board for the researcher. The researcher provided minimal feedback. The researcher praised Desiree for her implementation of wait time after asking close-ended questions.

Session 3. The third maintenance session was held 2 weeks after the second session and lasted approximately 25 minutes. During the third maintenance session, Gabriella traveled to Desiree's home to assist with setting up Skype for Business. Desiree explained that Veronica had a lot of pain in her back and right hand. She expressed that she was worried about Veronica's pain and was trying to save money to purchase a new medical chair for her to sit properly. Desiree explained that the chair was expensive; therefore, it would take months to save for one. When asked how the eye gaze AAC board was working, Desiree explained that she used the eye gaze AAC board for every daily activity (e.g., breakfast, painting or cooking activities, lunch, and dinner) and that she decreased wait time from 10 seconds to 5 seconds. Desiree explained that she was incorporating new words with pictures on the board. Desiree explained that the concrete photographs were more beneficial than abstract pictures, but that Desiree continued to

use abstract symbols for yes/no. Desiree also taught Veronica's siblings how to use the board with Veronica.

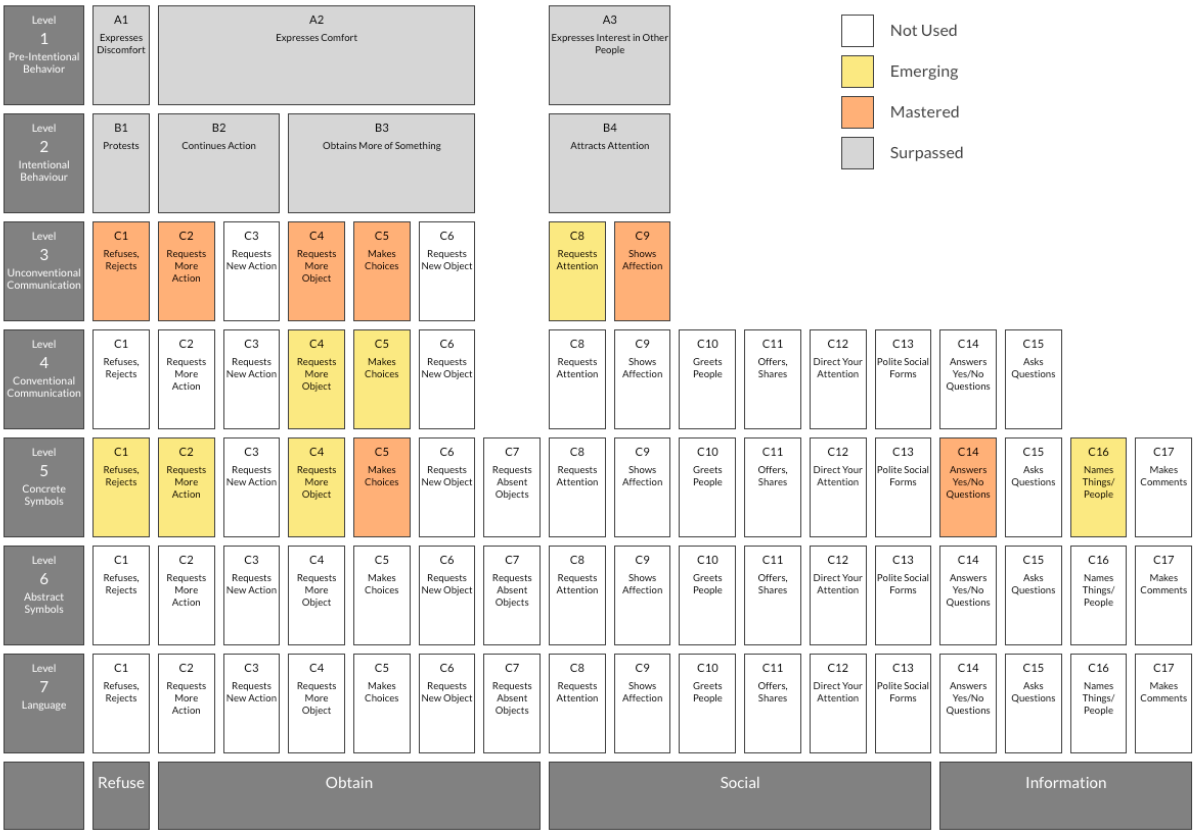
Session 4. The last maintenance session was held 2 weeks after the third session and lasted approximately 52 minutes. During the fourth maintenance session, Gabriella traveled to Desiree's home to assist with the technology. Desiree was still having trouble-using Skype for Business independently. Desiree explained that she was worried about Veronica because she was sweating a lot and shaking more than usual. Desiree was nervous that Veronica was having a lot of pain, which was making her sweat. The researcher asked Desiree to fill out the second survey. The researcher shared the screen through Skype for Business so she could read the questions. The researcher then asked Desiree to answer the questions on the online Communication Matrix (Rowland, 2018). Upon completion of the session, Desiree stated:

> Thank you for all the work you have done for Veronica. And the board and everything. A really nice intention. When I first knew what happened with Veronica I went to language therapy center and they said it wouldn't work, it would never work. So Veronica could never communicate or talk so they said no, no, no.

At the end of the session Desiree independently completed the online Communication Matrix (Rowland, 2017) (Figure 2) profile for Veronica. Results indicated the following. In Level 1 (Pre-intentional communication) Veronica moved from mastery to surpassing when expressing discomfort, expressing comfort, and expressing interest in other people. In Level 2 (Intentional communication), Veronica moved from mastery to surpassing when protesting, continuing an action, obtaining more of something, and attracting attention. In Level 3 (Understanding communication) went from not using to mastery in requesting a new action and

to emerging in requesting attention. The other communicative skills remained the same at mastery. In Level 4 (Conventional communication) Veronica moved from not using to emerging when requesting more of an object and making choices. Veronica moved from mastery to not using when refusing objects and showing affection. In Level 5 (Concrete symbols) Veronica moved from not using to emerging when refusing/rejecting, requesting more action, requesting more object, and naming things/people. Veronica moved from not using to mastery in making choices and answering yes/no questions. Veronica did not use language in Level 6 (Abstract symbols) or Level 7 (Language) to communicate. Results indicated that Veronica's total score was 35/160; indicating a gain of 5.

Figure 2. Veronica's final results. This figure depicts Veronica's communication strengths.



Carlos

Communication Assessment. The online Communication Matrix in Spanish (Rowland, 2017) was completed with the researcher and Evy. Results from Carlos' online Communication Matrix (Rowland, 2017) (Figure 3) profile indicated the following. In Level 1 (Pre-intentional communication) Carlos surpassed expressing discomfort, expressing comfort, and expressing interest in other people. In Level 2 (Intentional communication) Carlos surpassed protesting, continuing an action, obtaining more of something, and attracting attention. In Level 3 (Understanding communication) Carlos mastered refusing/rejecting, requesting more of an action, requesting more of an object, making choices and showing affection. Carlos was emerging when requesting attention. In Level 4 (Conventional communication) Carlos was emerging when requesting more of an object and making choices. In Level 5 (Concrete symbols) Carlos was emerging in refusing/requesting, requesting more of an action, requesting more of an object, and naming things. Carlos mastered answering yes/no questions. Carlos did not use abstract symbols or language to communicate. Carlos's total score was 35/160.

Figure 3. Carlos's initial results. This figure depicts Carlos's communication strengths.

AAC Implementation and Intervention.

Day 1. The researcher traveled to Carlos and Evy's home the first day. Assent was obtained in Spanish each time the researcher met with the participants. The researcher obtained assent from Carlos in Spanish (See Appendix B) upon meeting and explained that she was there to help Carlos better communicate. Evy assisted the researcher in determining if Carlos understood assent. The researcher introduced a tactile yes/no board to Carlos and Evy with two abstract pictures of sí (yes) and no (no). A tactile symbol board was selected due to Carlos's visual impairment limitations. The yes/no choices were selected because Evy explained that it was important for Carlos to express a definite yes/no with unfamiliar partners. The researcher then implemented intervention strategies including: language modeling, aided language

stimulation, and explicit instruction. In language modeling, the researcher put the tactile sí symbol board under Carlos's hand and asked, "Do you want to listen to music?" Next the researcher provided an opportunity for Carlos to select/touch the symbol with his hand (e.g., *You can touch sí and I will play music*). In aided language stimulation, the researcher reinforced the sí symbol on the AAC device with verbal input (e.g., *Do you want to listen to music?*). The researcher touched the sí symbol, and said, "Yes, you want to listen to music." Then the researcher played music. In explicit instruction, the researcher: 1. Used a stimulus (e.g., the researcher asked Carlos, *Do you want to listen to music?*), 2. Implemented a prompt (e.g., the researcher said, *If you touch sí, I will play music*), 3. Observed Carlos not touching sí, 4. Reinforced the Carlos's choice (e.g., *The researcher did not play music*). Throughout intervention, the researcher determined that Carlos needed a minimum of 10-15 seconds of wait time to elicit a communicative response. The researcher then implemented the Teach-Model-Coach-Review instructional approach. Evy *Modeled* the intervention, the researcher *Coached* Evy, and the researcher *Reviewed* what worked and what needed practice. Upon completion, the researcher explained that Carlos did not use the tactile AAC board successfully (i.e., consistently and effectively) during the activity. During the session when the researcher asked Carlos if he wanted to listen to music, he did not consistently respond through selection through the tactile AAC board. It appeared that Carlos's yes/no responses were not in response to the researcher questions or prompts. For example, Carlos selected "no" through touch when a question or prompt was not elicited. The researcher further explained that more practice and exposure could help. The session lasted approximately 30 minutes.

Day 2. The second day occurred at CASP. The researcher implemented language modeling, aided language stimulation, and explicit instruction intervention strategies for Carlos

during the activity. The activity consisted of playing music (i.e., the Beatles) to facilitate a definite yes/no response. Carlos initially attended to the tactile AAC board, however, within 20 minutes he grew tired, lost interest, and stopped attending (i.e., touching the board). Consequently, the researcher ended the session early and asked Evy to demonstrate the intervention strategies through the Teach-Model-Coach-Review approach. In accordance with observations from Evy and the researcher, a definite yes/no was not obtained in the session through the tactile AAC board or through Carlos's physical gesture for no (i.e., shaking his head from side to side). For example, when the researcher asked if she should stop playing the music, Carlos did not respond. The session lasted approximately 30 minutes.

Day 3. Carlos and Evy traveled to CASP for intervention. The researcher provided assent and implemented language modeling, aided language stimulation, and explicit instruction intervention strategies for Carlos during the activity. The activity consisted of playing music. The researcher then asked Evy to demonstrate the strategies through the Teach-Model-Coach-Review approach. After reviewing Evy's intervention strategies, the researcher explained that a minimum of 10-15 seconds of wait time should be incorporated when waiting for Carlos's response. Evy did not often give Carlos ample time to respond to prompts (i.e., Evy asked the question again after 1 second). During the review, the researcher asked Evy to count to 15 aloud, before asking Carlos if he would like to listen to music. It was unclear if a definite yes/no was obtained in regard to the chosen activity. However, when the researcher asked Carlos if he wanted to go home (i.e., *Quieres ir a tu casa*), Carlos responded with a head nod indicating "no." This session lasted approximately 30 minutes.

Day 4. The fourth intervention day occurred at CASP. The session lasted approximately 10 minutes. When the researcher asked for Carlos's assent, Carlos touched the "no" on the AAC

board. The researcher expressed that it was important to honor and respect Carlos's choice and therefore intervention did not occur. During this time, the researcher taught Evy how to make additional tactile AAC boards for Carlos. When asked, Evy expressed that *want* was important. The researcher additionally agreed that want was a good word to introduce to Carlos. Evy explained that she would create and incorporate a tactile *want* card in the future.

Maintenance. Maintenance sessions were initiated from the telepractice room in the Schiefelbusch Speech-Language-Hearing Clinic. The first maintenance session occurred 9 weeks after the last face-to-face session.

Session 1. During the first maintenance session Evy did not join the Skype for Business call or respond to the researcher's texts or IM messages on Skype for Business. The researcher waited for 30 minutes, and then decided to reschedule the session. During the rescheduled session, which occurred 1 week later, Evy explained that Carlos had been very tired throughout the week. The researcher asked how the tactile AAC board was working and Evy explained that Carlos incorporated the tactile AAC board at CASP with the teachers. Evy also explained that Carlos was making more definite yes/no responses and that they were constantly practicing. The researcher asked what other words were important for Carlos to communicate. Evy suggested the words *want, more*, and *stop*. Evy then explained that it was not a good time because her husband was out of the country and that she was busy with Carlos. The researcher asked if Evy had any questions or needed any help with the tactile AAC board. Evy explained that she didn't have any questions or need any help at that time.

Session 2. The second maintenance session occurred 3 weeks after the first maintenance session and lasted approximately 27 minutes. During the second session with Evy, the Internet connection was unstable (i.e., voice and video cut in and out). It took 7 minutes and 40 seconds

to establish video and audio. During the session, Evy explained that Carlos incorporated the board with every available opportunity (e.g., Evy incorporated the tactile AAC board when asking Carlos if he wanted to go to sleep). Evy explained that she put the board in a binder for better control (i.e., so the board would not slide off the lap top on the wheel chair) and that she made the tactile components (i.e., the Velcro) in the shape of the letters: S for sí and N for no. The researcher praised Evy and explained that that was a great way to incorporate literacy as well. Evy then modeled how she used the tactile AAC board. Evy asked Carlos if Carlos was hungry, waited 15 seconds, and then reinforced Carlos's response by going to get Carlos something to eat. When asked, Evy explained that she brought the tactile AAC board to CASP and introduced it to Carlos' teachers. The researcher additionally praised Evy for teaching the CASP staff members how to use the tactile AAC board because it was important for others to be able to communicate with Carlos. Evy also explained that she brought the tactile AAC board to a restaurant that week and used it with the waiter. She stated:

> But now he surprise me because the other time we went to the restaurant and I let him choose what he want to eat. And the garcon ask we need the knife and the tenedor and Carlos say yes. And the guy understand. So he bringed it. And he say, and when he choose water, soda, or juice he choose also what he want. I like it that way because I don't say nothing and he choose. The waiter understand him.

The researcher asked Evy if Evy wanted to add an additional word/card, but Evy said not yet because her husband was out of the country for work and she did not have time.

Session 3. During the third scheduled session, Evy did not join the call or respond to text messaging. The researcher rescheduled the session and Evy did not join the call or respond to the text messaging through WhatsApp from the researcher.

Session 4. This session occurred 2 weeks after the third maintenance session and lasted approximately 5 minutes. During the fourth session with Evy, the Internet was unstable. The audio was working, but the video was not working. The audio continuously cut out during the call, making it difficult to hear. Therefore, the researcher conducted the second survey with Evy through WhatsApp. The researcher was unable to complete the online Communication Matrix (Rowland, 2018) for final data.

Parent Satisfaction

To determine participant satisfaction and learning, the participants completed surveys before and after treatment in Spanish. The surveys asked the mothers to rate six statements as: (1) Strong agree, (2) Agree, (3) Disagree, (4) Strongly disagree, and (5) No opinion. The lower the score, the greater the agreement with the statement. Pre and post intervention results by participant are reported in the tables below:

Table 7

Parent Satisfaction Survey Desiree

Question	Pre-Intervention	Post-Intervention
I have knowledge about Augmentative and Alternative Communication	3	1
I have knowledge about Telepractice	4	2
I think Augmentative and Alternative Communication helps individuals communicate	1	1

I think Telepractice helps maintain intervention services	5	1
I think Telepractice is easy to use	5	3
I think Augmentative and Alternative Communication is easy to use	5	1

Table 8

Parent Satisfaction Survey Evy

Question	Pre-Intervention	Post-Intervention
I have knowledge about Augmentative and Alternative Communication	3	1
I have knowledge about Telepractice	4	1
I think Augmentative and Alternative Communication helps individuals communicate	2	1
I think Telepractice helps maintain intervention services	1	2
I think Telepractice is easy to use	5	2
I think Augmentative and Alternative Communication is easy to use	1	2

Chapter V
Discussion

This exploratory study described the assessment, implementation, and intervention of low-technology AAC in Lima, Peru and maintenance sessions through telepractice. The study was initiated due to lack of knowledge about AAC, a lack of AAC resources, and the need for an alternative means of communication for people with complex communication needs at CASP. The study was additionally conducted due to a gap in the literature on the maintenance of AAC in developing nations through technologies (i.e., telepractice) and information on sustainability once intervention was completed. The study documented the process of assessment and intervention and how to conduct maintenance through technologies.

Veronica

Development. Dr. Mayo selected Veronica for the study. Veronica did not have a consistent means to effectively communicate with familiar and unfamiliar partners and speech-language therapy services were not available at CASP. Standardized and informal speech, language, and communication measures were not available at CASP. Therefore, beforehand, the researcher selected the online Communication Matrix (Rowland, 2018), informal observations, and case history to assess Veronica's opportunity and access barriers to communication. These assessment measures were selected due to availability, ease of use, and time constraints. Information obtained from the online Communication Matrix in Spanish (Rowland, 2017) suggested targeting Veronica's receptive language skills to improve her understanding of language and additionally targeting her expressive language skills through the implementation of concrete and abstract symbols. Due to the lack of funding and a limited family income (i.e., the family could not afford an iPad), a low-technology eye-gaze AAC board was developed. The

researcher implemented recommendations from research conducted by Gormley (2017), which suggested being creative when using inexpensive materials to develop low technology communication boards and materials. It was important to use materials that were readily available and inexpensive when creating the eye gaze AAC board for Veronica. Because these materials were inexpensive and readily available in the home, the participants did not have to rely on the researcher for future supplies, thereby promoting sustainability for the AAC board. Because the materials to create the boards were available and inexpensive, Veronica's mother was able to create several additional AAC boards based on their needs at home and in the community.

Implementation. Throughout the study, the eye-gaze AAC board went through numerous modifications. Initially the eye-gaze board was a sheet of blank printer paper with abstract symbols for yes and no. Per parent report and information obtained through the four intervention sessions, it was determined that concrete symbols (i.e., pictures of Veronica doing motivating actions) would be more beneficial for Veronica. The printer paper was additionally flimsy and hard to hold up for long periods. Therefore, a new board was created out of cardboard with Velcro for the addition and substitution of concrete pictures. Velcro allowed the opportunity for different concrete pictures to be switched out depending on the situation. For example, during the day, concrete pictures of activities (e.g., painting or cooking) were placed on the board to ask Veronica what she wanted to do.

Throughout intervention it was important to incorporate the confirmation of intervention strategies data collection sheet to ensure that the researcher was implementing the correct procedures each intervention session. This data collection sheet additionally served as a teaching tool and reference for Desiree. At the end of each intervention session, the researcher reviewed

and discussed the procedures and observations. Through this discussion occurred, which aided in facilitating parent (i.e., communication partner) training.

During the implementation of AAC it was crucial to teach caregivers and other members in the community (e.g., teachers) how to implement AAC intervention strategies in order to ensure sustainability of the AAC boards. Providing caregivers and members in the community with these skill sets helped avoid device abandonment (Johnson, Inglebret, Jones, & Ray, 2006). Once the researcher left, the community members were able to serve as teachers for other members in the community, thereby further instilling sustainability.

Maintenance. Maintenance sessions were scheduled in accordance with Desiree's schedule and preference. It was determined that Friday mornings were the optimal time for her. Veronica had numerous doctor and therapy sessions throughout the week and Friday was reported to be a good time. The use of Skype for Business was not optimal. Desiree had trouble with the technology (e.g., downloading the program and inconsistent Internet connection) and therefore, Gabriella, the translator, brought her computer for the sessions. When asked, Desiree expressed that WhatsApp was much easier for her to use because she was familiar with the application on her smart phone.

The acquired information supports the importance of pre-training for technologies. A scheduled training session on Skype for Business before intervention would have made the technology easier to access and use. It is additionally important to select technologies for maintenance sessions, which are familiar and comfortable to the user. Asking which technologies and applications the participant used would have been beneficial. This information could avoid technological breakdowns and frustrations in the future.

Impact. Results from the online Communication Matrix in Spanish (Rowland, 2017), parent satisfaction survey, and discussions indicated that Veronica's receptive and expressive communication expanded. Within 4 intervention sessions and 4 maintenance sessions, Veronica acquired 4 new communicative acts including: 1. Request a new action, 2. Request attention, 3. Name things and people, and 4. Answer yes/no questions. During intervention sessions, it was observed that Veronica consistently started to answer yes/no questions when prompted with a motivating activity (e.g., listening to music). If more intervention sessions were administered, more communicative acts could have been developed and acquired. Desiree's final survey indicated that AAC helped Veronica communicate and that telepractice helped maintain services. During maintenance sessions through telepractice, Desiree stated: 1., "She is trying now to do more activities with less help and she's improving a lot," 2. "She can say yes/no for two options and she is excited for two options," 3."There was much improvement in Veronica's communication," and 4. "The board is helping Veronica make independent choices." After the completion of the study, Desiree continued to communicate through WhatsApp with the researcher. In one message Desiree stated, "Thank you for the life that has given me so much and for Veronica's smile. Today is a marvelous day. I invite you to smile." The involvement, motivation, trust, and rapport developed with Desiree were crucial to the successes for Veronica.

Carlos

Development. Dr. Mayo selected Carlos for the study. Carlos was selected for the study due to a lack of a consistent and effective means of communication with familiar and unfamiliar partners. Information obtained from the online Communication Matrix in Spanish (Rowland, 2017), informal observations throughout intervention sessions, and a case history suggested that a tactile AAC board would be the best means of improving Carlos's receptive and expressive

language skills and facilitating communication. Results from the researcher's informal observations did not match information obtained from Evy's results from the online Communication Matrix in Spanish (Rowland, 2017). For example, during one informal observation, Carlos did not exhibit a definite yes/no response or request more of a desired object. This could be attributed to Evy fully understanding what the prompted question was asking. Due to limited time constraints in this study, it is recommended to schedule more time and more opportunities for informal and structured observations. Recommendations include asking the caregiver for various video recordings of the participant in different environments and implementing structured observations to obtain a better understanding of the participant's communicative strengths and limitations.

When determining target words, Evy explained that she understood her son's wants and needs, however unfamiliar partners did not. The researcher suggested incorporating and introducing core vocabulary words (i.e., words that are frequently used in communication), however Evy was adamant to start with establishing a definite yes/no first. It was important for the researcher to support what was best for Evy and Carlos to ensure that the tactile AAC board was not abandoned once the researcher left.

Implementation. The tactile AAC board went through numerous revisions to meet Carlos's needs. The initial boards had yes on the left and no on the right. Abstract symbols were used to represent yes (i.e., a green smiling face) and no (i.e., a red X). Due to Carlos's visual impairments, the researcher suggested using tactile representations. Pieces of soft Velcro were placed below the word sí (yes) and rough Velcro pieces were placed below the word no (no). Further modifications were made to keep the tactile AAC boards in place. The board was placed in a binder, which sat, open on Carlos's lapboard on his wheelchair. The Velcro pieces were also

modified to represent the first letters of sí (yes) and no (no). The soft Velcro outlined the letter S for sí and the rough Velcro outlined the letter N for no. Throughout intervention sessions, Carlos continued to express "yes" and "no" through physical gestures, however the researcher explained that the tactile AAC board would provide him with a means to consistently say yes or no with unfamiliar partners in the future.

During interventions sessions, a definite yes/no was not consistently established, however this was attributed to the limited intervention time. It is therefore recommended to increase the number of intervention sessions and to alter and change activities. Evy explained that Carlos was highly motivated by music, however other motivating activities should have been explored and implemented.

Maintenance. Four maintenance sessions were scheduled in accordance with Evy's schedule. Due to Carlos's multiple doctor and therapy sessions a week, it was determined that Friday afternoons when at home were the most convenient time. Maintenance sessions were missed frequently, however, they were rescheduled in accordance with Carlos and Evy's schedules. During maintenance sessions, when asked, Evy also commented that WhatsApp was a much easier way to communicate than Skype for Business. Therefore implementing WhatsApp as a means to communicate is suggested over Skype for Business. Final data was not collected due to frequently missed sessions and unstable Internet connection. Final data could have been collected with additional rescheduled sessions, however, it was important to note the problem of poor and unstable Internet services in Lima, Peru. The final survey and discussions indicated that Carlos developed a consistent and effective means to say yes/no. Evy explained that additional words (e.g., quiero for want) would be added once she had time and support from her husband.

Due to the limited number of intervention sessions, maintenance sessions were scheduled to continue to support the sustainability of the low technology AAC boards for the parents. For Evy, the maintenance sessions provided an opportunity for her to ask questions, discuss complications and challenges, and note improvements. If parents of individuals with CCN have busy schedules and limited free time, it is recommended to select a familiar technology, which can be informally implemented. For Evy, WhatsApp provided a means to keep in contact with the researcher through text messaging, voice, and video calls.

Impact. Although results from the online Communication Matrix (Rowland, 2018) were not completed for Carlos, Evy's final satisfaction survey indicated that AAC helped Carlos communicate and that telepractice helped maintain services. During one maintenance session Evy commented, "He will be more sure when he wants to go to the toilet. And that is one of the things that I like it. Because he tell me more sure. Now, it is more sure when he tell me. Toilet, toilet." Evy's comments indicated that through the tactile AAC board Carlos developed independence and a more consistent means of communicating. After the completion of the study, Evy maintained communication with the researcher through WhatsApp. Dr. Mayo also maintained communication with the researcher through email and explained that Carlos was consistently using the tactile AAC board at CASP to communicate. Sustainability can be possible if maintenance is established and there is a reliable means of communication (i.e., WhatsApp).

Results from Veronica's online Communication Matrix (Rowland, 2018) and both parents' satisfaction surveys suggest that this model could be implemented with other populations where face-to-face speech-language services are not available. Results from Veronica's online Communication Matrix (Rowland, 2018) showed improvements in communication. And results from both parents' satisfaction surveys indicates the parents

obtained knowledge in AAC, obtained knowledge in telepractice, thought AAC was easy to use, thought telepractice helps people maintain intervention services, thought telepractice was easy to use, and thought AAC was easy to use.

Barriers

Various constraints were associated with this study. Restrictions were primarily due to a lack of technology and financial funding. Specific barriers included: 1. No previous information and limited exposure to AAC at CASP, 2. No access to high-technology AAC devices (e.g., iPads and high-technology speech generating devices), 3. Faulty Internet connections, 4. Outdated technology (e.g., desktop computers), 5. Inconsistent transportation from the caregivers to CASP for assessment and intervention services, and 6. Unavailable software programs in Spanish. If iPads became available in the future, there are currently limited communication software programs available in Spanish in Peru. For example, it is not possible to download the lite version of Sonoflex in Spanish (a communication software) through iTunes in Peru. Communication software applications must be downloaded in the United States through iTunes. Although, technologies were outdated and the Internet connection was frequently faulty, alternate means of communication, (e.g., WhatsApp), were explored and utilized to address the technological breakdowns.

Barriers additionally occurred due to a lack of standardized speech and language assessments for individuals with complex communication needs. Due to informal measures being the primary means of obtaining initial and final information, results from the parents were inconsistent with results from the researcher. For example, one of the parent's reports from the online Communication Matrix (Rowland, 2018) differed from the researcher's informal

observations. This resulted in inconsistent information thereby making it challenging to develop initial goals and to determine which communication acts were obtained.

Language was an additional barrier. Although, the examiner spoke and understood moderate Spanish, difficulties arose trying to explain unfamiliar concepts (e.g., intervention strategies). Throughout the study, the use of a translator was crucial.

Due to limited resources, the researcher used inexpensive, easily accessible, and available materials (e.g., paper, colored pens, tape, scissors, Velcro, and photographs). Due to limited financial resources, high-technology speech generating devices (e.g., iPads with communication applications) were not available to be incorporated. The use of high-technology AAC systems may have facilitated more improvements in communication (i.e., expressive and receptive language).

Limitations

Limitations consisted of time constraints and the number of participants in the study. Due to limited time, ample time was not provided for training in technologies (i.e., Skype for Business). Therefore, it is recommended to conduct training sessions before maintenance sessions start. A minimum of 1 hour of training time on Skype for Business, is recommended, before conducting maintenance sessions. Due to the small nature of the study (i.e., 2 participants), the results cannot be generalized to a larger population. Furthermore, due to the heterogeneous participants, results cannot be generalized to others.

Implications

The results from the study suggest that this model could be incorporated and implemented in other populations in need of speech and language services in developing nations and underrepresented regions (i.e., rural communities). Maintenance sessions can be conducted

through telepractice and/or applications on smart phones to monitor and ensure the sustainability of intervention services.

The model can be altered and modified to fit the schedule of both the practitioners and the clients. Intervention can be expanded from 4 sessions to as many sessions needed. Maintenance sessions can be conducted to meet the needs of the people being served. Lastly, the materials for the development of the low-technology boards were easily accessible and inexpensive.

Considerations for Future Research

In accordance with Donnellan's (1984) *least dangerous assumption* all humans have the desire to communicate and all humans have something to say. It is therefore important to continue and expand research in the development, implementation, and maintenance of low technology AAC and high technology AAC devices for people in underrepresented regions.

Considerations for future research consist of: 1. The expansion of this model to a larger population (i.e., more than two participants, ideally 40 participants or more), 2. The implementation of a more formal means of observing and assessing communication. The Communication Complexity Scale (CCS) can provide an accurate description of communication strengths and weaknesses. Standardized assessment, like the Peabody Picture Vocabulary Test (PPVT) could also be incorporated to assess receptive language skills, 3. Obtaining funding for iPads with compatible software programs and applications. GoTalk is one application that can be programed in Spanish.

Conclusion

The purpose of this exploratory study was to document one experience in the development, implementation, and maintenance sessions through telepractice for AAC in underrepresented regions. Through the development, implementation, and maintenance of a low-

technology eye gaze AAC board, Veronica expanded her communication. Results from the online Communication Matrix (Rowland, 2018) indicated that Veronica progressed and surpassed, mastered, and had emerging communication skills. Due to technological difficulties (i.e., poor Internet connection) it is uncertain if Carlos expanded and improved his communication. Results from the online Communication Matrix (Rowland, 2018) were not completed, however when asked, Evy explained that Carlos was developing a more efficient and effective means to consistently say *yes* or *no* with familiar and unfamiliar communication partners. Comparing the results from the initial and final surveys indicated that both Desiree and Evy developed knowledge in AAC and telepractice, thought AAC helped individuals communicate, thought that telepractice maintained intervention services, and thought AAC and telepractice were easy to use. Results indicated that, for these two individuals, the development and implementation in Peru and maintenance of AAC through telepractice was positive.

References

Alant, E. (1996). Augmentative and Alternative Communication in Developing Countries: challenge of the future. *Augmentative and Alternative Communication, 12,* 1-12.

Allen, A.A., Scholsser, R.W., Brock, K.L., & Shane, H.C. (2017). The effectiveness of aided augmented input techniques for persons with developmental disabilities: a systematic review. *Augmentative and Alternative Communication, 33*(3), 149-159.

American Speech-Language-Hearing Association. (2018). *Augmentative and Alternative Communication* [Overview]. Retrieved from http://www.asha.org/PRPSpecificTopic.aspx?folderid=8589942773&section=Overview.

American Speech-Language-Hearing Association. (2018). *Augmentative and Alternative Communication* [Forms Unaided or Aided]. Retrieved from http://www.asha.org/PRPSpecificTopic.aspx?folderid=8589942773&section=Key_Issues

American Speech-Language-Hearing Association. (2017). *Telepractice* [Overview]. Retrieved from http://www.asha.org/PRPSpecificTopic.aspx?folderid=8589934956&section=Overview.

American Speech-Language-Hearing Association. (2018). *Guidelines for Meeting the Communication Needs of Persons with Severe Disabilities* [Overview]. Retrieved from http://www.asha.org/policy/GL1992-00201/.

Anderson, K. B., Boisvert, M. K., Doneski-Nicol, J., Morelock, C., Cohn, E. R. (2012). Tele-AAC Resolution. *International Journal of Telerehabilitation, 4*(2), 79-82. doi: 10.5195/ijt.2012.6106.

Bauer, K. (2003). Distributive Justice and Rural Healthcare: A Case for E-Health. *International Journal of Applied Philosophy, 17*(2), 241-252.

Beukelman, D. R. & Mirenda, P. (2013). *Augmentative and Alternative Communication: Supporting Children and Adults with Complex Communication Needs* (4th ed.). Baltimore: Paul H. Brookes Publishing Company.

Bolajoko O. O., Ruben, R. J., & Parving, A. (2006). Reducing the Burden of Communication Disorders in the Developing World: An Opportunity for the Millennium Development Project. *American Medical Association.*

Brady, N.C. & Bashinski, S.M. (2008). Increasing communication in children with concurrent vision and hearing loss. *Research and Practice for Persons with Severe Disabilities, 33,* 59-70.

Brady, N. C., & Keen, D. (2016). Chapter 6 Individualized Assessment of Prelinguistic Communication. Prelingusitic and Minimally Verbal Communicators on the Autism Spectrum. Springer.

Cameron, D. & Markowicz, L. (2009). Augmentative and alternative communication: International perspectives. *Occupational therapy now, 11,* 12-14.

Cason, J. (2009). A Pilot Telerehabilitation Program: Delivering Early Intervention Services To Rural Families. *International Journal of Telerehabilitation. 1*(1), 29-37.

Brady, N.C., Fleming, K., Bourque, K., & Kasari, C. (2018). Communication Complexity Scale. Retrieved from https://lsidata.ku.edu/ccs/

Donnellan, A. (1984). The criterion of the least dangerous assumption. *Behavioral Disorders, 9,* 141-150.

Downing, J.E., Hanreddy, A., & Peckham-Hardin, K. (2015). *Teaching Communication Skills to Students with Severe Disabilities (3rd ed.).* Baltimore: Paul H. Brookes Publishing Company.

Dunst, C., & Trivette, C. (2009). Let's be PALS: An evidence based approach to professional development. *Infants & Young Children, 22,* 164–176.

Edwards, M., Stredler-Brown, A., & Houston, T. K. (2012). Expanding the Use of Telepractice in Speech-Language Pathology and Audiology. *The Volta Review, 112*(3), 227-242.

Fujiura, G.T., Park, H. J., & Rutkowski-Kmitta, V. (2005). Disability Statistics in the Developing World: A Reflection on the Meanings in our Numbers. *Journal of Applied Research in Intellectual Disabilities 18,* 295–304. doi: 10.1111/j.1468-3148.2005.00268.x

Gevarter C., O'Reilly M.F., Rojeski L., Sammarco N., Lang R., Lancioni G.E., Sigafoos J. (2013). Comparisons of intervention components within augmentative and alternative communication systems for individuals with developmental disabilities: A review of the literature. *Research in Developmental Disabilities, 34*(12), 4404-4414. doi.org/10.1016/j.ridd.2013.09.018.

Gormley, J. (2017). Addressing the Needs of Children With Complex Communication Needs and Their Partners in Areas of Poverty: To Haiti and Back. *Perspectives of the ASHA Special Interest Groups SIG 12, 2.*

Hartley, S. D. & Wirz, S. L. (2002). Development of a 'communication disability model' and its implication on service delivery in low-income countries. *Social Science and Medicine, 54,* 1543-1557.

Hayes, D., Boada, K., & Coe, S. (2015). Early Hearing Detection and Intervention by Telepractice. *Perspectives on Telepractice. 5*, 38-47.

Hyter, Y. D., Rosario Roman, T., Staley, B., McPherson, B. (2017). Competencies for Effective Global Engagement: A Proposal for Communication Sciences and Disorders. *Perspectives of the ASHA Special Interest Groups SIG 17, 2*(1), 9-17.

Johnson, J.M., Inglebret, E., Jones, C. & Ray, J. (2006). Perspectives of speech language pathologists regarding success versus abandonment of AAC. *Augmentative and Alternative Communication, 22*(2), 85-99.

Johnson, N. & Parker, A.T. (2013). Effects of wait time when communicating with children who have sensory and additional disabilities. *Journal of Visual Impairments and Blindness, 107,* 364-374.

Kaiser, A. P., & Roberts, M. Y. (2013). Parents as communication partners: An evidence-based strategy for improving parent support for language and communication in everyday settings. *SIG 1 Perspectives on Language Learning and Education*, *20*, 96-111. DOI: 10.1044/lle20.3.96

Lopresti, E. F., Jinks, A., & Simpson, R. (2015). Consumer Satisfaction With Telerehabilitation Service Provision Of Alternative Computer Access And Augmentative And Alternative Communication. *International Journal of Telerehabilitation, 7*(2), 3-13. doi: 10.5195/ijt.1015.6180

Lueck, A.H., & Dutton, G.N. (2015). Vision and the Brain. Understanding Cerebral Visual Impairment in Children. New York: AFB Press. American Foundation for the Blind.

Lund, S.K. & Troha, J.M. (2008). Teaching Young People who are Blind and have Autism to Make Requests Using a Variation on the Picture Exchange Communication System with Tactile Symbols: A Preliminary Investigation. *Journal of Autism and Developmental Disorders, 38*(4), 719-730. doi: 10.1007/s10803-007-0439-4

Lynch, Y., McCleary, M., & Smith, M. (2018). Instructional strategies used in direct AAC interventions with children to support graphic symbol learning: A systematic review. Child Language Teaching and Therapy, 34(1) 23-36. doi: i1.o0r.g1/107.171/0772/605265695091081877555524

Mashima, P. A., & Doarn, C. R. (2008). Overview of Telehealth Activities in Speech Language Pathology. *Telemedicine and e-Health, 14*(10), 1101- 1117.

Meadan, H. & Keen, D. (2016). Chapter 10: Parent involvement in communication intervention. Prelingusitic and minimally verbal communicators on the autism spectrum (Keen, Meadan, Brady, Halle). Springer.

Millar, D.C., Light, J.C., & Schlosser, R.W. (2006). The Impact of Augmentative and Alternative Communication Intervention on the Speech Production of Individuals with Developmental Disabilities: A Research Review. *Journal of Speech, Language, and Hearing Research 2006 49*(2), 248-264

Phillips, Dan. "The Nika Project." The American Speech-Language-Hearing Association National Convention, November 2017, Los Angeles, CA. Conference Presentation.

Roberts, M.Y., Kaiser, A.P., Wolfe, C.E., Bryant, J.D., & Spidalieria, A. M. (2014). Effects of the Teach-Model-Coach-Review Instructional Approach on Caregiver Use of Language Support Strategies and Children's Expressive Language Skills. *Journal of Speech Language and Hearing Research, 57,* 1851-1869.

Rowland, C. (2018). The Communication Matrix (Assessment Tool). Retrieved from https://communicationmatrix.org/

The Picture Exchange Communication System. (2018). Retrieved from https://www.nationalautismresources.com/the-picture-exchange-communication-system-pecs/

The United Nations (2018). Statistical Annex. Retrieved from http://www.un.org/en/development/desa/policy/wesp/wesp_current/2012country_class.pdf

The United Nations Children's Fund (2018). Situación del país. Retrieved from https://www.unicef.org/peru/spanish/children_5600.htm

Communication and Information (2018). Retrieved from http://www.unesco.org/new/en/communication-and-information/freedom-of-expression/freedom-of-information/

World Health Organization & World Bank. (2018). World report on disability. Retrieved from http://www.who.int/disabilities/world_report/2011/en/

Appendices

Appendix A

Assent in English

My name is Lauren Vaughan and I am learning about AAC and Telepractice. I want to show you some pictures to help you communicate. I want to work with you for 30 minutes for 5 days two times per day. If you do not want to participate, you do not have to. You can stop at any time and that is OK. If I see that you are upset or unhappy, I will stop. Do you want to participate?

(A yes/no choice board is provided for response)

Appendix B

Assent in Spanish

Me llamo Lauren Vaughan y estoy aprendiendo sobre como a AAC y Telepracitce. Quiero mostrarle algunas fotos que le ayudarán a communicarse. Quiero a trabajar con usted durante 5 días durante 30 minutos dos veces al día. Si no quiere participar, usted no tiene que. Usted puede parar. Si veo que esta enojado o infeliz me detengo. Quieres participar?

(Un sí/no tablero es proporcionado por la respuesta)

Appendix C

Consent Form Parent in English

Augmentative and Alternative Communication and Telepractice in Peru

INTRODUCTION

The Department of Speech Language and Hearing at the University of Kansas supports the practice of protection for human subjects participating in research. The following information is provided for you to decide whether you wish to participate in the present study. You may refuse to sign this form and not participate in this study. You are free to withdraw at any time. If you do withdraw from this study, it will not affect your relationship with this unit, the services it may provide to you, or the University of Kansas.

PURPOSE OF THE STUDY

The purpose of the study is to examine how to develop and implement low technology augmentative and alternative communication (AAC) boards through Telepractice in underrepresented regions.

PROCEDURES

You will be asked to:

1. Complete the communication matrix assessment. Depending on your child's communicative behaviors this can take 10 minutes to 1 hour.
2. Complete the communication matrix assessment in December 2017. Depending on your child's communicative behaviors this can take 10 minutes to 1 hour.

Telepractice sessions will be recorded and stored on a secure EPHI drive in the Schiefelbusch Speech Language and Hearing Clinic in Lawrence, KS. The researcher is to only person who will have access to the video recordings. The recordings will be stored indefinitely, however if you decided to withdraw from the study, the recordings will be destroyed.

RISKS

There are minimal risks that private information can been seen through Telepractice sessions.

BENEFITS

Telepractice is a service delivery that can help individuals improve their communication. Telepractice can additionally be used as a means to train staff members in how to implement low-technology AAC boards and it can be used as a means to implement therapy to individuals in underrepresented regions. Through telepractice, the Speech Language Pathologist can conduct assessments, provide staff training, and provide therapy to individuals to improve their communication.

PAYMENT TO PARTICIPANTS

Participants will not be paid to participate.

PARTICIPANT CONFIDENTIALITY

Your name will not be associated in any publication or presentation with the information collected about you or with the research findings from this study. Instead, the researcher(s) will use a study number or a pseudonym rather than your name. Your identifiable information will not be shared unless (a) it is required by law or university policy, or (b) you give written permission.

Permission granted on this date to use and disclose your information remains in effect indefinitely. By signing this form you give permission for the use and disclosure of your information for purposes of this study at any time in the future.

REFUSAL TO SIGN CONSENT AND AUTHORIZATION

You are not required to sign this Consent and Authorization form and you may refuse to do so without affecting your right to any services you are receiving or may receive from the University of Kansas or to participate in any programs or events of the University of Kansas. However, if you refuse to sign, you cannot participate in this study.

CANCELLING THIS CONSENT AND AUTHORIZATION

You may withdraw your consent to participate in this study at any time. You also have the right to cancel your permission to use and disclose further information collected about you, in writing, at any time, by sending your written request to:

Lauren E. Vaughan

Schiefelbusch Speech-Language-Hearing Clinic

1200 Sunnyside Ave

Lawrence, KS 66045

If you cancel permission to use your information, the researchers will stop collecting additional information about you. However, the research team may use and disclose information that was gathered before they received your cancellation, as described above.

QUESTIONS ABOUT PARTICIPATION

Questions about procedures should be directed to the researcher(s) listed at the end of this consent form.

PARTICIPANT CERTIFICATION:

I have read this Consent and Authorization form. I have had the opportunity to ask, and I have received answers to, any questions I had regarding the study. I understand that if I have any

additional questions about my rights as a research participant, I may call (785) 864-7429 or (785) 864-7385, write the Human Research Protection Program (HRPP), University of Kansas, 2385 Irving Hill Road, Lawrence, Kansas 66045-7568, or email irb@ku.edu.

I agree to take part in this study as a research participant. By my signature I affirm that I am at least 18 years old and that I have received a copy of this Consent and Authorization form.

PARTICIPANT CERTIFICATION:

I have read this Consent and Authorization form. I have had the opportunity to ask, and I have received answers to, any questions I had regarding the study. I understand that if I have any additional questions about my right's as a research participant, I may call (785) 864-7429, write to the Human Research Protection Program (HRPP), University of Kansas, 2385 Irving Hill Road, Lawrence, Kansas 66045-7568, or email irb@ku.edu.

I agree to take part in this study as a research participant. By my signature I affirm that I am at least 18 years old and that I have received a copy of this Consent and Authorization form.

_____ _____

Type/Print Participant's Name Date

_____

Parent/Guardian Signature

Researcher Contact Information

Lauren E. Vaughan
Principal Investigator
Speech Language Hearing Dept.
1200 Sunnyside Ave
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Jane Wegner Ph.D.
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1200 Sunnyside Ave
Lawrence, KS 66045

Appendix D

Consent form Parent in Spanish

Comunicación Aumentativa y Alternative y Telepraxis en Peru

INTRODUCCIÓN

El Departamento de Habla, Lenguaje y Audiencia de la Universidad de Kansas apoya la práctica de la protección de los sujetos humanos que participan en la investigación. Se proporciona la siguiente información para que usted decida participar en el presente estudio. Puede negarse a firmar este formulario y no participar en este estudio. Usted es libre de retirarse en cualquier momento. Si retira de este estudio, no afectará su relación con esta unidad, los servicios que puede brindarle a usted, o la Universidad de Kansas.

PROPÓSITO DEL ESTUDIO

El propósito de este estudio es explorar cómo implementar la tecnología de baja tecnología de comunicación aumentativa y alternativa a través de la telepraxis en regiones subrepresentadas.

PROCEDIMIENTOS

Va a:

1. Completa la evaluación de la matriz de communicación. Dependiendo de los comportamientos comunicativos de su hijo esto puede tomar de 10 minutos a 1 hora.
2. Completa la evaluación de la matriz de communicación en Decimbre de 2017. Dependiendo de los comportamientos comunicativos de su hijo esto puede tomar de 10 minutos a 1 hora.

Las sesiones de Telepractice serán grabadas y guardadas en un disco seguro de EPHI en la Clínica de Lenguaje y Audición Schiefelbusch en Lawrence, KS. El investigador es la única persona que tendrá acceso a las grabaciones de video. Las grabaciones serán almacenadas indefinidamente, sin embargo si usted decide retirarse del estudio, las grabaciones serán destruidas.

RIESGOS

Hay riesgos mínimos que la información privada se puede ver a través de sesiones de Telepractice.

BENEFICIOS

Telepractice es una prestación de servicios que puede ayudar a los individuos a mejorar su comunicación. La telepraxis se puede utilizar adicionalmente como un medio para capacitar a los miembros del personal en la implementación de placas de AAC de baja tecnología y se puede usar como un medio para implementar la terapia a individuos en regiones subrepresentadas. A

través de la telepraxia, el Patólogo del Lenguaje puede realizar evaluaciones, proveer capacitación al personal y proporcionar terapia a las personas para mejorar su comunicación.

PAGO A LOS PARTICIPANTES

Los individuos no serán pagados para participar en el estudio.

CONFIDENCIALIDAD DEL PARTICIPANTE

Su nombre no será asociado en ninguna publicación o presentación con la información recopilada sobre usted o con los resultados de la investigación de este estudio. En su lugar, el investigador (s) utilizará un número de estudio o un seudónimo en lugar de su nombre. Su información identificable no será compartida a menos que (a) sea requerida por la ley o política universitaria, o (b) usted da permiso por escrito.

El permiso concedido en esta fecha para usar y divulgar su información permanece en efecto indefinidamente. Al firmar este formulario usted da permiso para el uso y divulgación de su información para los propósitos de este estudio en cualquier momento en el futuro.

RECHAZO DE FIRMAR CONSENTIMIENTO Y AUTORIZACIÓN

Usted no está obligado a firmar este formulario de consentimiento y autorización y usted puede negarse a hacerlo sin afectar su derecho a los servicios que está recibiendo o puede recibir de la Universidad de Kansas o para participar en cualquier programa o evento de la Universidad de Kansas. Sin embargo, si usted se niega a firmar, no puede participar en este estudio.

CANCELANDO ESTE AUTORIZACIÓN Y CONSENTIMIENTO

Usted puede retirar su consentimiento para participar en este estudio en cualquier momento. Usted también tiene el derecho de cancelar su permiso para usar y divulgar información adicional recopilada sobre usted, por escrito, en cualquier momento, enviando su solicitud por escrito a:

Lauren E. Vaughan

Schiefelbusch Speech-Language-Hearing Clinic

1200 Sunnyside Ave

Lawrence, KS 66045

Si cancela el permiso para usar su información, los investigadores dejarán de recopilar información adicional sobre usted. Sin embargo, el equipo de investigación puede usar y divulgar información que fue recopilada antes de recibir su cancelación, como se describió anteriormente.

PREGUNTAS SOBRE LA PARTICIPACIÓN

Las preguntas sobre los procedimientos deben dirigirse al (los) investigador (es) enumerado (s) al final de este formulario de consentimiento.

CERTIFICACIÓN DEL PARTICIPANTE:

He leído este formulario de consentimiento y autorización. He tenido la oportunidad de preguntar, y he recibido respuestas a, cualquier pregunta que tuve con respecto al estudio. Entiendo que si tengo alguna pregunta adicional sobre los derechos como participante en la investigación, puedo llamar al (785) 864-7429, escribir al Human Research Protection Program (HRPP), Universidad de Kansas, 2385 Irving Hill Road, Lawrence, Kansas 66045-7568, o correo electrónico irb@ku.edu.

Estoy de acuerdo en permitir participe en este estudio como participante en la investigación. Por mi firma afirmo que tengo por lo menos 18 años y que he recibido una copia de este formulario de Consentimiento y Autorización.

Nombre: _____ **Fecha:** _____

Firma: _____

Información de contacto del investigador

Lauren E. Vaughan
Principal Investigator
Speech Language Hearing Dept.
1200 Sunnyside Ave
Lawrence, KS 66045

Jane Wegner Ph.D.
Faculty Supervisor
Speech Language Hearing Dept.
1200 Sunnyside Ave
Lawrence, KS 66045

Appendix E

Consent Form Staff in English

Augmentative and Alternative Communication and Telepractice in Peru

INTRODUCTION

The Department of Speech Language and Hearing at the University of Kansas supports the practice of protection for human subjects participating in research. The following information is provided for you to decide whether you wish to participate in the present study. You may refuse to sign this form and not participate in this study. You are free to withdraw at any time. If you do withdraw from this study, it will not affect your relationship with this unit, the services it may provide to you, or the University of Kansas.

PURPOSE OF THE STUDY

The purpose of the study is to examine how to develop and implement low technology augmentative and alternative communication (AAC) boards through telepractice in underrepresented regions.

PROCEDURES

You will be asked to:

1. Complete a survey. The survey takes approximately 1 minute.
2. Participate in training for 5 days, 2 times a day, for 30 minutes. Here, the researcher will teach you how to use an AAC board. The researcher will teach you three strategies. Strategies include: 1) modeling with aided input. In modeling with aided input, the researcher demonstrates the strategy and talks through the strategy (e.g., to model the word *want* the researcher says *want* verbally then points to the picture on the low technology AAC board of the word *want*), 2) prompting. In prompting the researcher suggests the use of the AAC board for the individual (e.g., to prompt the word *want,* the researcher tells the individual, "you can say you *want* a drink") and 3) wait time. In wait time the researcher provides ample time for the individual's response (e.g., the researcher asks the individual, "would you like to *go* or *stop*?" then the researcher waits 15 to 30 seconds for the individual's response).
3. Attend a Skype meeting once a month for four months.
4. Complete a survey in December 2017. The survey takes approximately 1 minute.

Telepractice sessions will be recorded and stored on a secure EPHI drive in the Schiefelbusch Speech Language and Hearing Clinic in Lawrence, KS. The researcher is to only person who will have access to the video recordings. The recordings will be stored indefinitely, however if you decided to withdraw from the study, the recordings will be destroyed.

RISKS

There are minimal risks that private information can be seen through telepractice sessions.

BENEFITS

Telepractice is a service delivery that can help individuals improve their communication. Telepractice can additionally be used as a means to train staff members in how to implement low-technology AAC boards and it can be used as a means to implement therapy to individuals in under represented regions. Through telepractice, the Speech Language Pathologist can conduct assessments, provide staff training, and provide therapy to individuals to improve their communication.

PAYMENT TO PARTICIPANTS

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PARTICIPANT CONFIDENTIALITY

Your name will not be associated in any publication or presentation with the information collected about you or with the research findings from this study. Instead, the researcher(s) will use a study number or a pseudonym rather than your name. Your identifiable information will not be shared unless (a) it is required by law or university policy, or (b) you give written permission.

Permission granted on this date to use and disclose your information remains in effect indefinitely. By signing this form you give permission for the use and disclosure of your information for purposes of this study at any time in the future.

REFUSAL TO SIGN CONSENT AND AUTHORIZATION

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1200 Sunnyside Ave

Lawrence, KS 66045

If you cancel permission to use your information, the researchers will stop collecting additional information about you. However, the research team may use and disclose information that was gathered before they received your cancellation, as described above.

QUESTIONS ABOUT PARTICIPATION

Questions about procedures should be directed to the researcher(s) listed at the end of this consent form.

PARTICIPANT CERTIFICATION:

I have read this Consent and Authorization form. I have had the opportunity to ask, and I have received answers to, any questions I had regarding the study. I understand that if I have any additional questions about my rights as a research participant, I may call (785) 864-7429 or (785) 864-7385, write the Human Research Protection Program (HRPP), University of Kansas, 2385 Irving Hill Road, Lawrence, Kansas 66045-7568, or email irb@ku.edu.

I agree to take part in this study as a research participant. By my signature I affirm that I am at least 18 years old and that I have received a copy of this Consent and Authorization form.

PARTICIPANT CERTIFICATION:

I have read this Consent and Authorization form. I have had the opportunity to ask, and I have received answers to, any questions I had regarding the study. I understand that if I have any additional questions about my rights as a research participant, I may call (785) 864-7429, write to the Human Research Protection Program (HRPP), University of Kansas, 2385 Irving Hill Road, Lawrence, Kansas 66045-7568, or email irb@ku.edu.

I agree to take part in this study as a research participant. By my signature I affirm that I am at least 18 years old and that I have received a copy of this Consent and Authorization form.

_____ _____

Name Date

Researcher Contact Information

Lauren E. Vaughan

Principal Investigator

Speech Language Hearing Dept.

1200 Sunnyside Ave

Lawrence, KS 66045

Jane Wegner Ph.D.

Faculty Supervisor

Speech Language Hearing Dept.

1200 Sunnyside Ave

Lawrence, KS 66045

Appendix F

Consent Form Staff in Spanish

Comunicación Aumentativa y Alternative y Telepraxis en Peru

INTRODUCCIÓN

El Departamento de Habla, Lenguaje y Audiencia de la Universidad de Kansas apoya la práctica de la protección de los sujetos humanos que participan en la investigación. Se proporciona la siguiente información para que usted decida participar en el presente estudio. Puede negarse a firmar este formulario y no participar en este estudio. Usted es libre de retirarse en cualquier momento. Si retira de este estudio, no afectará su relación con esta unidad, los servicios que puede brindarle a usted, o la Universidad de Kansas.

PROPÓSITO DEL ESTUDIO

El propósito de este estudio es explorar cómo implementar la tecnología de baja tecnología de comunicación aumentativa y alternativa a través de la telepraxis en regiones subrepresentadas.

PROCEDIMIENTOS

Va a:

1. Completa una encusta. La encuseta dura aproximadamente 1 minuto.
2. Participa en la formanacion durante 5 días, 2 veces al día durante 30 minutos. El investigador le enseñará cómo usar el tablero de AAC. El investigador le enseñará tres estrategias. Las estrategias incluyen: 1) modeling with aided input. En modeling with aided input, el investigador demuestra la estrategia y las charlas a través de la estrategia (por ejemplo, para modelar la palabra que el invetigador quiere decir verbalmente y luego señala a la imagen en la placa de AAC de baja tecnología de la palabra *quierer*). 2) prompting. En prompting al investigador que sugiera el uso del tablero de AAC para el individuo (por ejemplo, para pedir la palabra, el clínico puede decirle al individuo, "puede decir que quiere una bebida") y 3) Wait time. En wait time, el investigador proporciona suficiente tiempo para la respuesta del individuo (por ejemplo, el investigador puede preguntar al individuo, "¿le gustaría ir o detenerse?" Entonces elinvestigador espera de 15 a 30 segundos para la respuesta del individuo.
3. Asite a una reunion de Skype una vez al mes durante cuatro meses.
4. Completa una encusta en Deciembre de 2017. La encuseta dura aproximadamente 1 minuto.

Las sesiones de Telepractice serán grabadas y guardadas en un disco seguro de EPHI en la Clínica de Lenguaje y Audición Schiefelbusch en Lawrence, KS. El investigador es la única persona que tendrá acceso a las grabaciones de video. Las grabaciones serán almacenadas indefinidamente, sin embargo si usted decide retirarse del estudio, las grabaciones serán destruidas.

RIESGOS

Hay riesgos mínimos que la información privada se puede ver a través de sesiones de Telepractice.

BENEFICIOS

Telepractice es una prestación de servicios que puede ayudar a los individuos a mejorar su comunicación. La telepraxis se puede utilizar adicionalmente como un medio para capacitar a los miembros del personal en la implementación de placas de AAC de baja tecnología y se puede usar como un medio para implementar la terapia a individuos en regiones subrepresentadas. A través de la telepraxia, el Patólogo del Lenguaje puede realizar evaluaciones, proveer capacitación al personal y proporcionar terapia a las personas para mejorar su comunicación.

PAGO A LOS PARTICIPANTES

Los individuos no serán pagados para participar en el estudio.

CONFIDENCIALIDAD DEL PARTICIPANTE

Su nombre no será asociado en ninguna publicación o presentación con la información recopilada sobre usted o con los resultados de la investigación de este estudio. En su lugar, el investigador (s) utilizará un número de estudio o un seudónimo en lugar de su nombre. Su información identificable no será compartida a menos que (a) sea requerida por la ley o política universitaria, o (b) usted da permiso por escrito.

El permiso concedido en esta fecha para usar y divulgar su información permanece en efecto indefinidamente. Al firmar este formulario usted da permiso para el uso y divulgación de su información para los propósitos de este estudio en cualquier momento en el futuro.

RECHAZO DE FIRMAR CONSENTIMIENTO Y AUTORIZACIÓN

Usted no está obligado a firmar este formulario de consentimiento y autorización y usted puede negarse a hacerlo sin afectar su derecho a los servicios que está recibiendo o puede recibir de la Universidad de Kansas o para participar en cualquier programa o evento de la Universidad de Kansas. Sin embargo, si usted se niega a firmar, no puede participar en este estudio.

CANCELANDO ESTE AUTORIZACIÓN Y CONSENTIMIENTO

Usted puede retirar su consentimiento para participar en este estudio en cualquier momento. Usted también tiene el derecho de cancelar su permiso para usar y divulgar información adicional recopilada sobre usted, por escrito, en cualquier momento, enviando su solicitud por escrito a:

Lauren E. Vaughan

Schiefelbusch Speech-Language-Hearing Clinic

1200 Sunnyside Ave

Lawrence, KS 66045

Si cancela el permiso para usar su información, los investigadores dejarán de recopilar información adicional sobre usted. Sin embargo, el equipo de investigación puede usar y divulgar información que fue recopilada antes de recibir su cancelación, como se describió anteriormente.

PREGUNTAS SOBRE LA PARTICIPACIÓN

Las preguntas sobre los procedimientos deben dirigirse al (los) investigador (es) enumerado (s) al final de este formulario de consentimiento.

CERTIFICACIÓN DEL PARTICIPANTE:

He leído este formulario de consentimiento y autorización. He tenido la oportunidad de preguntar, y he recibido respuestas a, cualquier pregunta que tuve con respecto al estudio. Entiendo que si tengo alguna pregunta adicional sobre los derechos como participante en la investigación, puedo llamar al (785) 864-7429, escribir al Human Research Protection Program (HRPP), Universidad de Kansas, 2385 Irving Hill Road, Lawrence, Kansas 66045-7568, o correo electrónico irb@ku.edu.

Estoy de acuerdo en permitir participe en este estudio como participante en la investigación. Por mi firma afirmo que tengo por lo menos 18 años y que he recibido una copia de este formulario de Consentimiento y Autorización.

Nombre: _____ **Fecha:** _____

Información de contacto del investigador

Lauren E. Vaughan	Jane Wegner Ph.D.
Principal Investigator	Faculty Supervisor
Speech Language Hearing Dept.	Speech Language Hearing Dept.
1200 Sunnyside Ave	1200 Sunnyside Ave
Lawrence, KS 66045	Lawrence, KS 66045

Appendix G

Parent Informed Consent Form in English

Augmentative and Alternative Communication and Telepractice in Peru

INTRODUCTION

The Department of Speech, Language, and Hearing at the University of Kansas supports the practice of protection for human subjects participating in research. The following information is provided for you to decide whether you wish your child to participate in the present study. You may refuse to sign this form and not allow your child to participate in this study. You should be aware that even if you agree to allow your child to participate, you are free to withdraw at any time. If you do withdraw your child from this study, it will not affect your relationship with this unit, the services it may provide to you, or the University of Kansas.

PURPOSE OF THE STUDY

The purpose of this study is to explore how to implement low technology augmentative and alternative communication through telepractice in under represented regions.

PROCEDURES

Your child will be asked to:

1. Participate in intervention for 5 days, 30 minutes per day, two times per day. During intervention, the researcher will implement three strategies. Strategies include: 1) modeling with aided input. In modeling with aided input, the researcher demonstrates the strategy and talks through the strategy (e.g., to model the word *want* the researcher says *want* verbally then points to the picture on the low technology AAC board of the word *want*), 2) prompting. In prompting the researcher suggests the use of the AAC board for the individual (e.g., to prompt the word *want,* the researcher can tell the individual, "you can say you *want* a drink") and 3) wait time. In wait time the researcher provides ample time for the individual's response (e.g., the researcher can ask the individual, "would you like to *go* or *stop*?" then the researcher waits 15 to 30 seconds for the individual's response).

RISKS

There are minimal risks that private information can be seen through Telepractice sessions.

BENEFITS

Telepractice is a service delivery that can help individuals improve their communication. Telepractice can additionally be used as a means to train staff members in how to implement low-technology AAC boards and it can be used as a means to implement therapy to individuals in underrepresented regions. Through telepractice, the Speech Language Pathologist can conduct

assessments, provide staff training, and provide therapy to individuals to improve their communication.

PAYMENT TO PARTICIPANTS

Individuals will not be paid to participate in the study.

PARTICIPANT CONFIDENTIALITY

Your child's name will not be associated in any publication or presentation with the information collected about your child or with the research findings from this study. Instead, the researcher(s) will use a study number or a pseudonym rather than your child's name. Your child's identifiable information will not be shared unless (a) it is required by law or university policy, or (b) you give written permission.

Permission granted on this date, July 31st 2017, to use and disclose your information remains in effect indefinitely. By signing this form you give permission for the use and disclosure of your child's information, excluding your child's name, for purposes of this study at any time in the future.

INSTITUTIONAL DISCLAIMER STATEMENT

In the event of injury, the Kansas Tort Claims Act provides for compensation if it can be demonstrated that the injury was caused by the negligent or wrongful act or omission of a state employee acting within the scope of his/her employment.

REFUSAL TO SIGN CONSENT AND AUTHORIZATION

You are not required to sign this Consent and Authorization form and you may refuse to do so without affecting your right to any services you are receiving or may receive from the University of Kansas or to participate in any programs or events of the University of Kansas. However, if you refuse to sign, your child cannot participate in this study.

CANCELLING THIS CONSENT AND AUTHORIZATION

You may withdraw your consent to allow participation of your child in this study at any time. You also have the right to cancel your permission to use and disclose further information collected about your child, in writing, at any time, by sending your written request to:

Lauren E. Vaughan

Schiefelbusch Speech-Language-Hearing Clinic

1200 Sunnyside Ave

Lawrence, KS 66045

If you cancel permission to use your child's information, the researchers will stop collecting additional information about your child. However, the research team may use and disclose information that was gathered before they received your cancellation, as described above.

QUESTIONS ABOUT PARTICIPATION

Questions about procedures should be directed to the researcher(s) listed at the end of this consent form.

PARTICIPANT CERTIFICATION:

I have read this Consent and Authorization form. I have had the opportunity to ask, and I have received answers to, any questions I had regarding the study. I understand that if I have any additional questions about my child's rights as a research participant, I may call (785) 864-7429, write to the Human Research Protection Program (HRPP), University of Kansas, 2385 Irving Hill Road, Lawrence, Kansas 66045-7568, or email irb@ku.edu.

I agree to allow my child to take part in this study as a research participant. By my signature I affirm that I am at least 18 years old and that I have received a copy of this Consent and Authorization form.

_____ _____

Type/Print Participant's Name Date

_____

Parent/Guardian Signature

Researcher Contact Information

Lauren E. Vaughan	Jane Wegner Ph.D.
Principal Investigator	Faculty Supervisor
Speech Language Hearing Dept.	Speech Language Hearing Dept.
1200 Sunnyside Ave	1200 Sunnyside Ave
Lawrence, KS 66045	Lawrence, KS 66045

Appendix H

Parent Informed Consent in Spanish

Comunicación Aumentativa y Alternative y Telepraxis en Peru

INTRODUCCIÓN

El Departamento de Habla, Lenguaje y Audiencia de la Universidad de Kansas apoya la práctica de la protección de los sujetos humanos que participan en la investigación. Se proporciona la siguiente información para que usted decida si desea que su hijo participe en el presente estudio. Puede negarse a firmar este formulario y no permitir que su hijo participe en este estudio. Usted debe ser consciente de que incluso si usted acepta permitir que su hijo participe, usted es libre de retirarse en cualquier momento. Si retira a su hijo de este estudio, no afectará su relación con esta unidad, los servicios que puede brindarle a usted, o la Universidad de Kansas.

PROPÓSITO DEL ESTUDIO

El propósito de este estudio es explorar cómo implementar la tecnología de baja tecnología de comunicación aumentativa y alternativa a través de la telepraxis en regiones subrepresentadas.

PROCEDIMIENTOS

Se le pedirá a su hijo que:

1. Participar en la intervención durante 5 días, 30 minutos por día, dos veces al día. Participa en la formación durante 5 días, 2 veces al día durante 30 minutos. El investigador le enseñará cómo usar el tablero de AAC. El investigador le enseñará tres estrategias. Las estrategias incluyen: 1) modeling with aided input. En modeling with aided input, el investigador demuestra la estrategia y las charlas a través de la estrategia (por ejemplo, para modelar la palabra que el investigador quiere decir verbalmente y luego señala a la imagen en la placa de AAC de baja tecnología de la palabra *quierer*). 2) prompting. En prompting al investigador que sugiera el uso del tablero de AAC para el individuo (por ejemplo, para pedir la palabra, el clínico puede decirle al individuo, "puede decir que quiere una bebida") y 3) Wait time. En wait time, el investigador proporciona suficiente tiempo para la respuesta del individuo (por ejemplo, el investigador puede preguntar al individuo, "¿le gustaría ir o detenerse?" Entonces el investigador espera de 15 a 30 segundos para la respuesta del individuo).

RIESGOS

No todos los que participan en este estudio se beneficiarán. Los beneficios incluyen mejoras en el lenguaje expresivo (es decir, comunicación).

BENEFICIOS

Telepractice es una prestación de servicios que puede ayudar a los individuos a mejorar su comunicación. La telepraxis se puede utilizar adicionalmente como un medio para capacitar a los miembros del personal en la implementación de las juntas AAC de baja tecnología y puede usarse como un medio para implementar la terapia a individuos en regiones subrepresentadas. A través de la telepraxia, el Patólogo del Lenguaje puede realizar evaluaciones, proveer capacitación al personal y proporcionar terapia a las personas para mejorar su comunicación.

PAGO A LOS PARTICIPANTES

Los individuos no serán pagados para participar en el estudio.

CONFIDENCIALIDAD DEL PARTICIPANTE

El nombre de su hijo no será asociado en ninguna publicación o presentación con la información recopilada sobre su hijo o con los resultados de la investigación de este estudio. En su lugar, el investigador (s) utilizará un número de estudio o un seudónimo en lugar del nombre de su hijo. La información identificable de su hijo no será compartida a menos que (a) sea requerida por la ley o la política de la universidad, o (b) usted da permiso por escrito.

El permiso otorgado en esta fecha, 31 de julio de 2017, para usar y divulgar su información permanece en efecto indefinidamente. Al firmar este formulario usted da permiso para el uso y divulgación de la información de su hijo, excluyendo el nombre de su hijo, para propósitos de este estudio en cualquier momento en el futuro.

DECLARACIÓN DE RENUNCIA INSTITUCIONAL

En caso de lesión, la Ley de Reclamos de Accidentes de Kansas prevé una indemnización si se puede demostrar que la lesión fue causada por el acto negligente o ilícito u omisión de un empleado del Estado que actúa dentro del ámbito de su empleo.

RECHAZO DE FIRMAR CONSENTIMIENTO Y AUTORIZACIÓN

Usted no está obligado a firmar este formulario de consentimiento y autorización y usted puede negarse a hacerlo sin afectar su derecho a los servicios que está recibiendo o puede recibir de la Universidad de Kansas o para participar en cualquier programa o evento de la Universidad de Kansas. Sin embargo, si usted se niega a firmar, su hijo no puede participar en este estudio.

CANCELANDO ESTE CONSENTIMIENTO Y AUTORIZACIÓN

Usted puede retirar su consentimiento para permitir la participación de su hijo en este estudio en cualquier momento. También tiene el derecho de cancelar su permiso para usar y divulgar información adicional recopilada sobre su hijo, por escrito, en cualquier momento, enviando su solicitud por escrito a:

Lauren E. Vaughan

Clínica de Discurso-Lenguaje-Audición Schiefelbusch

1200 Sunnyside Ave

Lawrence, KS 66045

Si cancela el permiso para usar la información de su hijo, los investigadores dejarán de recopilar información adicional sobre su hijo. Sin embargo, el equipo de investigación puede usar y revelar información que fue recopilada antes de recibir su cancelación, como se describe anteriormente.

PREGUNTAS SOBRE LA PARTICIPACIÓN

Las preguntas sobre los procedimientos deben dirigirse al (los) investigador (es) enumerado (s) al final de este formulario de consentimiento.

CERTIFICACIÓN DEL PARTICIPANTE:

He leído este formulario de consentimiento y autorización. He tenido la oportunidad de preguntar, y he recibido respuestas a, cualquier pregunta que tuve con respecto al estudio. Entiendo que si tengo alguna pregunta adicional sobre los derechos de mi hijo como participante en la investigación, puedo llamar al (785) 864-7429, escribir al Human Research Protection Program (HRPP), Universidad de Kansas, 2385 Irving Hill Road, Lawrence, Kansas 66045-7568, o correo electrónico irb@ku.edu.

Estoy de acuerdo en permitir que mi hijo participe en este estudio como participante en la investigación. Por mi firma afirmo que tengo por lo menos 18 años y que he recibido una copia de este formulario de Consentimiento y Autorización.

Tipo / Imprimir Nombre del Participante _____ Fecha _____

Firma del Padre / Tutor _____ Fecha _____

Información de contacto del investigador

Lauren E. Vaughan	Jane Wegner Ph.D.
Principal Investigator	Faculty Supervisor
Speech Language Hearing Dept.	Speech Language Hearing Dept.
1200 Sunnyside Ave	1200 Sunnyside Ave
Lawrence, KS 66045	Lawrence, KS 66045

Appendix I

Survey in English

Survey

Q1 I have know ledge about Augmentative and Alternative Communication.
- Strongly Agree (1)
- Agree (2)
- Disagree (3)
- Strongly disagree (4)
- No opinion (5)

Q2 I have know ledge about telepractice.
- Strongly Agree (1)
- Agree (2)
- Disagree (3)
- Strongly disagree (4)
- No opinion (5)

Q3 I think Augmentative and Alternative Communication helps individuals communicate.
- Strongly Agree (1)
- Agree (2)
- Disagree (3)
- Strongly disagree (4)
- No opinion (5)

Q4 I think telepractice helps maintain intervention services.
- Strongly Agree (1)
- Agree (2)
- Disagree (3)
- Strongly disagree (4)
- No opinion (5)

Q5 I think telepractice is easy to use.
- Strongly Agree (1)
- Agree (2)
- Disagree (3)
- Strongly disagree (4)
- No opinion (5)

Q6 I think Augmentative and Alternative Communication is easy to use.
- Strongly Agree (1)
- Agree (2)
- Disagree (3)
- Strongly disagree (4)
- No opinion (5)

Appendix J

Survey in Spanish

Survey Spanish

Q1 Tengo conocimientos sobre comunicación aumentativa y alternativa.
- Sí totalmente (1)
- Más bien sí (2)
- Mas bien no (3)
- No en absoluto (4)
- Sin opinión (5)

Q2 Tengo conocimientos sobre telepraxis.
- Sí totalmente (1)
- Más bien sí (2)
- Más bien no (3)
- No en absoluto (4)
- Sin opinión (5)

Q3 Creo que comunicación aumentiva y alternativa ayuda las personas a comunicarse.
- Sí totalmente (1)
- Más bien sí (2)
- Más bien no (3)
- No en absoluto (4)
- Sin opinión (5)

Q4 Creo que la telepraxia mantiene la intervención.
- Sí totalmente (1)
- Más bien sí (2)
- Más bien no (3)
- No en absoluto (4)
- Sin opinión (5)

Q5 Creo que la telepraxia es fácil.
- Sí totalmente (1)
- Más bien sí (2)
- Más bien no (3)
- No en absoluto (4)
- Sin opinión (5)

Q6 Creo que la comunicación aumentativa y alternativa es fácil.
- Sí totalmente (1)
- Más bien sí (2)
- Más bien no (3)
- No en absoluto (4)
- Sin opinión (5)

Appendix K

Examples of transcripts from maintenance sessions

11/17/17 (10:12AM) Desiree and Gabriella in Peru. Researcher in Lawrence, KS.

D: Como estas? No escucho.

LV: Can you hear me?

G: She cannot hear you. And it's my maximum volume.

LV: Hola

D: Si, si, si

L: okay, bueno. Okay, I'll yell. How is V? Como esta V?

D: Esta mucho major.

G: She is better now, she had a little bit of backache.

LV: Hola, sí claro.

(2:33)

G: she has been...in bed because she didn't want to be too much time sit on the chair.

(3:02) Lost connection – screen froze

(4:56)

LV: Can you see me now?

(5:54)

G: I don't know why my camera isn't working

LV: Try turning it off like turning it off then turning it on again the app. So see the video down at the bottom? Click stop video. Then restarting it.

(6:50)

G: okay, its working, its working!

LV: it keeps freezing

(9:00)

G: She had the flu also.

(11:37)

L: How is the board working? Are you using it? Did you add any more pictures or is it hard with everything that's going on. With her being sick?

*Showed LV the new board with cocinar/pintar

G: She can say yes/no for two options and she is excited for two options.

LV: awesome

G: She tries to picture of V doing some activity at home. Regular at home. And she tapes it to the board.

LV: ok, so I see pintar, so paint and what's the other one?

D: En la cocina.

G: She is peeling a fruit.

LV: That's good.

G: She is trying now to do more activities with less help and she's improving a lot.

L: good.

10/27/17 (2:28 PM) Evy at home. Researcher in Lawrence, KS.

LV: Hi C

E: Dile hola LV. He's laying the bed because he gets tired, you know?

LV: yes, I know. Are you home?

E: hmm?

LV: Are you at home?

E: Yes, I'm at home. I'm am home for you because it is better for me and C.

LV: Yes tell me. How is everything. How is the speech going? And the communication and everything?

E: Wow, dile. We practice, but I tell you that the word you say, "yes" I put like a "S" for say yes. And then for no I put like an N.

LV: Okay…

E: We was practicing so because we was on our trip to Iquitoes, I tell you.

LV: And is he using that just with you or is he using it at CASP? Is it working? Or no, because we can figure out something else.

E: We use it in the CASP. We teach that. And continue to work with them. And uh well I can use it anytime that I come, no?

LV: Yes. Have you used any other words? Have you added anything? Or are you still at the yes/no?

E: No, I just say yes and no.

LV: okay

E: But, I can see like a sometimes he like ask me in the answer. I have it close to me (2:33)

LV: Do you think you want to add more words or do you want to keep with the yes/no for now? And then eventually add something else?

E: Yes, I think so. We are working to be more sure.

LV: Ok so that sounds good for now. How is speech going? The woman that I met with the physical therapist?

E: Oh yes, no you know? She is not to work something like this and that is sadly for me.

LV: yes. Is she still doing the face, the massage?

E: Well ,I just do because I don't find another.

LV: mmhmm

E: to do the job.

LV: I know, that's frustrating.

(4:01)

(6:09)

E: he will be more sure when he wants to go to the toilet. And that is one of the things that I like it. Because he tell me more sure. Now, it is more sure when he tell me. Toilet, toilet.

LV: okay. Are other people using the board with him? Or is it just you or have you been able to teach anyone else?

E: yea, me and the teacher.

LV: oh, the teachers at CASP too?

E: yes, he express and also when ask he say yes/no. But he also say with the head. That is the way.

LV: Yes, that is his way. That's good, I think that's a good introduction with the yes/no to get that definite response and add the other vocabulary in so picking a new word like "want" or

“more” or “stop.” We can think of another one. Or what would be the most helpful for the both of you to add to that?

E: yea…

LV: with a different texture.

E: yea a different textura, okay. I was thinking uh wait a little because my husband may be coming in 2 weeks something like that and we uh have more help with him. We can do something more.

LV: sounds good. Just let me know if there is anything I can make here and send it to you or anything that you need from me. Because I can help.

(7:50)

(8:16)

LV: yes, I think that would be the next one to add, quiero. For him.

E: I like that one better. It will motivate him.

LV: Yes, it will motivate him and give him more independence.