

## Background

Communication modalities, also known as augmentative and alternative communication (AAC) devices, are utilized by speech-language pathologists to help children express their wants and needs. AAC modalities may include gestures, sign language, facial expressions, picture-based system (PECS), writing, and other devices. AAC devices are provided to children who have significant difficulty using speech to communicate (e.g., motor speech deficits and/or language deficits). Due to motor, language, cognitive, and/or sensory perceptual impairments, children may not develop speech and language skills as expected. Additionally, these children may be diagnosed with cerebral palsy, autism, Down syndrome, or other developmental

## Methods

The study conducted explanatory research to determine commonalities of AAC use issues in the four neurodevelopmental deficits, the acceptance of AAC devices, common situations AAC devices used in, and the training needed for individuals to use AAC devices.

### Inclusion Criteria

- (1) Participants were between the ages 1-21 years old
- (2) Participates must be diagnosed with Angelman syndrome, cerebral palsy, autism spectrum disorder, and/or Down syndrome
- (3) Participates must use AAC (augmentative and alternative communication devices).

## Measures

- Collection of Data (e.g., Battelle's questionnaire, interviews, focus groups, video recordings, AVAZ Application)
- Intervention Methods (e.g., outcomes of PECS, SGD, and apps, intervention of Stay-Play-Talk)
- Measures of Outcomes (e.g., modality)
- Measures of Assessment (e.g., Intelligibility Scale adapted from Pennington and McConachie (2001), The Responsive Augmentative and Alternative Communication Style (RAACS) scale Version 2, children completed a construction and comprehension assignment)
- Measures of Teaching (e.g., teaching gestures and symbols)

## Results

Four research questions were examined throughout the study: (1) common issues of AAC use in several neurodevelopmental disorders (2) the willingness to accept the AAC devices (3) the most common situations AAC devices are used (4) kind of training needed for children and/or parents to use AAC devices.

Three schemes were determined to help answer the major inquiry, common issues of AAC use in several neurodevelopmental disorders (e.g., Angelman syndrome, cerebral palsy, autism spectrum disorder, and Down syndrome). The schemes discovered include the willingness to accept the AAC device, the most common situations AAC devices were used, and different training types for individuals to use AAC devices.

- The first scheme: Willingness to accept AAC devices (e.g., device usage).
  - For the device to be beneficial, children need to be willing to use the device to communicate with their communication partners. Individuals can measure the willingness of children to use their devices by looking at the duration of use.
- The second scheme: Most common situations the AAC devices were used in
  - The situations that were examined consisted of friendships between typically developing children and their friends who use AAC. Children with various neurodevelopmental deficits can communicate with family members, teachers, and hospital staff. Children with various neurodevelopmental deficits use their AAC devices to communicate, gain attention, answer questions, convey basic physical needs, give/receive information, control their environment, and participate in preferred activities.
- The third scheme: Different types of training for individuals to use AAC devices
  - Four specific training programs were researched (e.g., enhanced natural gestures program, direct-teaching method, stay-play-talk intervention, and picture-based strategy) during the study. In addition to the four specific training types, the articles researched areas of training needed (e.g., AAC instruction, information about AAC devices, and making effective use of AAC technology). Parents, teachers, and hospital staff have expressed their concerns about not being prepared to support their children's use of AAC devices.

## Discussion

- The goal of the study was to understand the multiple factors that should be considered before selecting a device. To help children become successful communicators, they need to utilize a mode of communication. To gather more knowledge on the topic, research was analyzed through four questions.
  - The research determined the different factors that should be considered when selecting an AAC device for children with Angelman syndrome, cerebral palsy, autism spectrum disorder, and Down syndrome. These factors include the device's acceptance, the usage of the device, the training needed to use the device.

### Limitations:

- The neurodevelopmental disorder of Angelman syndrome has far less research collected than the neurodevelopmental disorders of cerebral palsy, Down syndrome, and autism spectrum disorder.
- Several of the articles used in my research focused on one type of low or high-tech device (e.g., gestures, eye-tracking technology, PECS, and iPads)

### Future Research:

- Additional research on Angelman syndrome could help researchers determine successful treatments for children diagnosed with this neurodevelopmental deficit, such as the most effective AAC device.
- Future investigators might provide children with different levels of devices to see if the children utilize the devices in the same situations.
- Additionally, investigators should determine if training is easier for certain devices and if the child is more willing to accept a certain device over another.