

JUST-IN-TIME TECHNOLOGY TO SUPPORT COMMUNICATION OF YOUNG CHILDREN WITH COMPLEX COMMUNICATION NEEDS



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Young children with CCN

- Children with complex communication needs (CCN) may have a range of disabilities that compromise their ability to effectively use natural speech (Light & Drager, 2007).
 - They require access to augmentative and alternative communication (AAC) to enhance their communication.
- AAC interventions positively impact
 - Participation
 - Communication
 - Vocabulary development of young children with CCN.

JIT programming of vocabulary

- AAC apps that support JIT programming allow partners to
 - Capture photos as VSDs quickly and easily
 - Add vocabulary as hotspots during daily interactions with young children with CCN.
- JIT programming allows partners to
 - respond to their children's interests in the moment
 - capitalize on teachable moments throughout the day
 - ensure that children with CCN have access to the vocabulary that they need and want throughout the day

Research Questions

1. What are the effects of mobile technology with an AAC app that provides VSDs, JIT programming, and speech output on the frequency of communication turns expressed by children with CCN?
2. What are the effects of the AAC app on the vocabulary available to children with CCN?
3. What are the effects of the AAC app on the concepts expressed by the children?

Methods

- This poster presents the results from a single participant, a girl, age two years nine months, with pontocerebellar hypoplasia
 - The current study is from a larger study investigating the effects of the AAC app on the language and communication development of young children with CCN.
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Research design

- The larger research utilized a single subject multiple baseline design across participants.
 - This poster focuses on a single case.
- There were 3 phases in the study
 - Baseline prior to intervention in which the child utilized her typical modes of communication
 - Intervention in which the mobile technology and AAC app were introduced
 - Maintenance in which the families continued to use the mobile technology and AAC app with their child post intervention

Materials

- Samsung Nexus tablet with the "EasyVSD" app
 - Featuring JIT programming, VSDs, and speech output
- Customizing "EasyVSD"
 - Green and pink cameras for creating VSD groups and corresponding pages
 - Orange circle for creating hotspots
 - Blue pencil for drawing



Procedures

- Data were collected during play interactions with the child at her home at baseline and intervention
 - Including the researcher, a nurse, and /or grandparents or mother
- In all sessions, the partner
 - Provided opportunities for communication
 - Modeled the use of speech and AAC
 - Responded to the child's communication by fulfilling the intent and expanding on the message
- During intervention, the partner provided access to the mobile technology and AAC app
 - Added VSDs and vocabulary of interest to the child during the interactions

Effects of JIT app on communication

- Introduction of the AAC app with VSDs, JIT programming, and speech output resulted in
 - Significant increases in the child's communication
 - Significant increases in the range of concepts expressed
 - Access to a greater range of vocabulary for expression



Potential hypotheses to explain the positive effects

- The AAC app provided speech output and a more effective means to communicate.
- The use of VSDs maximized vocabulary learning and reduced cognitive demands.
- JIT programming allowed communication partners to be responsive to the child's interests in the moment.
- The AAC app could be programmed with new vocabulary concepts & customized immediately to the child's interest.
- Due to the ease of programming, vocabulary was not restricted to what was currently on the system and as a result communicative turns were not limited.

Clinical Implications

- AAC technology/ apps should be introduced as early as possible to increase communicative turns and vocabulary development of young children with CCN
 - Use of mobile technology with AAC apps
 - With VSDs
 - With speech output
 - That support JIT programming of new VSDs and vocabulary as the need and interest arises during daily interactions with children with CCN

References

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Acknowledgements

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- For further information, please visit our website at <http://aac.psu.edu>