

Background

- Approximately one million children in the United States alone have complex communication needs (Binger & Light, 2007)
- iPads as communication devices can allow children to feel more confident and inconspicuous (Light & McNaughton, 2014)
- Mainstream connectivity of iPads has pros and cons
- Effective use without distraction requires children to be actively engaged in an AAC application
- Limited research conducted on appeal of AAC Apps to date (Snyder & McCarthy, 2013)
- Apps are often based on existing dedicated device interfaces making it necessary to learn design features to provide best experience
- Aimed to identify enhancements to scaffold learning and use as well as to reduce the operational demands of the system
- Primary Goal: Develop a set of design principles to optimally integrate features and capabilities of mobile devices with AAC Apps based on feedback from key stakeholders

Method

- Recruited Speech-Language Pathologists and Parents of Children with Autism Spectrum Disorder (ASD) from announcements on online Listservs and the Autism Society of Ohio
 - Each group participated in a 1 hour online focus group using Adobe Connect
 - Participants: 7 SLPs and 5 Parents*
 - Each group was shown the same set of visuals and asked for benefits and drawbacks based on various design principles
 - Participants responded to both open-ended and poll questions
 - Participants were able to respond verbally or type their responses in a chat window available to the group
 - Stimulus items were for Daily Communication Application Designs, Play Mode Designs, and Incentives
- * 1 parent completed the focus group session individually

Design Modes

Communication Mode

- Explored design principles related to daily communication and provided alternative designs and features for typical grid displays

Play Mode

- Explored the option of having games within a communication app that support the daily communication app and provide an opportunity to play with language

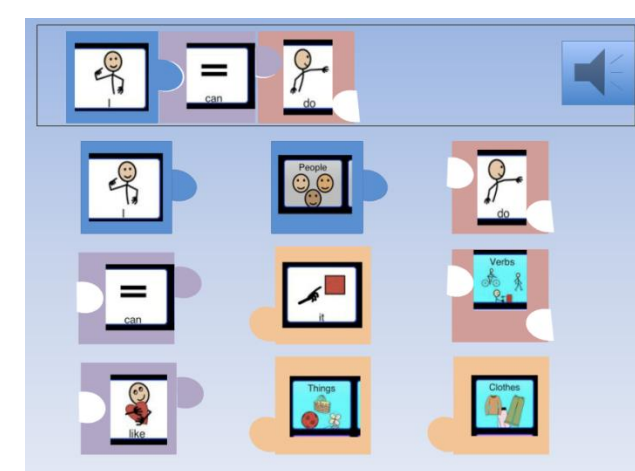
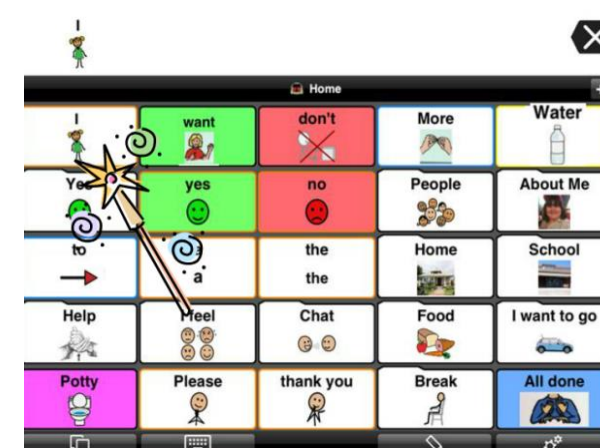
Incentives

- Explored the idea of incorporating reward systems into AAC apps

Daily Communication Mode Results

Cursors and Animation

- 100% of SLPs and Parents desired these as a customizable features
- Pros: Draws attention, interesting and motivating design
- Cons: Visually distracting, children may select only to view animation

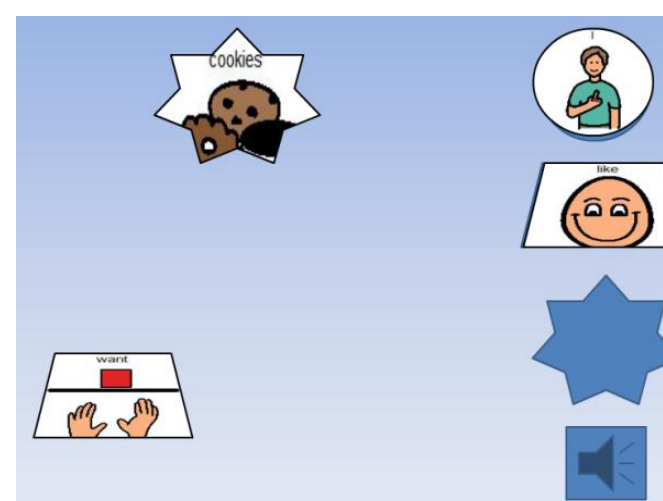


Color Categories and Message Construction Supports

- SLPs and Parents felt color coding was beneficial
- SLPs viewed interface as a potential teaching tool
- Pros: Interesting and motivating
- Cons: Limited word combinations and demand for space

Message Window Orientation

- 100% agreement on left to right arrangement
- Desired left to right arrangement to support reading
- Pros: Identified as a potential teaching tool, requires child to attend to which symbol fits



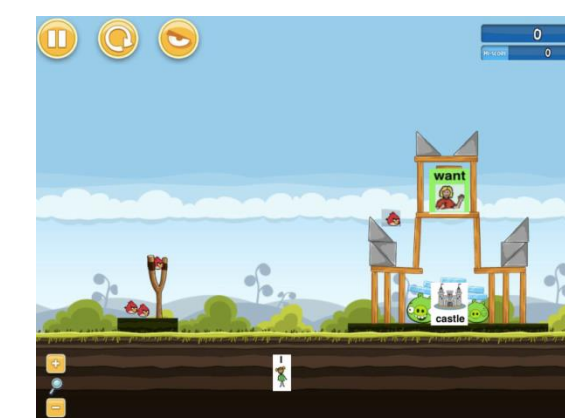
Alternative to a Grid

- Pros: Visually interesting, potential game interface
- Cons: Lack of motor planning, time consuming retrieval
- Parents and SLPs desired a consistent organization pattern if an alternative to a grid were to be used

Play Mode Results

Popular Game Characteristics

- Pros: motivating and engaging
- Parents desired levels of the game to support learning
- SLPs concerned about access for some individuals, did not feel points should be earned as the game itself is a reward



Video Clips of Messages

- 100% agreed videos would be interesting and motivating for children
- Pros: attach meaning to messages, fun and engaging
- No cons were provided for this design

Character Assistants

- 4/5 parents felt character assistants would be motivating for their child
- Parents desired customizable characters
- Pros: increase "buy in," helpful teaching tool



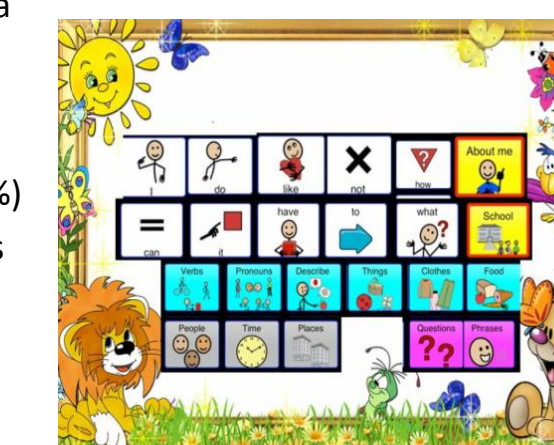
Additional Features of Play Mode

- The majority of SLPs (4) and Parents (3) felt play mode should be used as a separate application
- The majority of participants, 5 SLPs and 4 Parents, also felt Play Mode should be available in controlled amounts only
- 71% of SLPs felt children should be able to construct both incorrect and correct messages while 60% of Parents felt children should only be able to construct correct messages
- 85% of SLPs and 80% of parents also felt symbols used in play mode should match those used in the daily communication mode

Incentive Results

Backgrounds, Frames and Character Sets

- 42% of SLPs and 60% of Parents felt earning points for incentives would appeal to children
- SLPs who did not favor the use of incentives but instead felt the game itself was the incentive
- SLPs felt making the connection between the game and changes in a child's daily communication app would be difficult to make
- Parents felt character assistants would appeal most to children (80%)
- SLPs also chose character assistants and character sets as most appealing



Discussion

- Overall SLPs and Parents were in agreement regarding design principles of AAC Apps
- Each group conveyed a need for highly customizable interface features
- Majority of designs presented were seen as valuable teaching tools rather than daily communication interfaces
- Incentivized games within apps was not favored
- Parents were highly interested in integrating popular game characteristics and children's characters
- SLPs desired interfaces that structure and teach message construction
- Each group desired an App that could "grow" with the child
- Participants desired more integration of iPad features including the camera and touch screen controls
- Important to consider features of new platforms and how they can impact AAC interfaces

References

- Binger, C. & Light, J. (2007). The effect of aided AAC modeling on the expression of multi-symbol messages by preschoolers who use AAC.
- Light, J., & McNaughton, D. (2014). Communicative competence for individuals who require augmentative and alternative communication: A new definition for a new era of communication?. *Augmentative and Alternative Communication*, 30(1), 1-18.
- Snyder, C., & McCarthy, J. (2013, November). Increasing Children's Interest in Augmentative and Alternative Communication Apps for iPad. Poster presented at the 2014 ASHA Convention, Chicago, IL.