

Rationale

Literacy skills are critically important, especially for individuals with with autism spectrum disorder (ASD) who have complex communication needs (CCN).

- Expand communication options significantly
- Increase perceptions of competence
- Increase self-esteem

The Problem?

More than 90% of individuals with CCN enter adulthood without functional literacy skills (Foley & Wolter, 2010)

As a result, they are severely restricted in their participation in education, employment, healthcare, and society.

Typically, individuals with ASD & CCN who are non-literate use AAC systems/apps with picture symbols. Eventually, these individuals who use symbol-based AAC need to transition to an orthographically based system



Currently no AAC apps support this transition from the use of graphic AAC symbols to the use of orthographic text

The Solution? - AAC technologies to support the transition to literacy (T2L)

- T2L = a software feature for AAC technologies/apps
- provides dynamic presentation of text with speech output when a picture symbol is selected
- provides a first step in the transition from use of picture-based AAC technologies /apps to literacy

Research Question

What is the effect of the T2L app with dynamically displayed text on the acquisition, maintenance, and generalization of single word reading by a pre-literate preschooler with ASD?

Methods

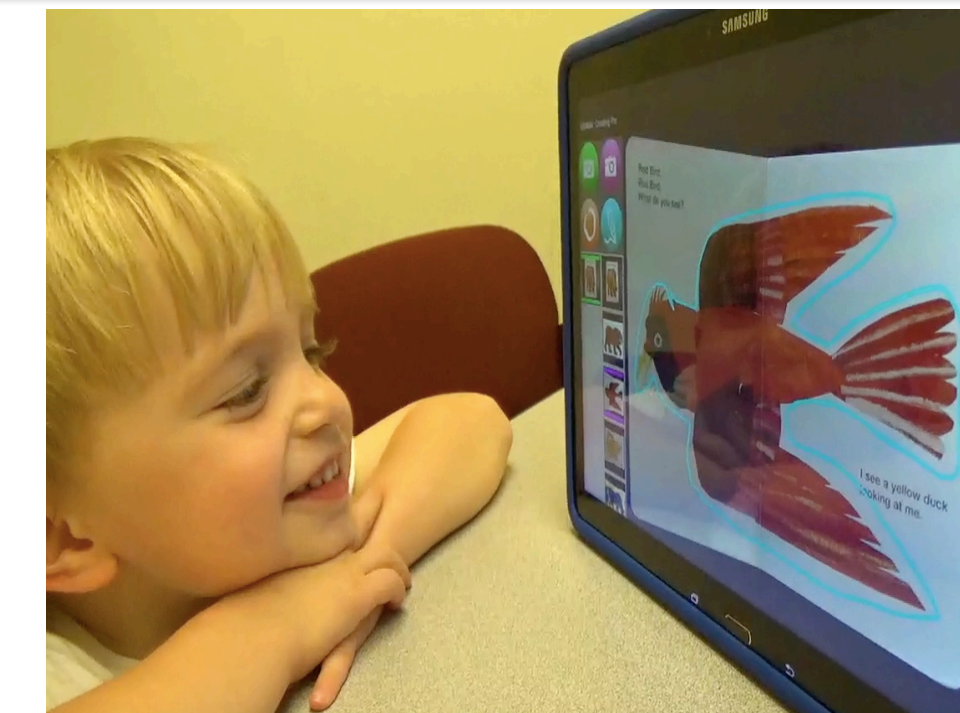
Single-subject across participants multiple probe design

Phases: baseline, intervention, generalization, and maintenance

- baseline condition (prior to exposure to tablet technology);
- exposure to tablet technology with the AAC app;
- generalization (to new photographs of target words not used in intervention);
- maintenance

Participant

- Matthew, a 4 year old male, diagnosed with Autism Spectrum Disorder
- Pre-literate
- Attended a LEAP preschool
 - Each classroom has 4 children with ASD and 8 children who are typically developing



Materials



Dependent Variable Materials

- 10 words from Brown bear book
- Images from Brown bear book
- Words ranged from 3-7 letters (e.g., cat & teacher)

Independent Variable (Intervention) Materials

- Brown bear book displayed on the app on Samsung Tablet
- Dynamic text for each of the animals in the book
- Text appeared with speech output upon selection of the animal
- No other instruction during intervention



Procedures

Dependent Variable (Probe) Procedures

DV= % accuracy reading single words (matching written word to picture)

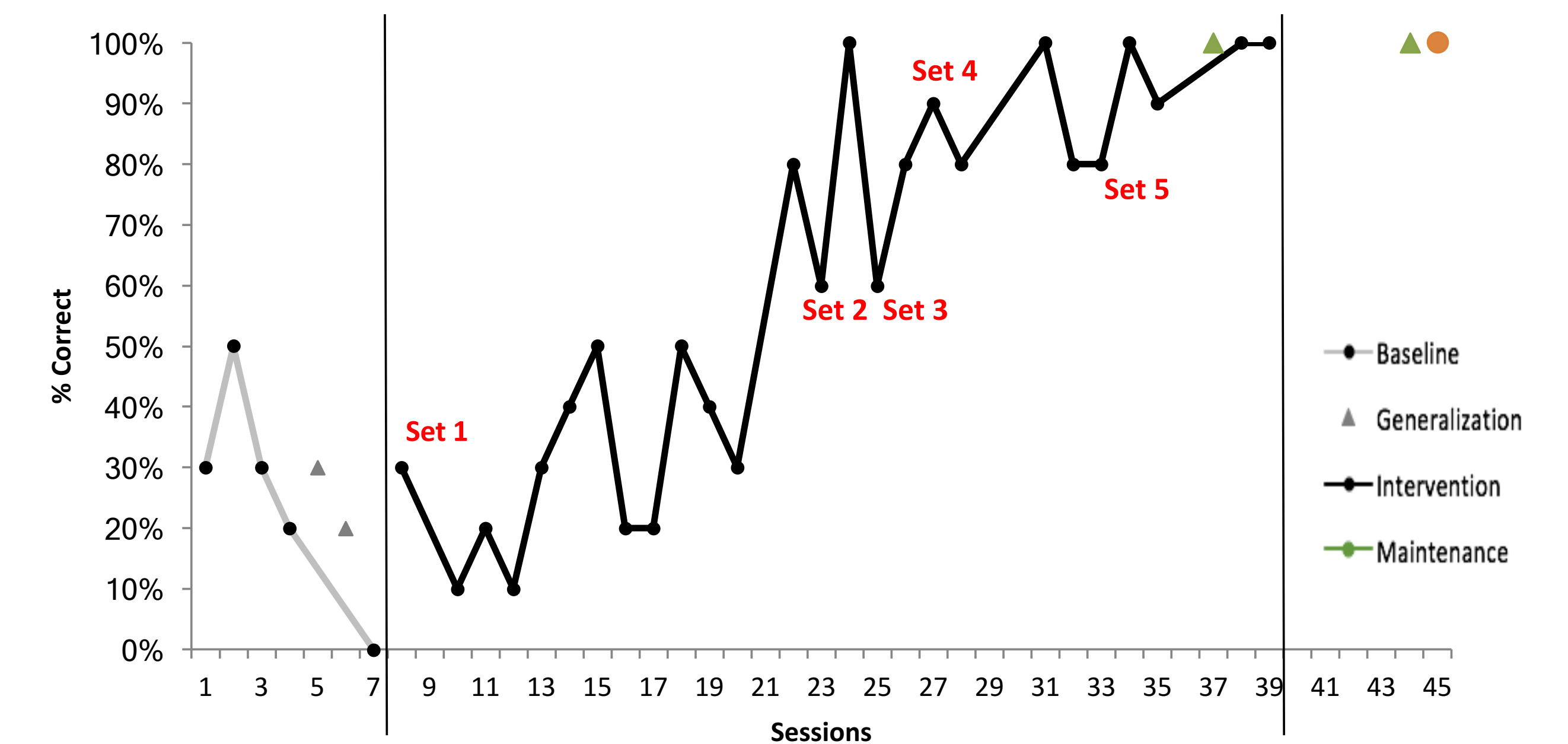
- Matthew was presented with four images (images from the Brown bear book)
- 1 target sight word + 3 foils
- He was told to read the word and match the word to the correct picture.
 - "Read the word, give me the picture that goes with this word"



Independent Variable (Intervention) Procedures

- Words were introduced in sets of 2 for a total of 5 sets
- Matthew began the intervention phase with introduction of the first pair of sight words
- Once the first pair reached criterion, the 2nd pair was introduced
 - Criterion: 2/2 target words during two consecutive sessions
- Each intervention session took approximately 5 minutes and included two "read throughs"
 - 1st Read Through - participant activated the target sight words 2x
 - 2nd read through of book- participants returned only to the two target pages for an additional 3 activations/page

Results



	Length of Exposure per word (# of sessions)
Pairs of words	Matthew
Bear, cat	3 min 15 sec (13)
Bird, dog	45 sec (3)
Duck, sheep	30 sec (2)
Horse, fish	1 min (4)
Frog, teacher	1 min (4)

Matthew acquired 10 target sight words after 26 intervention sessions (2 hours, 10 minutes of intervention)

Discussion & Implications

Matthew provides preliminary evidence that a software feature for AAC apps, including the dynamic presentation of text paired with graphics and speech output, positively impacts the single-word reading of a pre-literate preschooler with ASD.

The student acquired the written words successfully with only minimal exposure to the words via the app.

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