

VSDs with Dynamic Text: Effects on Word Reading for an Adolescent Cerebral Palsy

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Introduction

- Cerebral palsy (CP) is a heterogeneous disorder that places individuals at increased risk for speech, language, and cognitive impairments (Bax et al., 2005).
- Many individuals with CP cannot meet their communication needs with speech alone (Hustad & Miles, 2011) and are considered candidates for augmentative and alternative communication (AAC).

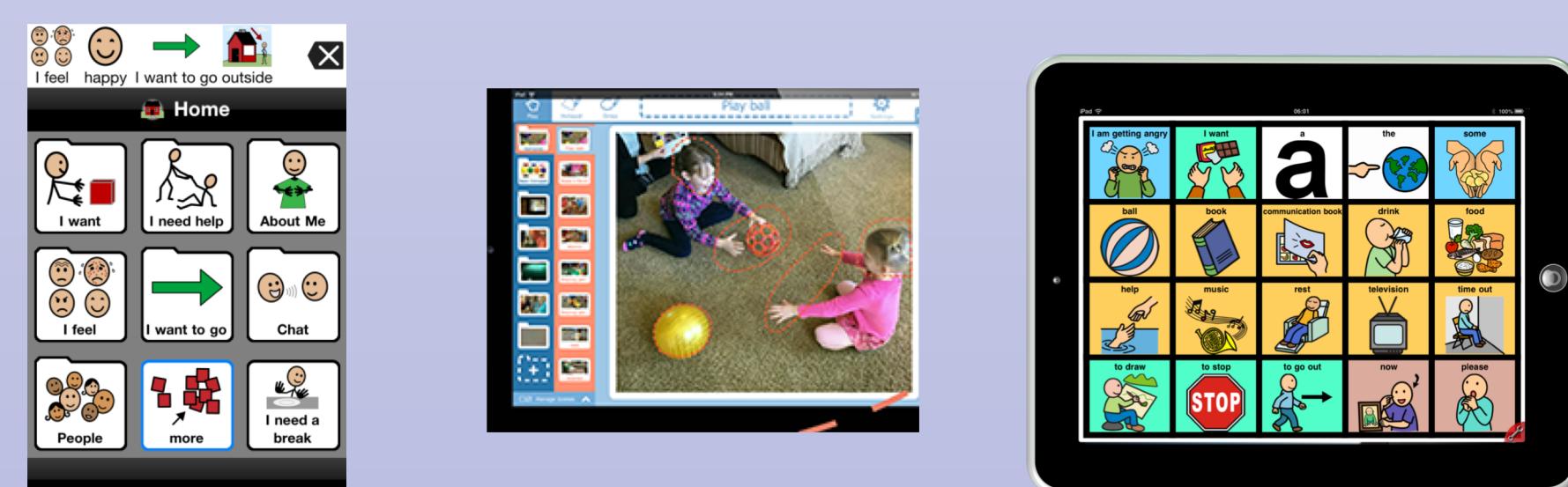
THE PROBLEM

The speech and cognitive impairments associated with CP can have significant consequences for literacy development and can result in adolescents and adults who are unable to read and write.

As a result, they can be severely restricted in their participation in:

- Education
- Employment
- Society

Currently, non-literate individuals with CP who use AAC typically use graphic AAC symbols to communicate, either through the use of visual scene displays (VSDs) or grid displays.



IF text is paired with symbols or VSDs, there is **NO** evidence to suggest that individuals learn these words.

How can we support the transition from communicating through graphic symbols to using orthographic text?

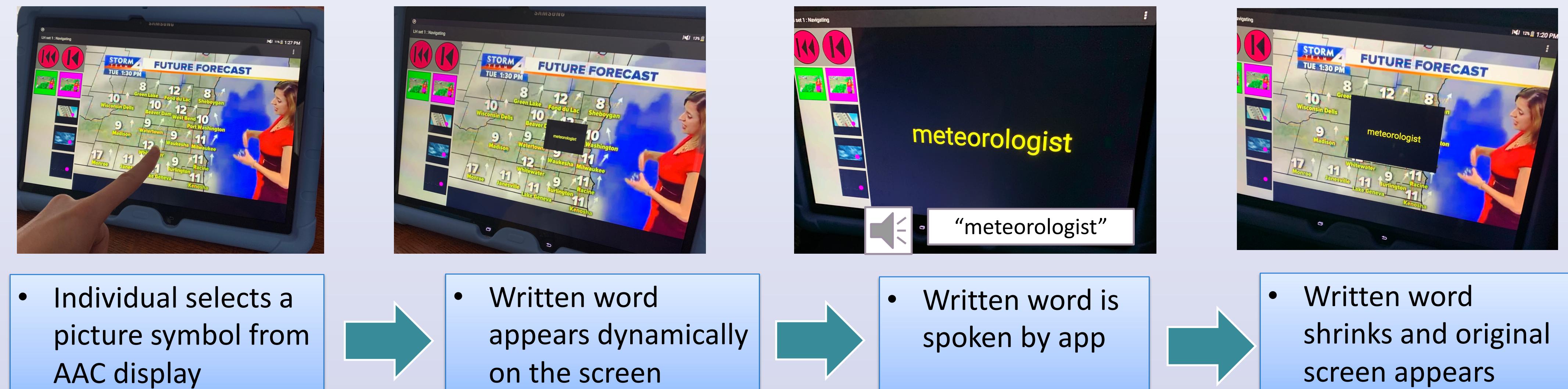
Solution

AAC technologies to support the transition to literacy (T2L)

Transition to literacy (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

Design of T2L feature is grounded in the state of the science in **visual cognitive processing, literacy instruction, and instructional design** (Light et al., 2014)



Research Question

What is the effect of the **video VSD AAC app with the T2L feature** on the acquisition and generalization of sight word reading by an adolescent with CP who uses AAC?

Participant

- Laura (pseudonym)
- 16-year old female with a diagnosis of Cerebral Palsy
- Non-ambulatory, uses a wheelchair
- Communicates using signs, gestures, facial expressions, and her communication device
- Per teacher report, Laura could expressively identify all 26 letters (through signs and/or her communication device), could spell some words, and had some sight words

Design

Single-subject, across behaviors, multiple probe design
Phases: baseline, intervention, and generalization

- baseline condition (prior to exposure to tablet technology);
- exposure to tablet technology with the AAC app;
- generalization

- Oral Label Task
- Communication task using target words

Independent Variable



Exposure to a **video VSD app with T2L feature**

- Researcher and Laura watched videos of weather concepts displayed on video VSD app on Samsung Tablet
- At the end of each video, Laura activated the "hotspot"
- Dynamic text appeared with speech output upon selection
- No other instruction during intervention

Acknowledgements

This research was supported by a grant from the National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR grant #90RE5017) to the Rehabilitation Engineering Research Center on Augmentative and Alternative Communication (The RERC on AAC). We have no relevant financial or nonfinancial relationship(s) within the products or services described, reviewed, evaluated or compared in this presentation.

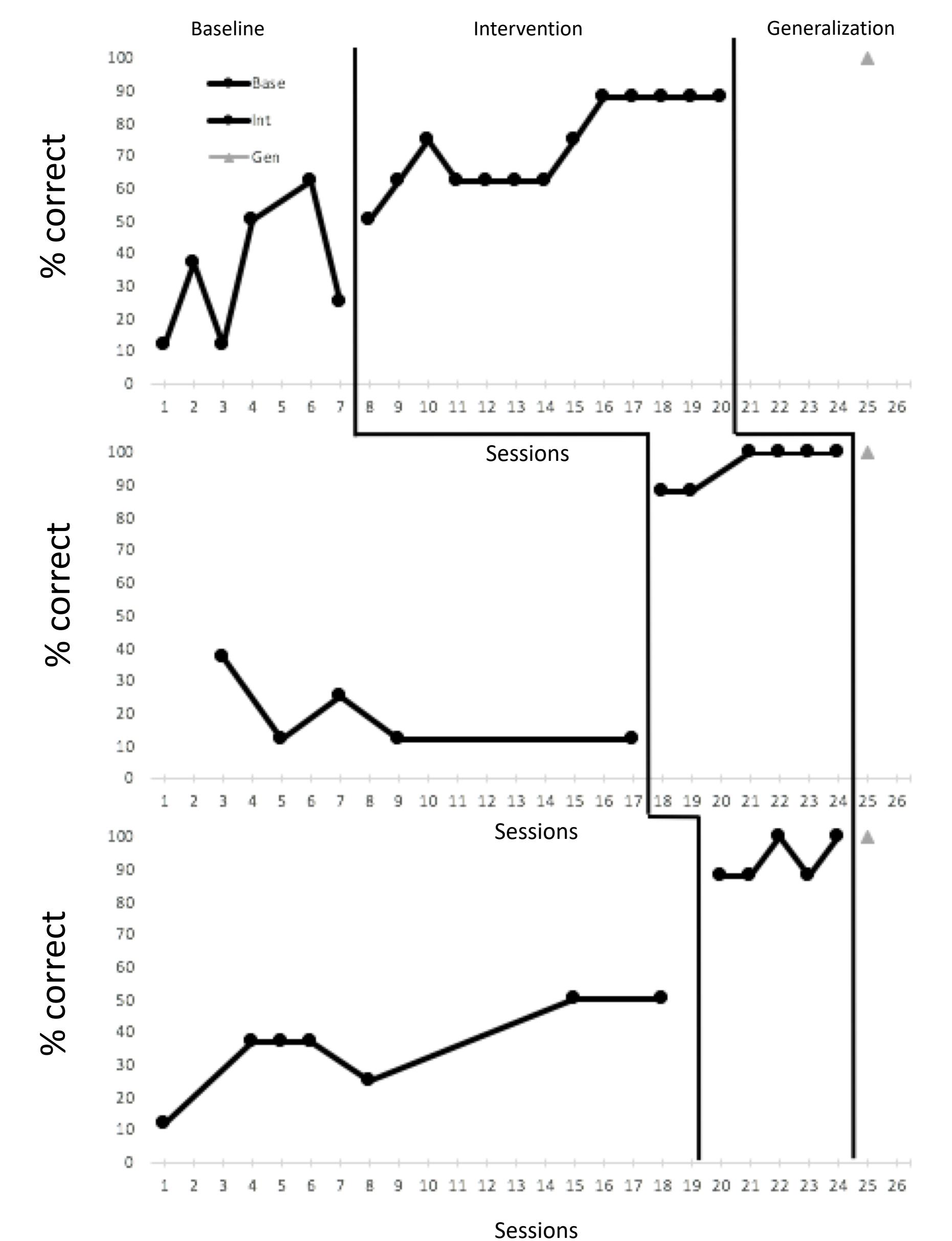
Dependent Variable

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

Materials
12 "weather" vocabulary words (selected by teacher)



Results



Sets of words	Length of exposure per word until treatment effect (# of sessions)
lightning	2 min 15 sec (9)
meteorologist	
temperature	
thunderstorm	
avalanche	30 sec (2)
hurricane	
snowflake	
snowstorm	
tsunami	30 sec (2)
condensation	
equator	
tornado	

Summary of Findings

Laura's data provide 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 adolescents with CP who use AAC.

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