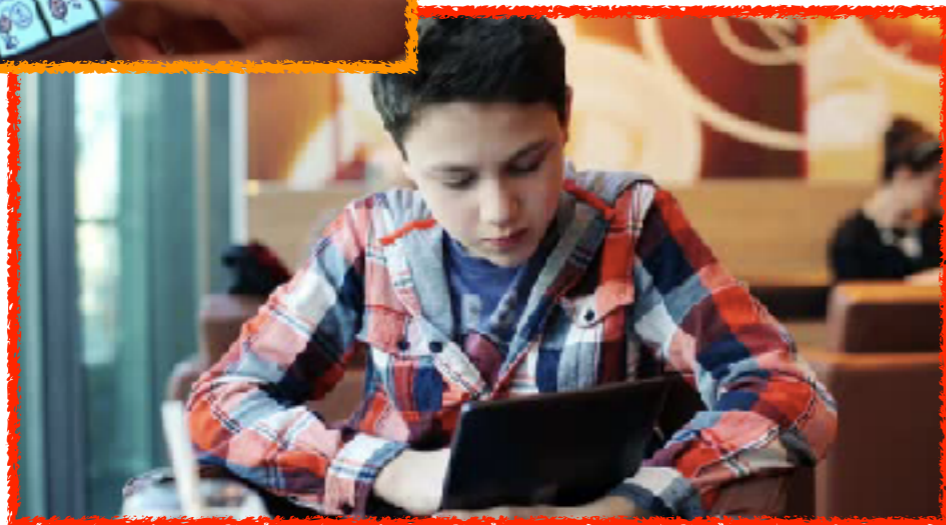
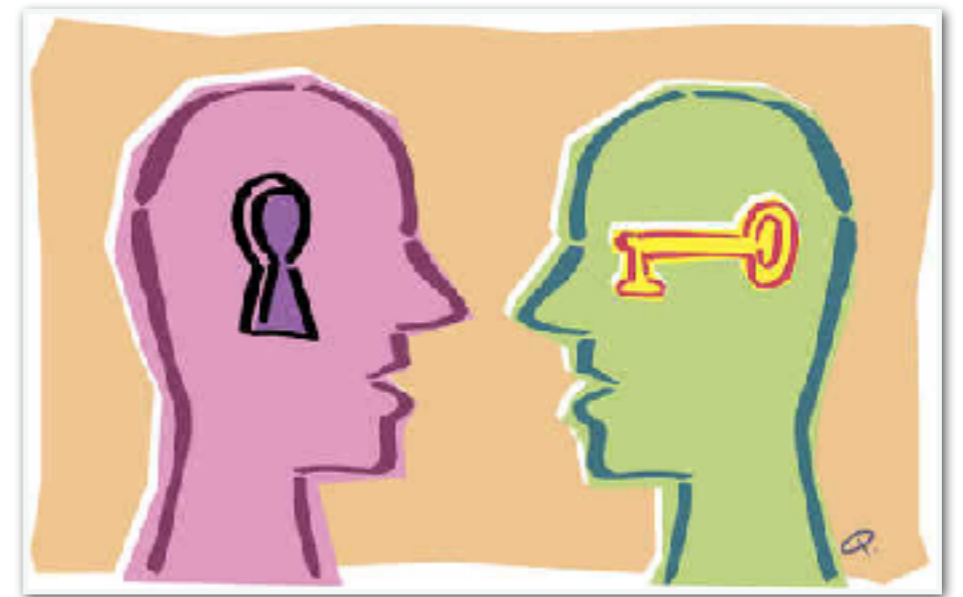


Augmentative Alternative Communication using tablets with speech generating device for children with special needs: strengths and limitations

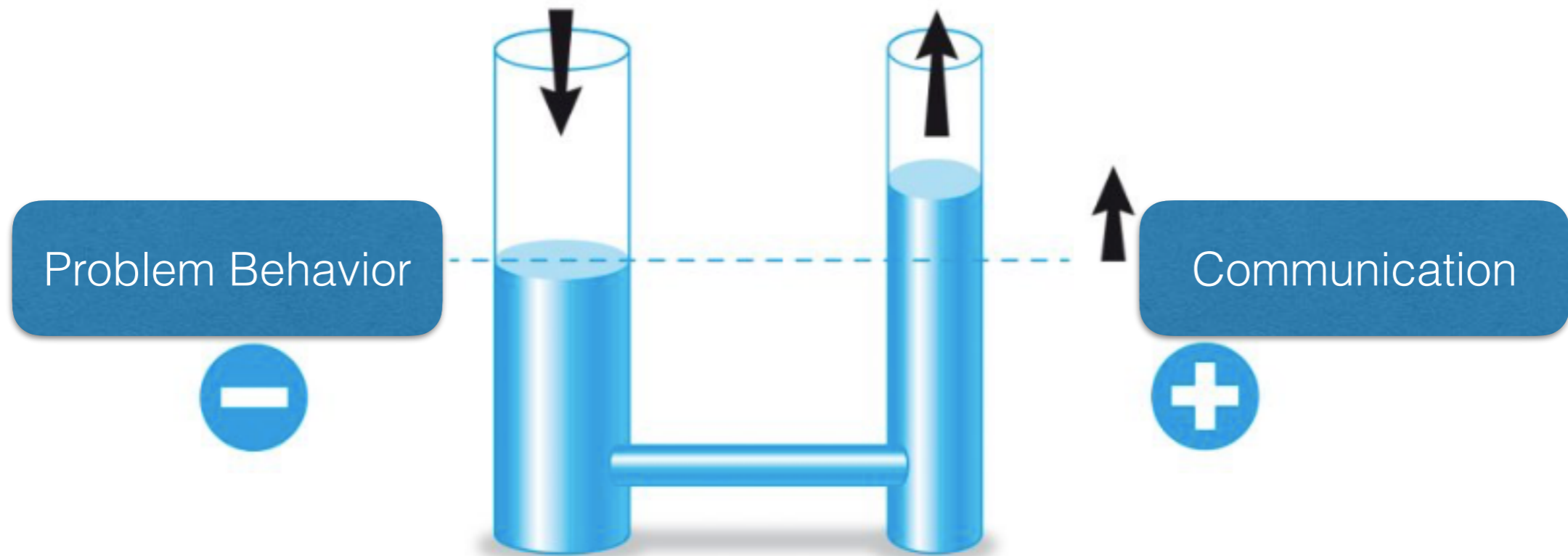
Lorenzo Todone, BCBA,
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Importance of communication



- Brings about desired changes or conditions
- Allows to control the social environment
- Allows to get what we want when it is wanted
- Allows to get rid of we don't want when it is not wanted
- Social community is paired with the delivery of Reinforcement related to the MAND



Research has shown that mand training benefits individuals with autism in terms of decreasing challenging behavior (e.g., Durand [1999](#)) and, in some cases, increasing speech production (e.g., Charlop-Christy et al. [2002](#)).








Although the goal of many language training programs is to develop vocal verbal behavior, this can sometimes be a long and difficult process (Carbone et.al. 2010)

if a child is
non-vocal?



Augmentative and alternative communication (AAC) systems are often recommended for individuals with autism spectrum disorder (ASD) who have not developed vocal language or who have unintelligible or limited vocal speech (Ronski & Sevcik, 1997; Sigafoos, Schlosser, & Sutherland, 2010).

Since prompting spoken words is virtually impossible, Carbone (2001, 2004), McGreevy (2002) and Sundberg and Partington(1998), strongly recommend that an alternative be selected and implemented **immediately**:

- signs A photograph showing two hands in a specific gesture, likely representing a sign language symbol.
- manual or electronic selection of pictures, symbols or words  A photograph of a tablet displaying a grid of colorful icons, and a photograph of a blue communication board with various symbols and a red button.
- writing A photograph of a hand holding a pen and writing on a piece of paper.
- typing A photograph of hands typing on a laptop keyboard.

Within AAC, two broad categories exist, **aided** and **unaided** (Mirenda [2003](#)).

Unaided AAC does not require any equipment and includes manual *signs* and *gestures*.

Aided AAC the *Picture Exchange Communication System* (PECS) (Frost and Bondy [2002](#)), *other forms of PE* (i.e. not implementing the PECS protocol), *speech generating devices* (also referred to as Voice Output Communications Aids, or VOCA) (Mirenda [2003](#))

Augmentative and alternative communication (AAC) systems, such as picture exchange (PE) and speech generating devices (SGD) have been shown to be effective in teaching individuals with autism to acquire a communicative (e.g., mand) repertoire (Goldstein 2002; Rispoli et al. 2010; Lancioni et al. 2007; Mirenda 2003).



PECS is an instructional system, which teaches aided communication through the exchange of graphic picture symbols (see Frost & Bondy, 2002).

Pecs

- <https://www.youtube.com/watch?v=rsDBJyrcyh0>
- <https://www.youtube.com/watch?v=Hs-412lhXb0&t=21s>
-



Several studies have provided empirical support for the use of **manual sign** manding in producing a functional communication repertoire in the absence of effective vocal verbal behavior repertoires for children with developmental disabilities (Schlosser & Wendt, 2008, for a review; Gregory, DeLeon, & Richman, 2009).

*INCREASING THE VOCAL RESPONSES OF CHILDREN
WITH AUTISM AND DEVELOPMENTAL DISABILITIES USING
MANUAL SIGN MAND TRAINING AND PROMPT DELAY*

VINCENT J. CARBONE AND EMILY J. SWEENEY-KERWIN

CARBONE CLINIC

VIVIAN ATTANASIO

VERBAL BEHAVIOR INSTITUTE

AND

TAMARA KASPER

CENTER FOR AUTISM TREATMENT

The purpose of this study was to determine the effect of manual sign mand training combined with prompt delay and vocal prompting on the production of vocal responses in nonvocal children with developmental disabilities. A multiple baseline design across participants verified the effectiveness of this intervention. All participants showed increases in vocal responses following the implementation of the independent variables.

Key words: autism, mand, manual sign language, prompt delay, vocal responding

video

- https://www.youtube.com/watch?v=aqoEIIY4_CQ
-

AAC

```
graph TD; AAC[AAC] --> Aided[Aided AAC]; AAC --> Unaided[Unaided AAC];
```

Aided AAC

- PECS
- Other form of PE
- SGD

Unaided AAC

- Gestures
- Manual Sign

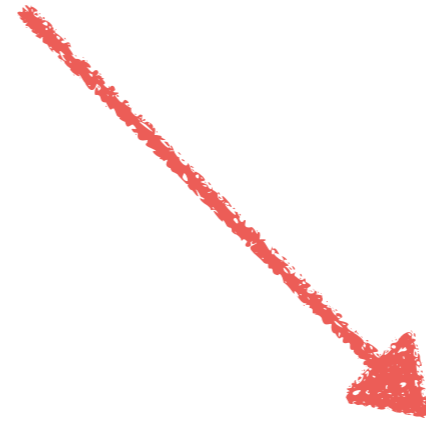
One of the limits of Picture Exchange Communication System

When there are 2 possible responses that you can engage in, you'll engage in the one that has resulted in reinforcement more often



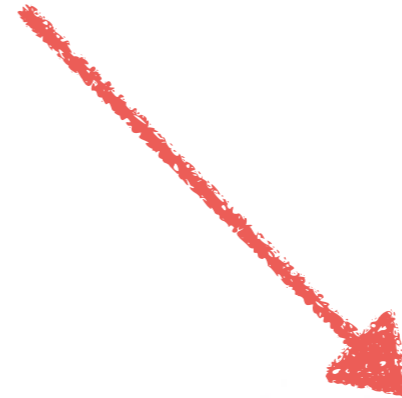
One of the limits of Picture Exchange Communication System

When there are 2 possible responses that you can engage in, you'll engage in the one that has resulted in reinforcement more often



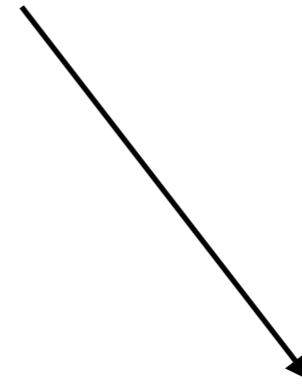
One of the limits of Picture Exchange Communication System

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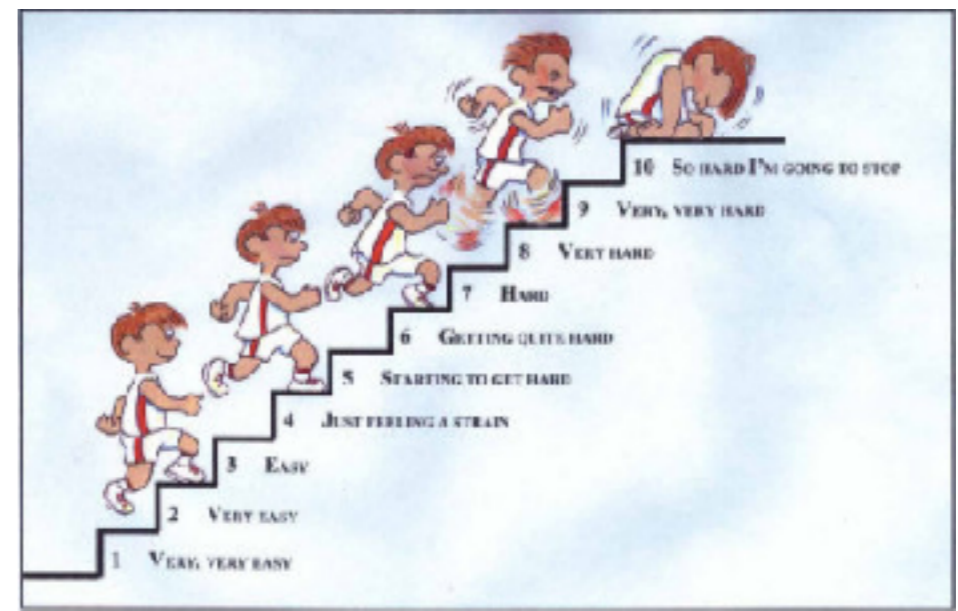


One of the limits of Picture Exchange Communication System

When there are 2 possible responses that you can engage in, you'll engage in the one that has resulted in reinforcement more often



Response Effort



- Task Analysis of response: **13 steps**
- Time: **90 seconds**



Response effort for caregivers



Update Communication Book

- Look for Picture
- Print Picture
- Plastify Picture
- Put Velcro

this is not a presentation against PECS!

PECS met evidence-based criteria with 2 group design and 4 single case design studies. (Charlop-Christy, Carpenter, Le, LeBanc, & Kellet, 2002; Dogoe, M. S., Banda, D. R., & Lock, R. H., 2010; Ganz & Simpson, 2004; Howlin, P. et.al. 2007; Jurgens, A., Anderson, A., & Moore, D. W., 2009; Magiati & Howlin, 2003; Tincani, 2004,)

According to the evidence-based studies, this intervention has been effective for preschoolers (3-5 years) to middle school-age learners (12-14 years) with ASD.

.

My question



- The use of tablet as speech generating devices with child and adolescents with autism can be more effective over a long period of time especially for those who will not develop vocal mands?

Using SGD in adolescent and young adults:
possible....



First: What is a SGD?

SGDs are electronic devices that rely on the speaker's pressing of a picture or text depicting the desired item or activity on an electronic screen with enough force to evoke a digitized SGD message (Lancioni et al. [2007](#)).

Using SGD in adolescent and young adults: possible...



- Using a device such as a tablet as a SGD may be more normalizing and less stigmatizing for a person with a disability than a PE book.
- Tablets are common consumer product. *A child carrying and using an iPad may be viewed as quite typical.*

(Peluso 2012)

Using SGD in adolescent and young adults: possible...



Using SGD in adolescent and young adults: possible...



- The use of touch screen tablet technology has become widely accepted as part of the classroom-learning environment
(Peluso 2012)

- More Social Validity?



Using SGD in adolescent and young adults: possible....



- Because of the **voice output** of a SGD, gaining the listener's attention before communicating, or picture exchange, is not a necessarily part of communication training.
- Greater naturalness for listeners, greater social acceptability among peers, and decreased misunderstandings among unfamiliar listeners due to the precision of the messages (*Sigafoos et al., 2011*).

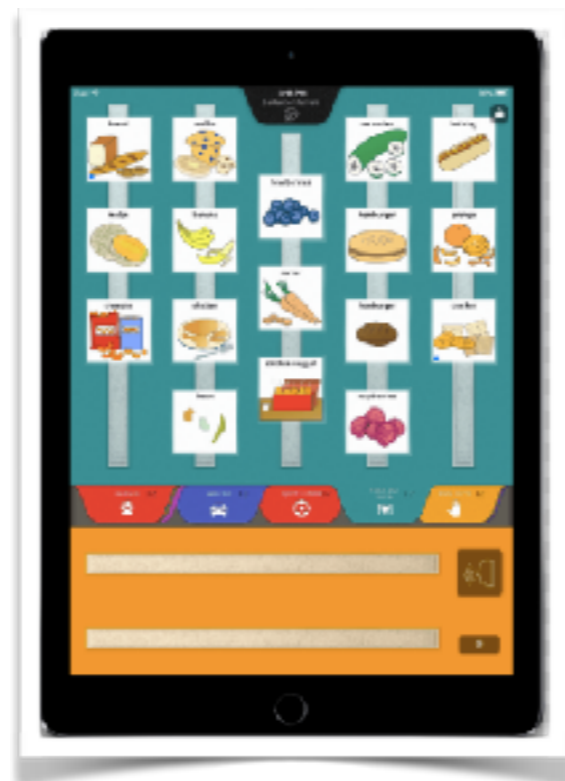


Using SGD in adolescent and young adults:
possible....



- Material more appealing
- Children with ASD may respond better to the game-like interface (Tincani and Boutot 2005).

From now on studies were conducted using SGD on tablets



A Systematic Review of Tablet Computers and Portable Media Players as Speech Generating Devices for Individuals with Autism Spectrum Disorder

**Elizabeth R. Lorah · Ashley Parnell ·
Peggy Schaefer Whitby · Donald Hantula**

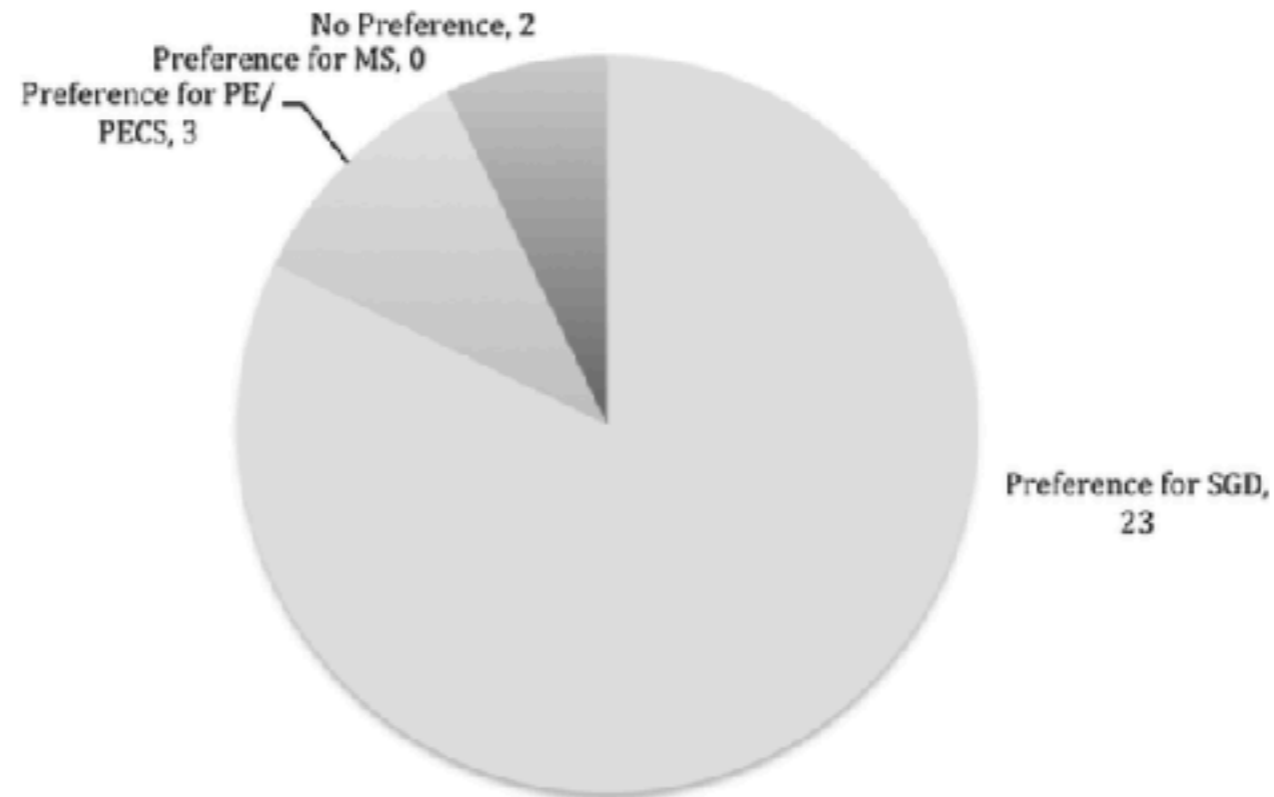
Lorah et al. (2014) reviewed 17 studies that evaluated the use of handheld computing devices or portable multimedia players as a SGD, in the acquisition of verbal behavior (communication repertoire) for individuals diagnosed with ASD or a related disability (i.e., ID).

53 of the 57 total participants (93 %) acquired the ability to communicate using the iPod or iPad as a SGD. With regard to the teaching strategies, a multitude of methods have been used (i.e., physical prompting, time delay prompting, graduated guidance, etc.) with no clear method of instruction emerging as preferred or more effective.

A Systematic Review of Tablet Computers and Portable Media Players as Speech Generating Devices for Individuals with Autism Spectrum Disorder

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Fig. 2 Participant device preference. Number of participants included in device preference assessments and the demonstrated preference between manual sign, picture exchange or the picture exchange communication system, and the iPad or iPod Touch as a SGD



28 participants involved in this research were exposed to a **device preference measure** following completion of the training;

23 of the total participants demonstrated a preference for the SGD, 3 for PE, and 2 did not present a preference for any device.

A Systematic Review of Tablet Computers and Portable Media Players as Speech Generating Devices for Individuals with Autism Spectrum Disorder

Elizabeth R. Lorah · Ashley Parnell ·
Peggy Schaefer Whitby · Donald Hantula

Eight studies have offered **a comparison of the iPad or iPod Touch as a SGD to other modalities of communication.**

Studies comparing these devices to picture exchange or manual sign language found that **acquisition was often quicker** when using a tablet computer.

*INCREASING THE VOCALIZATIONS OF INDIVIDUALS WITH
AUTISM DURING INTERVENTION WITH A SPEECH-GENERATING
DEVICE*

CINDY GEVARTER, MARK F. O'REILLY, MICHELLE KUHN, KASEY MILLS,
RAECHAL FERGUSON, AND LACI WATKINS

UNIVERSITY OF TEXAS AT AUSTIN

JEFF SIGAFOOS

VICTORIA WELLINGTON UNIVERSITY

RUSSELL LANG

TEXAS STATE UNIVERSITY

LAURA ROJESKI

UNIVERSITY OF TEXAS AT AUSTIN

AND

GIULIO E. LANCONI

BARI UNIVERSITY, ITALY

For **three of four participants**, the addition of vocal language instructional methods to an SGD-based intervention resulted in an **increase in independent vocalizations**.



PECS Phase III 4+

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★★★★☆ 8 Ratings

\$2.99

iPad Screenshots



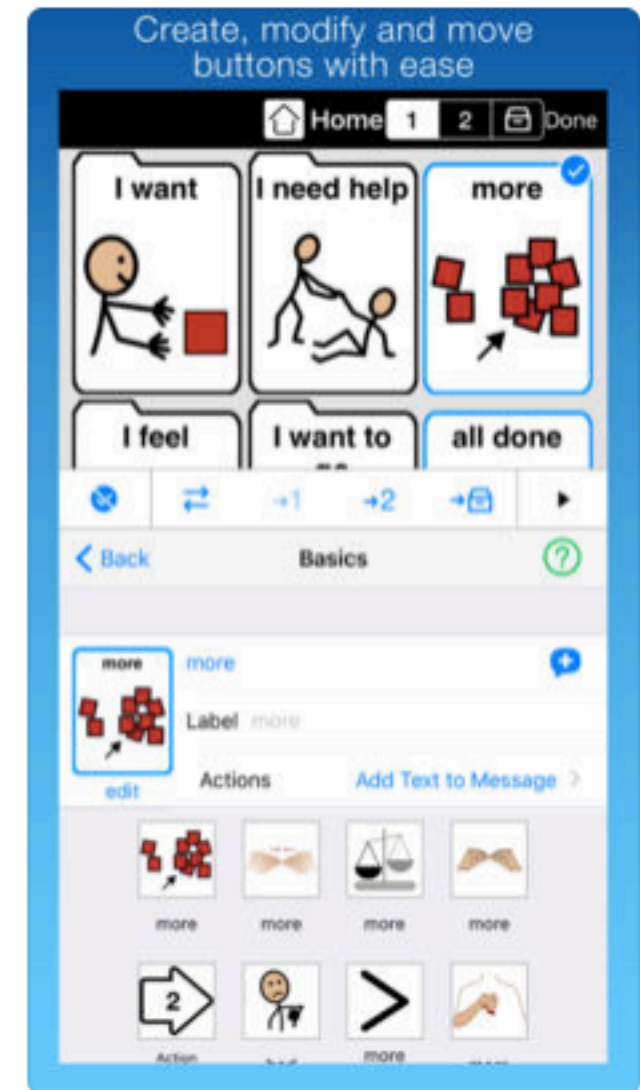
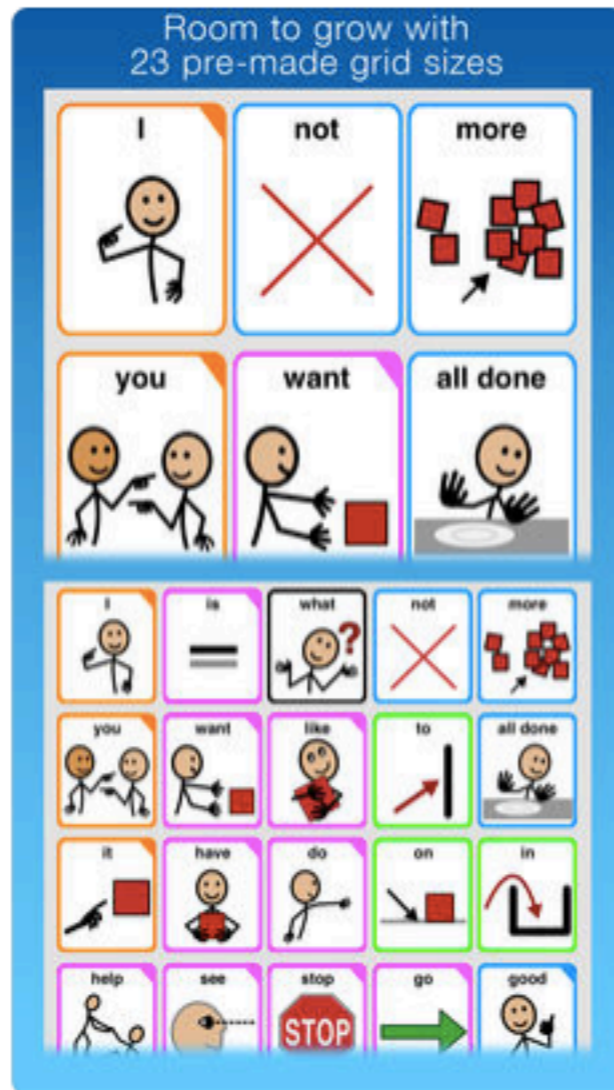


Proloquo2Go 4+

AssistiveWare

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Istantanee [iPhone](#) [iPad](#) [Apple Watch](#)





GoTalk Now 4+

Attainment Company

89,99 € • Offre acquisti in-app

Istantanee iPad



But...

"Regard no practice as immutable. Change and be ready to change again, Accept no eternal verity, Experiment"

(Skinner, 1979, p. 346)



COURTESY: CONRADO TAPADO/UNIV OF WASHINGTON, COMOTION

THESE
GLOVES
TRANSLATE
SIGN
LANGUAGE
INTO TEXT
OR
SPEECH



TECH
LEADER