

Experimental Evaluation of an iPad-based Augmentative and Alternative Communication Program for Early Elementary Children with Severe, Non-verbal Autism

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BACKGROUND

Mobile devices equipped with AAC applications have become increasingly popular in the clinical field. Both interpersonal and intrapersonal benefits exist for this emerging technology, including the devices' accessibility, social acceptance, portability, and multi-functionality (McNaughton & Light, 2013). However, there is an urgent need for more evidence-based information on the efficacy of these solutions.

RESEARCH GOALS

The purpose of this study was to investigate the effects of a treatment package that contains an autism specific iPad application in combination with the instructional framework of the Picture Exchange Communication System (PECS). Effects on the following variables were hypothesized:

- Functional communication (i.e., requesting)
- Natural speech production
- Social interaction

RESEARCH DESIGN

- Multiple Probe Design across participants (Horner & Baer, 1978) replicated across N=4 children with severe autism
- Intervention phase split into sub-phases that follow PECS instruction

MODIFIED PECS PROTOCOL

(Preference Assessment)

Intervention starts with iPad and SPEAKall!®

- iPad Phase I (Ph 1): One-Symbol Activation
- iPad Phase II (Ph 2): Distance and Persistence
- iPad Phase III (Ph 3): Discrimination Between Symbols
- iPad Phase IV (Ph 4): Sentence Structure

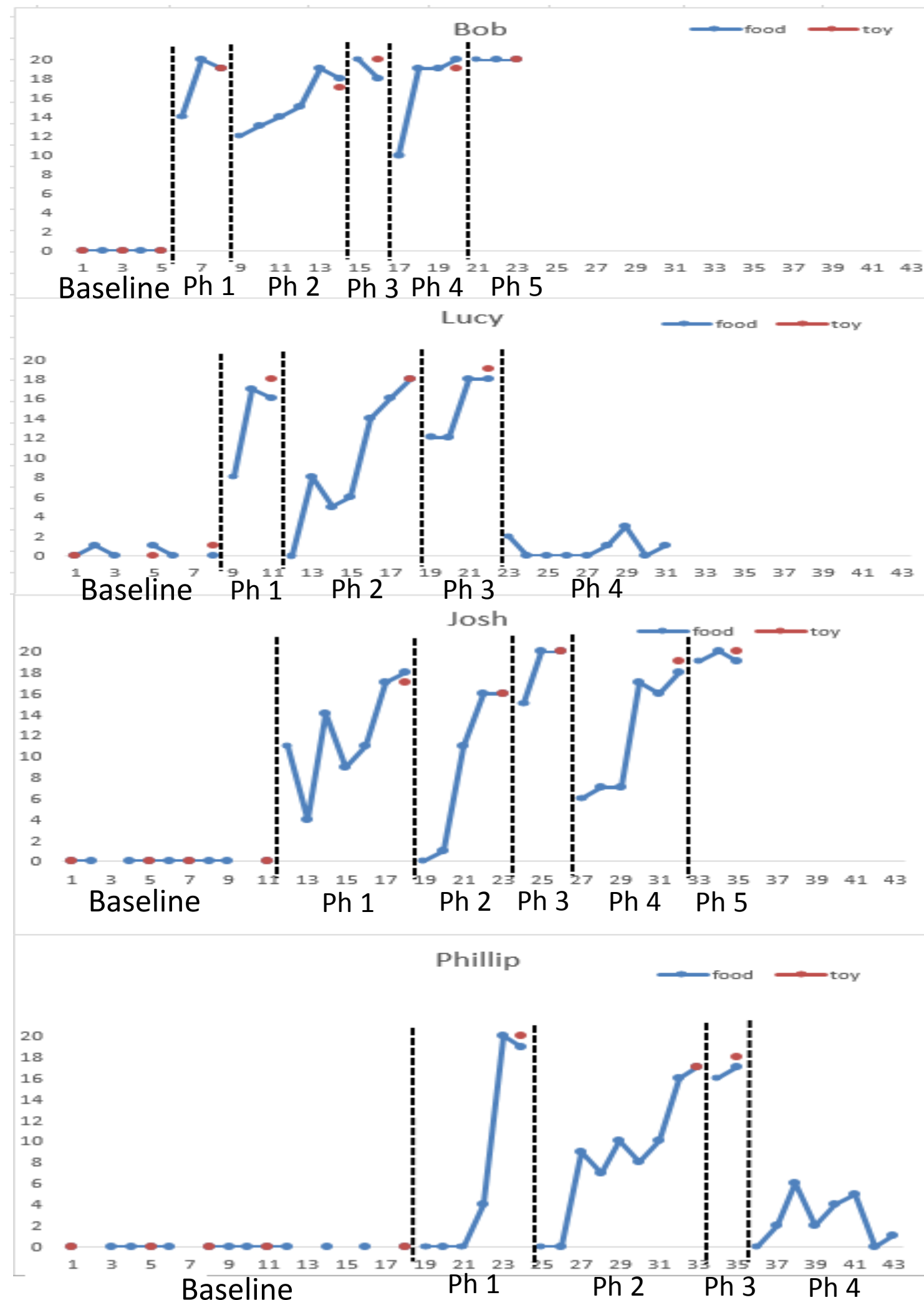
⇒ Added more rigorous speech elicitation, clinician and child read sentence strip together, clinician increasingly fades out prompts

- iPad Phase V (Ph 5): Responding to "What do you want?"
- iPad Phase V (Ph 5): Spontaneous Requesting

PECS equivalent Phase VI: Responsive and Spontaneous Commenting not targeted

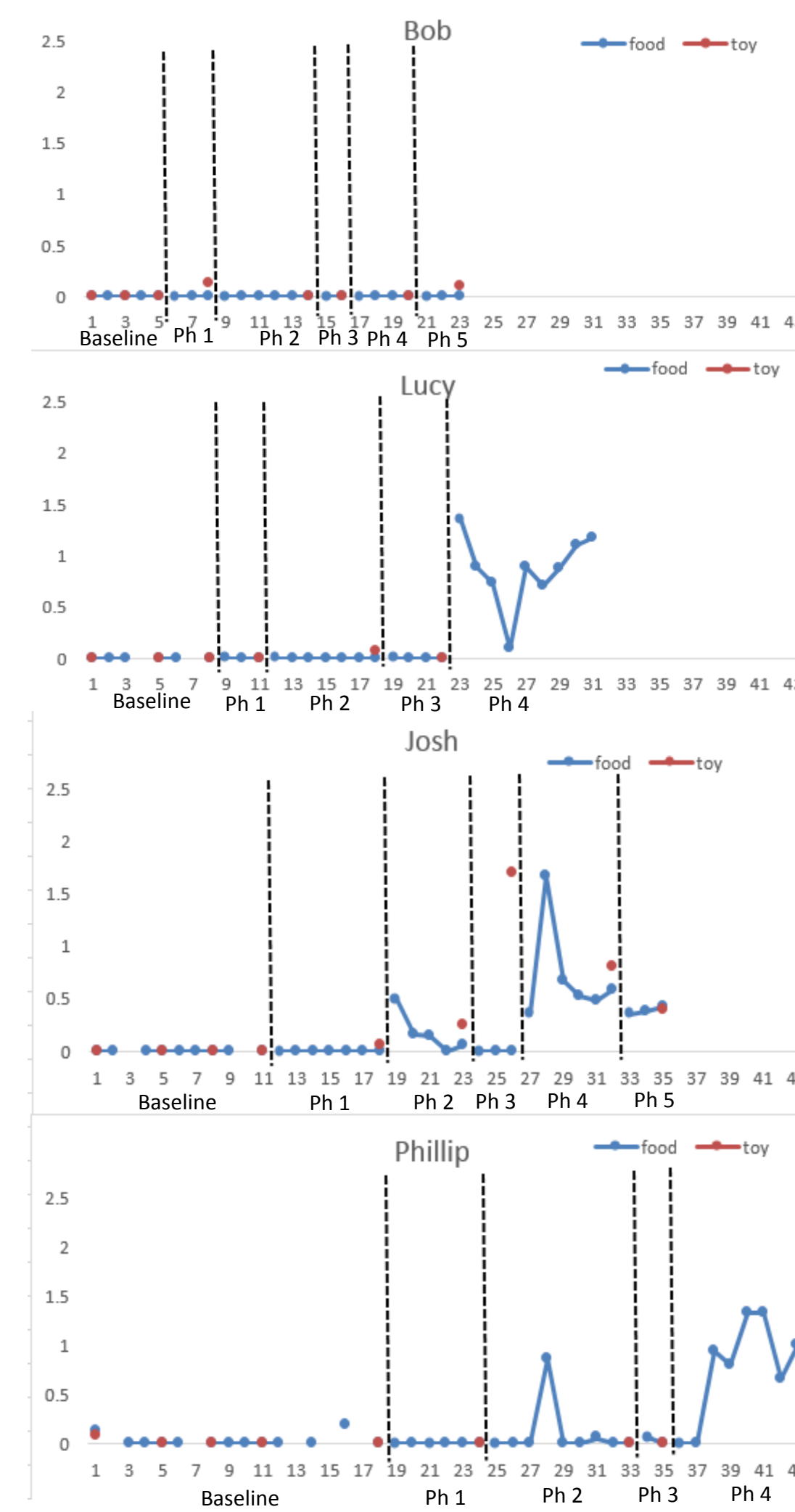
REQUESTING

(number of correct requests during 20-trials sessions)



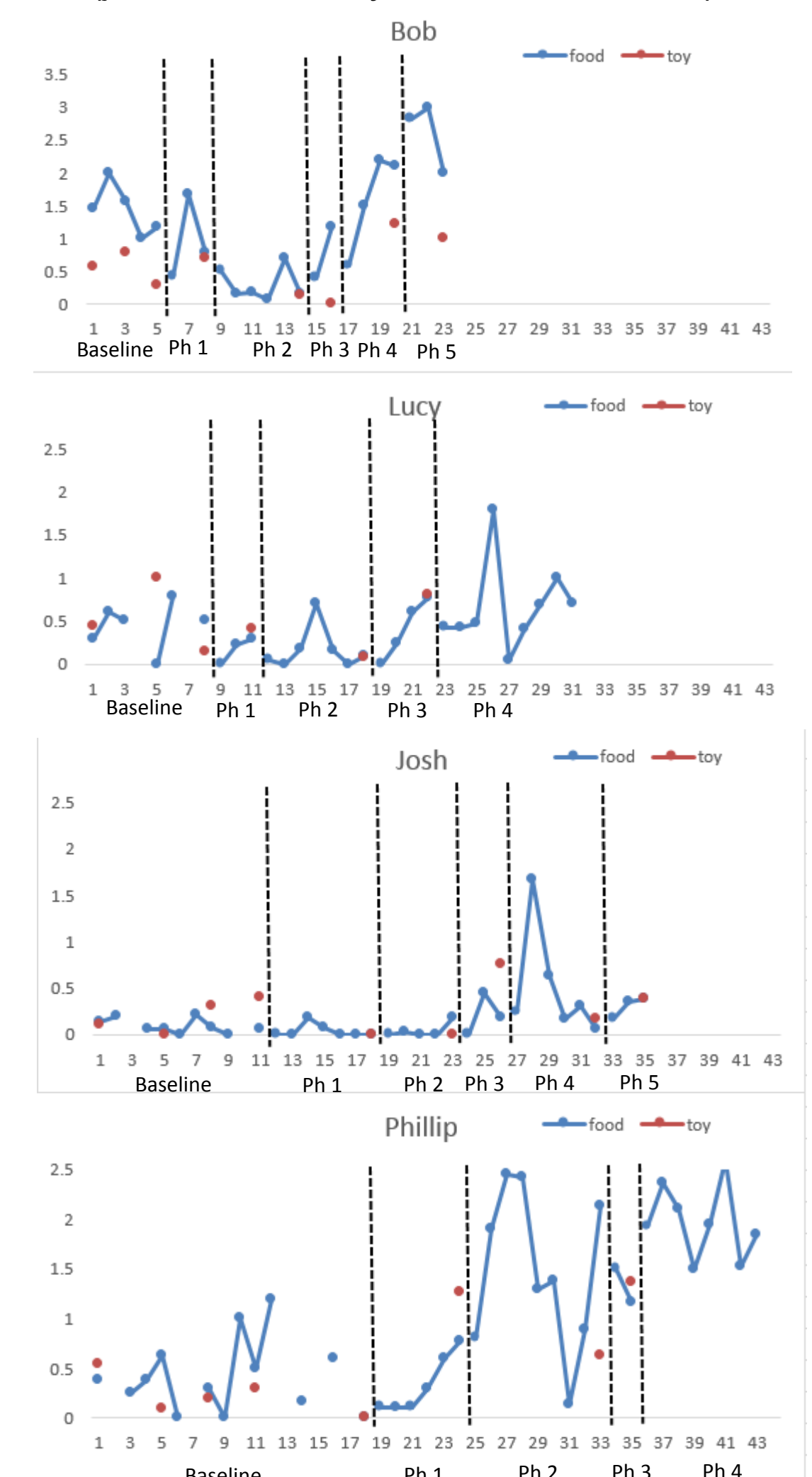
SPEECH

(intentional-related whole word utterance/ approximation)



SOCIAL INTERACTION

(joint attention, eye contact, affection)



IPAD WITH SPEAKall! APP

- Allows teaching simple sentences
- Selection Area on top replaces PECS book
- Sentence Strip at bottom speaks selected graphic symbols
- "Shuffle button" randomly regroups graphic symbols



Download on iTunes or Google Play: search for "Speakall"

PARTICIPANTS

"Bob": Male, 9 yrs.	severe autism	nonfunctional vocalizations that lack communicative intent
"Lucy": Female, 7 yrs.	severe autism	severe oral motor and verbal apraxia with limited functional speech
"Josh": Male, 4 yrs.	severe autism	variegated babble and limited word-approximations with prompting.
"Phillip": Male, 4 yrs.	severe autism	no functional speech and language

CONCLUSIONS

- All participants mastered iPad intervention, but varied in ability to complete later protocol phases; effects replicated across generalization probes.
- Gains in speech production seen in phase 4 for the 3 participants who demonstrated effects
- Pre-treatment speech skills and degree of cognitive impairment likely moderator variables
- General increase seen in social interaction variables as phases progress
- Maintenance effects under investigation