Behavioral Connections
ABA *Outside the Box*

The Effects of Backwards Chaining on Echoic Language Skill Acquisition in Children with Autism
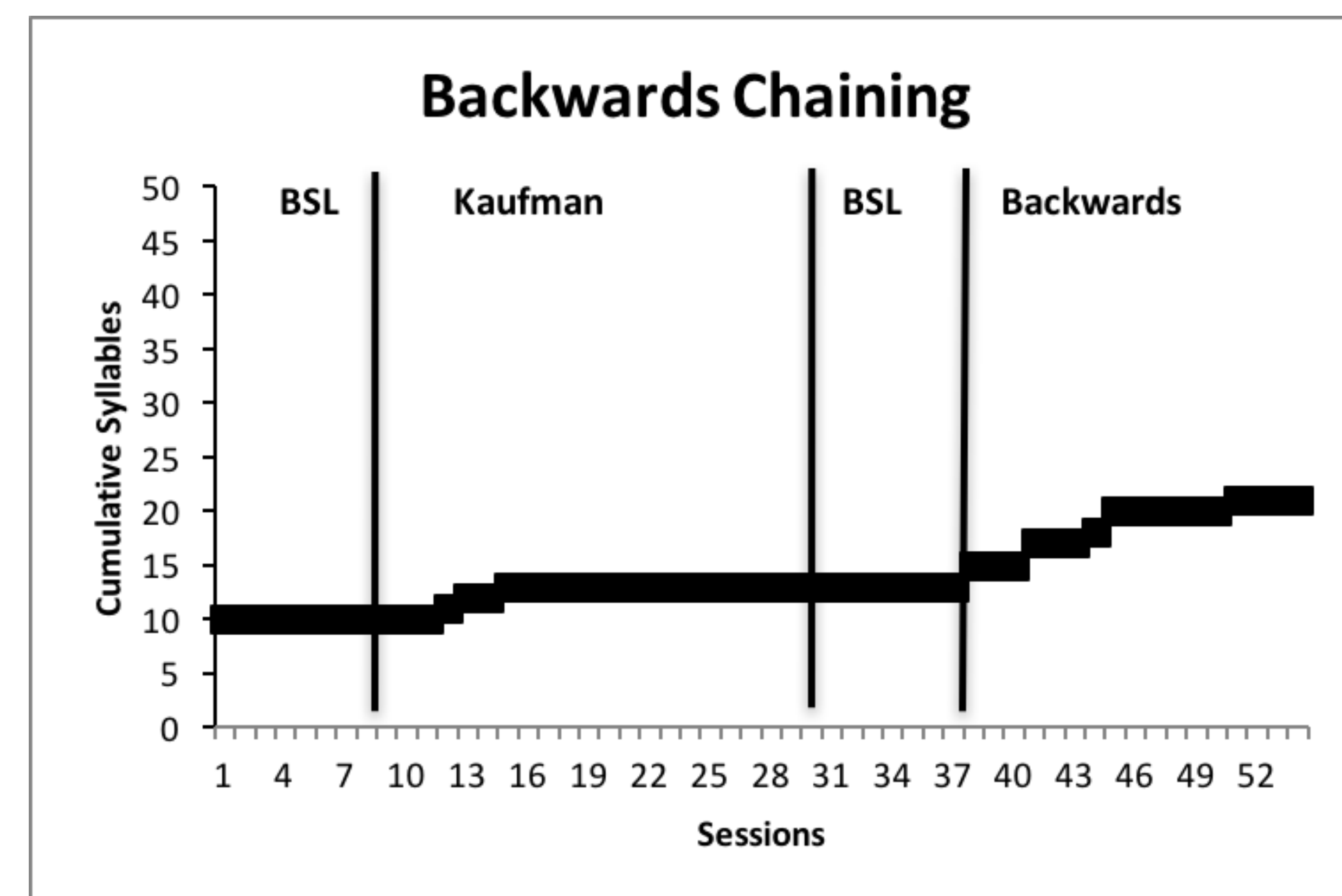By Thomas St. Michel & Tammy Lygren

Introduction

- This study is a partial replication of: Þorsteinsson, H., & Sigurðardóttir, Z. G. (2007). Backward chaining used to teach a woman with aphasia to read compound words: A single case study. *The Journal of Speech and Language Pathology-Applied Behavior Analysis, 2(3), 325.* The present study was conducted to demonstrate the efficacy of this method across other populations.
- Backwards Chaining for Echoic Language is the process of the breaking down a target word into discrete syllables and/or phonemes and reinforcing an echoic presentation of the terminal syllable; this is followed by reinforcing the next to last syllable and the last syllable, and so on.
- This intervention may provide a more effective alternative method of Echoic Language building for children with Autism with a major echoic barrier. The present study demonstrates the effects of Backwards Chaining compared to a traditional approach, e.g. Kaufman Echoic Breakdown, within the same subject.

Methods

- The subject is a 7 year old male diagnosed with an Autism diagnosis and also has Phelan-McDermid Syndrome, a deletion syndrome. The Learner receives 30 hours of intensive, clinical ABA Services weekly at Behavioral Connections. The subject exhibited a proclivity for repeating the first syllable of any multi-syllable word.
- Baseline:
    - The learner was prompted to echo entire words; progress was assessed daily.
- Kaufman Intervention:
    - The learner was prompted to echo the entire target word.
    - If the learner, does not appropriately echo the word, the learner is prompted to echo the first syllable/phoneme of the word.
    - The learner is prompted to echo successive syllables/phonemes until the target word is acquired.
- Backwards Chain Intervention:
    - (described in the introduction)
- An example of how backwards chaining data was collected: The word is "**TOWEL,**" the therapist gives an echoic breakdown of the word in this manner:
    - "ll" wait for response and collect yes or no data,
    - "wool" wait for response and collect yes or no data,
    - "owl" wait for response and collect yes or no data,
    - "towel" wait for response and collect yes or no data
- Prediction: the backwards chaining intervention would acquire significantly more syllables per session when compared with Kaufman Echoic Breakdown.

Results

- During baseline, the participant did not acquire any echoic targets.
- During the Kaufman Intervention, the participant initially exhibited target echoic behavior, but acquisition quickly plateaued for an extended duration.
- During the second baseline, the participant did not acquire any echoic targets.
- During the Backwards Chaining Intervention, the participant demonstrated continued syllable acquisition. There has also been no evidence of a plateau.

Discussion

- In the present study, the participant displayed continued syllable acquisition only in the Backwards Chaining Intervention. This had the benefit of reducing the participant's habit for repeating the first syllable twice with many new/introduced words. The participant also had remarkably less problem behavior when giving the word through Backwards Chaining procedure vs. Kaufman Echoic Breakdown.
- When the original study is considered, these results suggest this method of teaching language acquisition is applicable and effective across a great variety of populations/disabilities.
- Confounds and limitations of the study include the sample size. Another potential confound is the comorbid diagnosis; results may not generalize to populations afflicted by only one of the developmental disabilities.
- Future research should consider applying the methodology across populations afflicted by other language disabilities. We have recently introduced two other participants to Backwards Chaining. One participant, a 9 year old who has the same diagnosis, (Phelan-McDermid). The other subject shows trending signs of small acquisition before plateau through Kaufman Echoic Breakdown.