Increasing Toddlers with Down Syndrome’s Expressive Language

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Introduction

Children with Down syndrome have delays in their expressive language. One method used to improve expressive language is sign language, which is a system of communication using visual gestures and signs. Another method is alternative and augmentative communication device (AAC), which is a mechanical and electronic system that allows for communicative access. It is unknown which approach is significantly better.

Purpose

Using the PICO (Purpose, Intervention, Comparison, Outcome) framework (Gillam & Gillam, 2008), the following question was developed:

In toddlers with Down Syndrome (P), does teaching sign language (I) compared to using an AAC device (O) increase their expressive language as measured by a larger MLU (O)?

Case Scenario

- I am a first year graduate student clinician who will potentially work in an early intervention environment.
- I am working with Hayden, a 2 year 5 month old male with Down syndrome. He has a mean length utterance of 1.5 and does not use verbal language when communicating with caregivers or other children around him. He does not produce spontaneous gestures when communicating.
- I want to know if teaching sign language with toddlers with Down syndrome will help them increase their overall MLU and increase their communication more than using an AAC device.

Methodology

Search Terms:

- Down syndrome
- Sign Language
- Toddler
- AAC device
- Expressive Language

Databases:

- PubMed
- ERIC
- PsychInfo
- One Search Mathew son
- IGT Knowledge Center
- Google Scholar electronic databases

Appraisal:

- 10 articles were appraised using CAPE and CASM forms (Dollaghan, 2007). Four articles were selected based on their relevance to the purpose of this study.

Discussion

External Evidence: The research indicated that teaching sign language (Wright et al., 2013) to toddlers with Down syndrome demonstrated a greater effect in increasing expressive language and gestures (Caselli et al., 1998; JA te Kaat-cran Os et al., 2015). Research also showed using an AAC device which used sign (Makaton) increased expressive language compared to an AAC device that used pictures (COMPIC) (Foreman & Cresw, 1998).

Evidence Internal to Clinical Practice: As a graduate student clinician I do not feel comfortable using sign language. I do feel comfortable using an AAC device that uses Makaton to increase my client’s expressive language.

Evidence Internal to Client: My client’s parent’s indicated a preference in using a sign language device.

EDBP Decision: After combining evidence, we decided to implement using an AAC device which uses Makaton intervention in order to increase Hayden’s expressive language skills. Hayden will attend therapy twice a week in the clinical setting. After a 3-month treatment period a reassessment will be completed.

Results

<table>
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<tr>
<th>Authors (date)</th>
<th># of Participants, age, and description</th>
<th>Purpose</th>
<th>Dependent Variable</th>
<th>Results</th>
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| JA te Kaat-cran Os, Jongmans, Voiman, & Lauteklegier (2015) Systematic Review | N = 12
- Inclusion criteria as follows: children with DS aged 0-7 years, and the study measured gesture and preverbal and language development and/or early development.
- Toddlers with Down syndrome aged from 8 months to 5 years. | Synthesize the current state of empirical evidence on the role of gestures during the acquisition of early lexical and syntactic milestones in young children with Down syndrome. | Use of gestures during communication | The results of the systematic review support the idea of a relationship between gestures and spoken language in children with DS. Particular gesture types appear to be relevant for the development of expressive language. |
| Wright, Kaiser, Reikowski, & Roberts (2013) Experimental | N = 4
- Toddlers (Ryan, Erin, Jay, Gretchen) ages 23-29 months with Down syndrome. | The authors evaluated the effects of Enhanced MIkeau Teaching (EMT). Hancock & Kaiser, 2006) blended with Joint Attention, Symbolic Play, and Emotional Regulation (JASPER; Kaiser, Freeman, & Papani, 2006) to teach spoken words and manual signs (Words + Signs) to young children with Down syndrome. | Signed
Signed/Spoken
Spoken/Spoken Signed
Spoken | Ryan
Baseline: 1 signed, 0 spoken
Tx: 18 (15 sign, 1 sign/spoken, 2 spoken) Erin
Baseline: 5 spoken, 0 signed
Tx: 23 (15 sign, 6 signed/spoken, 2 spoken)
Jay
Baseline: 2 signed, 0 spoken
Tx: 14 (9 sign, 1 signed/spoken, 2 spoken)
Gretchen
Baseline: 0 signed, 0 spoken
Tx: 10 (5 sign, 3 signed/spoken, 2 spoken/spoken) |
- T1: 40 typically developing (TD) toddlers (8-17 months),
- T2: 40 toddlers with Down syndrome (DS) (10-49 months) | The purpose of this study was to analyze the early stages of children with DS, comparing performance in the vocal and gestural modalities. The list aim was to measure the degree of communicative and linguistic deficit in children with DS as compared to their chronological age. | The Italian version of MacArthur Communicative Development Inventory | Gestures Produced
- 02 (mean = 37.4) had significantly more gestures than G1, (mean = 28.6), p-values were not reported.
- There was an increase in gesture production when word comprehension increased from 51-100 to 101-200 F (4, 69) = 3.51, p < .01. |
- 2-4 year old toddlers with Down syndrome. | The present study was an attempt to control as many variables as possible through an experimental study of the way in which young children with DS learn the names of objects with the assistance of augmentative communication techniques. | Savings score - how quickly they communicated the word from the initial session to the second and third session
Four Methods of Word Instruction:
- Verbal Instruction
- Symbol (COMPIC) method
- Sign (Makaton) method
- Multimodal (verbal + sign + symbol) method | Sign method of instruction was significantly higher than Symbol instruction (F (1, 18) = 8.362, p = .011) for word learning. |

References