Research Insights Into LAMP
(Language Acquisition through Motor Planning)

Ben Satterfield, Ed.D.
John Halloran, M.S., CCC-SLP
Research Background

• Many individuals with autism do not produce natural speech that is adequate to meet their daily needs (Weitz, Dexter, & Moore, 1997).

• The level of competence in communication has been found to be a predictor for positive outcomes for individuals with autism (Lord & Paul, 1997).

• Schlosser, et al., (2007) observes that support for these communication deficits has often been sought from AAC systems, especially those which provide an auditory component, or speech-generating devices (SGDs).
Research Background

• Prizant & Wetherby (1993) found that nonverbal systems may actually facilitate speech acquisition in children with disabilities.

• Therapy employing SGDs can promote the production of speech (Frost & Bondy, 2002; Blischak, Lombardino, & Dyson, 2003).
Research Background

Using AAC with ASD clients does NOT inhibit speech development:

• Millar, Light, & Schlosser (2006)
• Schlosser & Wendt (2008)
• Romski, et.al. (2010)
Research Background

• The main thrust of interventions that employ AAC is to enhance the client’s communication ability by means of the multi-modal capabilities inherent in AAC systems themselves:
  – tactile interaction
  – visual symbols/devices
  – auditory feedback

(Light, Beukelman, & Reichle, 2003).
Research Background

• The introduction and acquisition of an AAC system is one aspect of the intervention.
• Another aspect relates to how the SGD is used with the client: therapy approach.
• Most studies did not distinguish approach (diverse strategies).
Texas Study

• This study examined the Language Acquisition through Motor Planning (LAMP) approach to implementing an AAC device as an intervention.

• Small group (Case study/Single Subject Research Design)
Participants

- Study took place from 2009-2012
- Seven clients in a private practice setting
- Four boys, three girls
- Ages 3 to 7
- Each with diagnosis of ASD or PDD-NOS
- Nonverbal
- Disruptive, some self-injurious behaviors
- Short attention spans
- All seven were found to have expressive-receptive language disorder.
Intervention

• Each obtained a Vantage-Lite speech generating device (SGD)
• Each received Language Acquisition through Motor Planning (LAMP) therapeutic intervention.
Methodology

• Each child was given an AAC evaluation and trialed multiple devices for extended periods (two to six months).
• The SLP recommended a device for each child.
• Funding was obtained for each device based upon each child’s eligibility for Medicaid and private insurance or grant funding.
Implementation

• LAMP therapy with the SGD involved one to three sessions per week with private practice SLP, depending upon the subjects’ family schedules.

• Training was provided to families in the LAMP approach with the expectation that the family would support the LAMP approach at home as well.
Data Collection

• The primary measure of gains in communication for this study was mean length of utterance (MLU).

• The Systematic Analysis of Language Transcripts (SALT) was applied to language samples taken from subjects at various intervals.

• Data collected was matched to Brown’s Stages to provide a frame of reference for therapy and to help identify progress.
Data Collection

- In addition, instruments such as the Preschool Language Scale, Fourth Edition (PLS-4) (Zimmerman, Steiner, & Pond, 2002) were used where possible to measure aspects of expressive and receptive language.
- Type-token ratio (TTR) was used in selected cases as a measure of vocabulary diversity within a child’s speech.
- The therapist in this study sought to collect informal data on behavior as well as upon attention and focus.
- Anecdotal data was collected on each subject. Data was supplemented from parent reports and informal measures.
Data Collection

• Data was collected at various intervals to assess progress.
• Testing revolved around each child’s health issues, and family and practitioner schedules.
• Progress was compared to baseline performance and previous test data.
Results

• It was clear from therapy observation, notes, and from parent reports that all seven participants demonstrated communication progress.

• To the degree that performance could be measured, it was apparent that each child made gains in both expressive and receptive language.

• However, each demonstrated different levels of progress.
Results

• Among those who made the most progress, vocabulary expanded and represented broad lexical variation.

• The most telling results were evident when mean length of utterance (MLU) was assessed by applying the SALT to language Samples.
Results

- The size of the vocabulary used by each subject increased.
- Six of the seven used the SGD to spontaneously generate communication.
- All seven used the AAC device to respond to questions and to make choices.
- Four subjects have demonstrated some level of natural vocalization in addition to using the SGD for communication.
- Two of the four had very limited vocalization at baseline, and their vocalization increased notably while using their AAC devices.
Behavior, Attention and Focus

• All participants demonstrated gains in shared engagement and attention and a reduction in problem behavior was observed.
Results

MLU Samples: Bianca

<table>
<thead>
<tr>
<th></th>
<th>Base</th>
<th>3 mos</th>
<th>6 mos</th>
<th>9 mos</th>
<th>12 mos</th>
<th>15 mos</th>
<th>18 mos</th>
<th>21 mos</th>
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Results

MLU Samples: Terry

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<th>9 mos</th>
<th>12 mos</th>
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<th>18 mos</th>
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Results

**MLU Samples: Haylie**

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Results

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<th>1.56</th>
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Results

MLU Samples: John

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Results

MLU Samples: Zoe

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Conclusions

• The LAMP therapy approach appears to have been important in each student’s communication progress.

• The LAMP technique appears to have contributed to the participants’ gains in terms of behavior and attention.

• The Vantage Lite with “Unity-modified” vocabulary appears to support the LAMP therapy effectively.
Questions for Further Study

• What is the impact of the LAMP therapy on those who exhibited natural vocalization?
• Will the children who began to naturally vocalize ultimately transition to natural speech and no longer need an AAC device?
• What was the impact of family and school support for LAMP therapy upon client progress?
Australian Study

- Case studies of 9 children with ASD
- Ages 4 to 12
- 3 locations
- Each had AAC in place, but not using spontaneously
- LAMP Training provided for family & therapist
- Five weeks of LAMP intervention followed by two weeks of Maintenance
Australian Study Outcomes

• All participants made progress (differing levels)
• Anecdotal evidence supports statistical data.
• Greatest gains: expressive communication
  – Four out of the eight participants went from being mainly in the pre-intentional/intentional stages of communication, to using intentional and symbolic communication using SGD
  – Other four participants who were already using both intentional and symbolic communication, increased their use of symbolic communication across the functions of communication, and as a consistent method of communicating.
Australian Study Outcomes

• Prior to the research:
  – 87% of participants were using a method of communication to protest;
  – 62% were able to gain attention, greet and farewell or express feelings using some sort of communication or physical behavior (e.g. hugging another person).
  – Only two of the participants (25%) were commenting in some way

• At the post-assessment and maintenance stages,:
  – All the participants were requesting using a symbolic means of communication (device or spoken language)
  – 100% of participants were developing social communication through commenting.

• Other improvements in functional communication were:
  – An increase of 75% of participants developing communication to gain attention and express feelings
  – 87% using communication to greet or bid farewell to others.
Australian Study Outcomes

• Most Impressive Increases in expressive communication:
  – range of vocabulary
  – length of utterances used by participants.

• Specifically:
  – Fifty per cent of participants had up to 10 words by session five.
  – The other 50% had greater than 30 words being used spontaneously on the device, by session five.
  – Three of these had a vocabulary of between 40 to 65 words at this stage.
Australian Study Conclusions

• Effective teaching of motor plans, using the LAMP theory, can be seen to:
  – allow for increased storage and retention of symbolic information,
  – resulting with more automatic communication over time,
  – reducing the cognitive demands associated with analyzing and choosing from different symbol sets

• The results of this research add to the evidence regarding the effectiveness of using AAC with people with an ASD
Questions & Discussion
Contact Information

• John Halloran, M.S., CCC-SLP is speech-language pathologist, is the Senior Clinical Associate for The Center for AAC and Autism.
  
  John@aacandautism.com

• Ben Satterfield, Ed.D. is an Assistant Professor at UGA in Communication Sciences and Special Education in the School of Education and a research consultant for GA Tools for Life/AMAC at GA Tech.
  
  Ben@GATFL.org