AAC, SLPS AND ABA: USING LAMP TO MAKE IT WORK

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‘SCUSE ME?
SO LET ME GET THIS STRAIGHT
I DON'T HAVE TO CRY AND YELL TO GET MY COOKIE?
COMBINING APPLIED BEHAVIOR ANALYSIS AND AAC TECHNIQUES TO TEACH COMMUNICATION

- Explore common obstacles you may encounter in the field
- Understand the outcome based AAC approach known as LAMP
- Understand ABA terms and principles—Yes, you can!
- How the LAMP approach to communication can appeal to ABA providers
- Find common ground that can help improve communication and reduce challenging behaviors
- Share tools you can use to start collaborating
WHAT YOU MAY HAVE HEARD WHEN DISCUSSING AAC WITH OTHER PROVIDERS:

- We only use ______(insert AAC software/PECS) here.
- AAC devices discourage vocal speech
- We only use outcome based treatments.
- We only use ABA to teach language.
- Gigi has a lot of language—she can label 300 pictures!
- Sam is not ready for an AAC device until he improves his visual scanning.
- Sam has great language—he uses an I WANT strip on his PECS book, says, “I want _____, please.”
- *Note: other professionals may say these things, too! Not limited to what an ABA provider may say
TEACHING COMMUNICATION (AAC OR VOCAL SPEECH) IS VERY COMPLEX. WE OFTEN ENCOUNTER…

- Children who use rote phrases (Hi, How are you, Fine….I see red bird looking at me…I want cookie please thank you)
- Children who are prompt dependent
- Children with challenging behaviors
- Yet very few assessments look at and address these obstacles to learning (Esch, B. E., LaLonde, K. B., & Esch, J. W. (2010), Sundberg (2014))

  ▶ An ABA based assessment tool such as the VB-MAPP (Sundberg 2004) and LAMP AAC (Halloran, 2009) could address some obstacles to learning communication
WHAT CAN YOU DO?

- Open a dialogue with other providers
- Understand some ABA-based and Verbal Behavior terms
- Share your knowledge of the outcome-based AAC approach (LAMP)
- Team together to focus on the student
- Design a plan for the student based on ABA and LAMP approaches
- Take good data that will show progress
WHAT IS LAMP?

Language Acquisition through Motor Planning
TEACHING CORE VOCABULARY: Top words- Toddlers

1. a
2. all done/finished
3. go
4. help
5. here
6. I
7. in
8. is
9. it
10. mine
11. more
12. my
13. no
14. off
15. on
16. out
17. some
18. that
19. the
20. want
21. what
22. yes
23. you

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<tbody>
<tr>
<td>1.</td>
<td>again</td>
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<td>2.</td>
<td>all done/finished</td>
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<td>3.</td>
<td>away</td>
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<td>4.</td>
<td>big</td>
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<td>get</td>
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<td>9.</td>
<td>help</td>
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<td>10.</td>
<td>here</td>
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<td>11.</td>
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<td>12.</td>
<td>In</td>
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<td>13.</td>
<td>it</td>
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<tr>
<td>14.</td>
<td>Like</td>
</tr>
<tr>
<td>15.</td>
<td>Little</td>
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<tr>
<td>16.</td>
<td>mine</td>
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<td>17.</td>
<td>more</td>
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<td>18.</td>
<td>my</td>
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<td>19.</td>
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<td>20.</td>
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<td>21.</td>
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<td>22.</td>
<td>put</td>
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<td>23.</td>
<td>some</td>
</tr>
<tr>
<td>24.</td>
<td>stop</td>
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<td>25.</td>
<td>that</td>
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<tr>
<td>26.</td>
<td>there</td>
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<tr>
<td>27.</td>
<td>up</td>
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<tr>
<td>28.</td>
<td>want</td>
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<td>29.</td>
<td>what</td>
</tr>
<tr>
<td>30.</td>
<td>you</td>
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</table>
WHY LOOK AT EARLY CHILD USE OF CORE?

- Core words are emphasized. Nouns are very important and teach specific requests, and for many students this eases frustration. However, many students get “stuck” on nouns or stuck on: I want ____ (noun), please.

- Core words and little words can be used regardless of activity

- Teaching Core and little words can lead to novel combinations, a.k.a. language (e.g., turn me, get me, like that, go up, play more, you go)
IF YOU ONLY HAD NOUNS ...
candy ball chips
toy cookie
car elephant
IF YOU HAD CORE WORDS…

stop
play
eat
do
help
out
like
come
got
turn
drink
### Activity

<table>
<thead>
<tr>
<th>Activity</th>
<th>Core Words to Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lining up to leave room</td>
<td>Go, out, go out, goodbye, play,</td>
</tr>
<tr>
<td>Academics</td>
<td>Want, like, get, put, in, on, eat, play, stop, no, more, turn, actions in books</td>
</tr>
<tr>
<td>Outdoors/ Recess</td>
<td>Go, fast, slow, up, down, more, play, come, get me</td>
</tr>
<tr>
<td>Arts and Crafts</td>
<td>Put, on, put on, make, you do, big, little, like, good, bad, yuk!</td>
</tr>
</tbody>
</table>
ELEMENTS OF LAMP APPROACH

Auditory Signals

Consistent and Unique Motor Pattern

Language Connections

Natural Consequences

Readiness to Learn

Joint Engagement
READINESS TO LEARN

- Learners need to be in an optimal state of arousal and readiness
- Motivating activities are preferred over adult chosen activities (HIGH MO)
- Learners must be comfortable, calm and in a state that helps them share focus on an activity they enjoy (REINFORCERS)
SHARED FOCUS

- Expand vocabulary around the learner’s interests
- Activities that are initiated by the learner are going to increase joint attention and engagement (HIGH MO)

https://www.youtube.com/watch?v=hrQclfzmRsE
NATURAL CONSEQUENCES

- Need to receive an intrinsically rewarding consequence after saying the word (Positive Reinforcement)
- Consequence must be an animated reaction, receiving the item, having control over activity (Functional Communication Teaching)
- Consequence relates to interests, is playful, keeps one engaged (as opposed to rote)
- NATURAL ENVIRONMENT TEACHING vs DTT
- FUNCTIONAL COMMUNICATION TEACHING (FCT)
AUDITORY SIGNAL

- Produce words via a consistent and unique motor pattern (there is only one motor path per word)
- Never need to say a word to get a word!
- Can practice words when not in presence of a listener (babble). This is automatically reinforcing!
- Connection between hearing word and consequence!
- Can address ECHOLALIA/SEGMENTATION ISSUES
UNIQUE & CONSISTENT MOTOR PLANS

- Speaking is a motor plan, as are tying shoes and typing. Once the plan is learned it becomes automatic.
- We don’t have to think about how to make a word with our articulators
- We communicate well because we have automaticity
- LAMP helps develop automaticity in a way that other approaches do not.
- If a motor movement changes each time we say a word, we do not develop automaticity. Consistency of that motor pattern is key for teaching language.
- A word can be produced in 1-3 keystrokes along a unique and consistent motor pathway. The AAC user can devote more cognitive energy to interacting vs. navigating through category pages.
LANGUAGE CONNECTIONS

- Phrase-based teaching does not help learners access words they may wish to say. *(I want cookie* learned as a chunk does not teach how to combine words to produce a variety of utterances)*

- Teaching the meaning of single words helps learners with auditory processing difficulties learn word meanings and use word combinations.

- A consistent unique motor path paired with the auditory signal, plus a rewarding consequence, helps children learn meanings of words in a meaningful context.
LANGUAGE CONNECTIONS (CONT.)

- Teach frequently occurring core words
- Teach Fringe words (special nouns are important)
- Teach small words (on, off, me, my, in, out, to, my, you)
- Consistent motor plans are taught across activities to teach flexibility or different senses of a word (e.g., Go to make a car go, Go to start chase, Go to say Go away, Go to ask permission to leave)
- This can lead to a language explosion
WHY IS LAMP BASED AAC NEEDED?

- Vocabulary using icons with multiple meanings helps learners quickly find words they want to say.
- Categorical or single meaning icons make learners navigate through several layers of pages, which places a high cognitive load on interaction. For many learners, this does not help develop automaticity.
- Category-based vocabulary programming can steer learners down a path that is not generative in nature (e.g. won’t see turn unless learner says my first, or won’t see mama unless learner says want)
WHAT IS APPLIED BEHAVIOR ANALYSIS?

A set of principles used to analyze how an individual learns in the environment. An individual emits a behavior in the presence of a stimulus. There is a consequence to that behavior. That consequence can increase or decrease the likelihood that the behavior will be emitted the next time the individual encounters that stimulus.

WHAT IS VERBAL BEHAVIOR?

Very broadly, we learn verbal communication the same way we learn nonverbal behaviors. Verbal skills are controlled by the same set of variables as for nonverbal behaviors (Skinner, 1957).
ABA: WHY IS IT IMPORTANT TO UNDERSTAND?

Can’t we just say request instead of mand?

- Yes! But it is important to know why a behavior analytic approach uses specific terms.

- Understanding specific events and functions of communication prevents confusing a mand (request) when it is an echoic (imitation), for example.

- If we know the real antecedent controlling a response we can help avoid rote responding or less functional responses that are hard to change once established.
ABA AND VERBAL BEHAVIOR TERMS

YOU KEEP USING THAT WORD
I DON'T THINK YOU KNOW WHAT IT MEANS
Motivating Operation (MO)/Establishing Operation: a condition of deprivation that temporarily alters the value of a particular reinforcer. An MO increases the effectiveness of a reinforcer a stimulus, object, or an event). Example: If you haven’t eaten lunch, food becomes a valuable reinforcer. (Michael, 1982; 2000; Cooper, Heron, & Heward, 2007).

Why is an MO important? MOs are essential to teaching early communicators to make requests, or mand. The goal is to increase Spontaneous requests.
ABA PRINCIPLES:

Abolishing Operation (AO) a stimulus, object or event that decreases reinforcer value

- If you just ate a snack, this is an AO as it reduces the value of food as a reinforcer.
- **Response Effort**: if child views Manding as too hard, the response effort kills the motivation for the item (I want it but don’t want to have to ask)
- Why is this important? You want to make sure that the learner finds your activity highly motivating, and values you as a key part of that reinforcing activity
A BEHAVIORAL SITUATION TO AVOID

- **Conditioned MO-Reflexive**: presence of a teacher, instructional items have been established as aversive. Children begin to exhibit any and all problem behaviors that have led to escaping that situation.

- Why is this important? Children may have high demands upon them, with low reinforcement, or items may be too challenging. This will take some unlearning that needs teamwork.

- *Nobody said that ABA approaches had to be aversive!* (Carbone, 2010, Sundberg 2012). This is not good ABA, nor is it good teaching or speech therapy!
VERBAL BEHAVIOR TERMS
(SUNDBERG, 2008,2016)

- **Stimulus Control**: A behavior is under stimulus control when it occurs in the presence of one particular stimulus. The antecedent becomes a signal once the person notices it. Example: traffic signals, unplugging computer at onset of a storm.

Why Important:

- Many children demonstrate what looks like a request or response to a question, but the behavior is controlled by a different signal (antecedent) than we may think.
**VERBAL BEHAVIOR: MAND (SUNDBERG, 2004)**

**Mand:** a verbal operant involving a response that is evoked by an MO and followed by specific reinforcement. It allows speakers to get their wants and needs reinforced by listeners.

Motivating Operations are a huge component of both Mand Training and the LAMP Approach.
**Tact**: a verbal response evoked by a nonverbal discriminative stimulus and followed by generalized conditioned reinforcement.

- **Antecedent**: Child sees cat
- **Response**: Child says cat
- **Reinforcement**: Adult says, Yes, that’s a cat!

Tacting allows a speaker to identify or describe the features of the physical environment. Early Tacts are often MAND based! Appeals to child’s interests, as in LAMP approach!
**VERBAL BEHAVIOR TERMS (SUNDBERG, 2008, 2016)**

**Echoic Imitation**—a response that is evoked by a verbal discriminative stimulus that has point-to-point correspondence and formal similarity with the response. Learning to repeat the words of others is essential to language, but it can be too strong, as in *echolalia.*

*Child sees cat*

Motivation

*What's that? Say “cat”*

Echoic Prompt

*“cat”*

Response

*Child gets praised*

Reinforcement

*Echolalia indicates poor segmentation of words (where word begins and ends and what individual words mean) LAMP teaches better segmentation (Halloran, 2014)*
WHY ANALYZE BEHAVIORS?
BEHAVIORS CAN BE APPROPRIATE OR MALADAPTIVE
REMEMBER: BEHAVIOR IS COMMUNICATION

Antecedent  Behavior  Consequence

The purpose of analysis is to determine the function that the behavior serves. Then the ABA provider, teacher and SLP can teach the learner an easier way to serve that function
SOME ABA PRINCIPLES

- **Reinforcement** – a consequence that provides (+) or removes (-) something, which increases the chance the behavior will occur again

- **Positive Reinforcement:** Praise, social attention, tangible reward

- **Negative Reinforcement:** Ending the task, an annoying sound stops, get a break, staff goes away, work materials are removed

- Children with challenging behaviors have a history of being reinforced for that challenging behavior.
<table>
<thead>
<tr>
<th>CONSEQUENCE</th>
<th>FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reprimand</td>
<td>Attention</td>
</tr>
<tr>
<td>Remove Work</td>
<td>Escape</td>
</tr>
<tr>
<td>Praise</td>
<td>Attention</td>
</tr>
<tr>
<td>Gets Cheetos</td>
<td>Tangible</td>
</tr>
<tr>
<td>End of Worksheet</td>
<td>Escape</td>
</tr>
<tr>
<td>Disappointed Look</td>
<td>Attention</td>
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<tr>
<td>Flapping hands</td>
<td>Automatic</td>
</tr>
</tbody>
</table>
How one simple behavior chain can quickly turn into a pattern of behavior…

<table>
<thead>
<tr>
<th>Antecedent</th>
<th>Behavior</th>
<th>Consequence</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus arrives early; no time for breakfast</td>
<td>Sally arrives to school crying</td>
<td>Staff hurry &amp; feed Sally breakfast</td>
<td>Tangible</td>
</tr>
<tr>
<td>Johnny takes Sally’s toy</td>
<td>Sally cries</td>
<td>Staff give Sally back her toy</td>
<td>Tangible</td>
</tr>
<tr>
<td>End of Recess bell</td>
<td>Sally cries</td>
<td>Staff say, “Okay, just 5 more minutes:”</td>
<td>Tangible</td>
</tr>
<tr>
<td>Mom says, “It’s time to go to bed”</td>
<td>Sally cries</td>
<td>Mom says, “Okay, one more story”</td>
<td>Tangible</td>
</tr>
</tbody>
</table>

What is really sad in this situation?

Sally has no functional communication skills!
**SO, HOW CAN WE HELP?**

<table>
<thead>
<tr>
<th>Bus was early; no time for breakfast</th>
<th>WHAT CAN SHE DO INSTEAD OF CRYING?</th>
<th>Staff hurry &amp; get Sally breakfast</th>
<th>Tangible</th>
</tr>
</thead>
</table>

- Let’s teach her functional communication.
- Functional communication is when the **BEHAVIOR** (communication) is related to the **FUNCTION**.
- In the Individual Behavior Intervention Plans (IBIPs), we call it replacement behavior.
Hypotheses Based on Indirect and Direct Assessment(s) | QABF (Questions About Behavioral Function) March 2013
---|---
**Crying**: Tangible

<table>
<thead>
<tr>
<th>Replacement Behavior:</th>
<th><strong>Crying</strong></th>
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<tbody>
<tr>
<td>Teach Sally to request items that she needs or wants using augmentative communication device.</td>
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</tr>
<tr>
<td>• When Sally begins to show signs of agitation, prompt her to ask for preferred items by touching the symbol on her device that correlates with the desired item.</td>
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<tr>
<td>• Initially reinforce all attempts to appropriately communicate her wants.</td>
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<tr>
<td>• Once she has begun to consistently ask for preferred items, begin to introduce a wait time. (Ex: “Thanks for asking for the train, I will get it for you in a moment,”).</td>
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<tr>
<td>• Begin with short wait times, and systematically increase them as Sally is more and more successful at waiting.</td>
<td></td>
</tr>
<tr>
<td>Antecedent</td>
<td>Behavior</td>
</tr>
<tr>
<td>------------------------------------------------------</td>
<td>---------------------------------------------------</td>
</tr>
<tr>
<td>Bus arrives early; no time for breakfast</td>
<td>Prompt Sally to request foods-eat or food items</td>
</tr>
<tr>
<td>Johnny takes Sally’s toy</td>
<td>Sally is prompted to say Mine</td>
</tr>
<tr>
<td>End of Recess bell</td>
<td>She is prompted to say “Play” or More Play</td>
</tr>
<tr>
<td>Mom says, “It’s time to go to bed”</td>
<td>Sally is prompted to say Read or Read More</td>
</tr>
</tbody>
</table>

Note: The student must first be taught these words in a fun way, as in the LAMP approach, and not during a behavioral challenge.
TEACHING FUNCTIONAL COMMUNICATION USING LAMP AND ABA: REINFORCERS

- Assess Reinforcers: Behavior Analysts use Preference Assessments to determine interest in activities and items, and rank them in order of preference (DeLeon, 2013).

- Preferences can change daily so you will need to assess preferences frequently (Is there an MO, or did the child become satiated (A0)?)

- Without a high MO, student will not Mand or request, because the reinforcer has less value at that time.
TEACHING FUNCTIONAL COMMUNICATION USING LAMP AND ABA: AVERSIVES OR CHALLENGING BEHAVIORS

- Work with your Behavior Analyst to determine the function of the challenging behaviors

- Set up what words can be taught as replacement behaviors (Functional Communication Training)

- Ensure your student can use core words and some fringe nouns, in a playful/engaging activity (LAMP- shared focus, natural consequence, auditory signal)

- Students will remember the word and use it in the proper context if they learn it in a meaningful way
<table>
<thead>
<tr>
<th>LAMP Component</th>
<th>Benefit to ABA program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Readiness to Learn: student in state that allows attending and learning, requires access to motivating activities</td>
<td>Student attends to stimulus presentation and to activities for longer time High MO leads to increased Mands</td>
</tr>
<tr>
<td>Unique and Consistent Motor Plan: stable word location leads to effortless communication due to low cognitive load</td>
<td>Minimal Response Effort, leads to increased Mands and Joint Attention</td>
</tr>
<tr>
<td>Auditory Signal: hear the word and pair it with consequences across context</td>
<td>Student gets immediate delivery of word and consequence, can help with Stimulus Control issues and Echolalia</td>
</tr>
<tr>
<td>Shared Focus: Child led activities will increase joint attention</td>
<td>Increase spontaneous Mands, Pairs adult as reinforcing</td>
</tr>
<tr>
<td>Natural Consequences: Student learns the word in meaningful context</td>
<td>Increases generalization of Mands across contexts</td>
</tr>
</tbody>
</table>
BENEFITS OF ABA AND LAMP APPROACHES TO INTERVENTION PROGRAMS

- VB MAPP in particular (see references) and LAMP approach can address obstacles to learning language (does the learner understand what individual words mean and multiple meanings of words?)
- Both LAMP and ABA approaches help build communication first and follow typical communication development (solid Manding repertoire of single words is taught before longer phrases or adjectives).
- Both LAMP and VB MAPP program emphasize using Motivation to increase early communication
RESOURCES


- http://www.aacandautism.com/references

- https://aaclanguagelab.com/
SHOW ME THE RESEARCH

**Evidence-Based Practice**- "Evidence-based medicine is the integration of best research evidence with clinical expertise and patient values." - Sackett D et al. (ASHA website)

**Evidence-Based Intervention**- There is strong research to indicate the treatment method is effective. Different organizations use different criteria and levels of efficacy.
Level 1: “Best Support”

- Two or more between-group design experiments demonstrating that treatment is superior to placebo or superior or equivalent to already established treatment
- Ten or more rigorous single case design experiments which demonstrate treatment efficacy

Level 2: “Good Support or Moderate Support”

- Two or more experiments showing treatment is superior to a wait-list control group
- One between-group design experiment utilizing manuals and a specified sample which demonstrates treatment is superior to placebo or superior or equivalent to previously established treatment
- Four or more rigorous single case design experiments utilizing manuals and specifying sample clients which demonstrate treatment efficacy

Level 3: “Promising Practice”

- Sound theoretical basis in generally accepted psychological principles or has been demonstrated to be effective with another target behavior.
- Substantial clinical-anecdotal literature indicating treatment value with the target behavior
- Generally accepted in clinical practice as appropriate for use with the target behavior
Effective ASD Treatments

ABA
Joint Attention intervention*
Video Modeling
Modeling-emerging
Naturalistic Interventions*
PECS
Speech Generating Devices – Emerging
No differentiation between SGD's

Research Supporting LAMP

Does not meet the strict criteria of evidence-based treatment; however, initial case studies are promising. Components are based on evidence-based practice. Stress importance of individual’s data and personal progress.
LAMP


LAMP Words For Life
RESEARCH ON LAMP AND LANGUAGE LEARNING: NENO ET AL

- LAMP is listed under AAC treatment approaches on the American Speech and Hearing Association website

- **LAMP Approach Research**


- Summary: Researchers collaborated to design and study the effects of a fully immersive Language Acquisition through Motor Planning (LAMP)-based classroom. Eight participants were in kindergarten and first grade and spent two hours in a classroom co-taught by three speech-language pathologists and a special educator. The classroom focused on instruction of a set of core vocabulary words instructed across a variety of sensory and scientific/discovery activities. The immersive portion of this classroom took place in large-scale language around a SMARTBoard projecting the Words for Life language program that an adult would model the sequences of the vocabulary being used by the teacher.

- The findings of this study indicated an upward trend in total use and duration of use of the devices, total number of words used and the frequency of different words used. The most significant data trend (compared to control classrooms) is that the greatest language use was shown after the program had ended indicating that this 8-week intensive program "set the stage" for further language growth.

http://www.tandfonline.com/eprint/gZZtTFzRYDBqZTsCxWq/full

Summary: Eight participants received intervention with the LAMP approach and SGD for five weeks. All of the children had received previous intervention prior to the study, (up to 9 years) yet only 25% of them were able to comment at the baseline assessment. At post-program assessment, all subjects showed significant vocabulary increase. All were requesting using a symbolic means of communication (on the device or using spoken language) and 100% of the children were developing social communication through commenting. Other social communication improvements were also observed in gaining attention (75%), expressing feelings (75%) and greetings (87%). All of the children were independently communicating and were not restricted to vocabulary that had been taught to them. Although not the focus of the study, 75% of the children were observed to be using phrases on their device by week 5 of implementation and two of the children in the study were observed at the week 9–10 post-program assessment to be using words with multiple meanings in the right context.

There were a range of other outcomes that parents, teachers and speech pathologists observed and reported including an increase in joint attention, interest, motivation and engagement with others, an overall increase in willingness to communicate and an overall increase in play and social communication. For some of the children, this was the first time they were able to communicate and participate in social situations. Behavior was also reported to have improved with a corresponding decrease in frustration as a result of improved expressive communication.
RESEARCH ON LAMP AND LANGUAGE LEARNING: PULLIAM


- http://gradworks.umi.com/14/83/1483250.html

- Summary: Case study of a child who used the LAMP approach, then an alternate approach, and the LAMP approach again several years later. Vocabulary increase was only noted during the periods where the LAMP approach was implemented. The same study was published recently in a peer-reviewed journal but they focused on the AAC device rather than the approach.

Summary: The seven children in this study, who ranged from age three to age seven, had a diagnosis of autism or pervasive developmental disorder—not otherwise specified (PDD-NOS) and complex communication needs (CCN). All seven were diagnosed with expressive-receptive language disorder. Four presented with severe/profound apraxia. Two were found to have dysarthria of speech. Each obtained a speech generating device (SGD) and received LAMP therapeutic intervention. Each child demonstrated communication progress. Language samples from six participants revealed gains as measured by mean length of utterance (MLU) within the first year. Other progress was noted in areas such as enhanced receptive vocabulary, spontaneous use of language, natural vocalization, and in the reduction of difficult behaviors and increase in shared attention.

Findings Were Presented:


Summary: Informal case studies on two children who began using the LAMP approach with a Vantage SGD with a secondary evaluation/therapy center outside of the schools where they received primary services. Both children showed communication improvement while using the LAMP approach. Difficulties with coordinating services with the primary team and modifications that were made to accommodate the primary team are discussed.
1. Dukhovny, E. Effect of Size-Centered vs. Location-Centered Grid Design on Aided AAC Productions. Poster session presented at American Speech and Hearing Association Conference; 2015 Nov 12-14; Denver CO.

Summary: Learning of aided AAC displays frequently begins with several large icons, with icon size decreasing as more vocabulary is introduced ("size-centered design"). Another approach introduces small icons from the start, with icon location maintained as new vocabulary is introduced ("location-centered design"). This ongoing study compares the effectiveness of these display designs with neurotypical adults. More subjects are needed but location-centered design is trending toward significance for accuracy and speed of access. Findings support using Vocabulary Builder in a complex communication system over providing limited vocabulary in an orientation that will change as language develops.


Summary: Neurotypical adults were more successful with recall of motor patterns to access words on SGD when the motor patterns for those words were dissimilar indicating that motor patterns play a role in access speed and recall. "This study provides initial support for the use of motor sequences in SGD-based language production.... If supported with further research findings, evidence of SGD-based motor plans for production will have significant practical clinical implications. Prior research in AAC design has focused primarily on facilitating visual search of the SGD interface by comparing the effectiveness of visual properties of the symbols on the grid, such as iconicity and use of color cues (Thistle & Wilkinson, 2009). Developing motor plan automaticity is a complementary and, in later stages of device use, possibly more efficient, approach to reducing the cognitive load of production (Grabowski, 2010). If SGD-based production quickly becomes automatic, as the current study suggests, one implication is that, with continued SGD use, location of symbols on a grid becomes more relevant to fluent SGD production than the internal visual characteristics of the symbols. Therefore, in planning SGD design and intervention, location of symbols on the AAC device, and the resulting motor plans for accessing symbols, must be taken into account along with visual considerations."
RESEARCH SUPPORTING READINESS TO LEARN


RESEARCH ON JOINT ENGAGEMENT

- Predict the Subsequent Development of Their Children’s Communication.” Journal of Autism and Developmental Disorders. 32: 77-89.
RESEARCH ON UNIQUE AND CONSISTENT MOTOR PLANS


RESEARCH ON AUDITORY SIGNAL


SAMPLE GOALS USING FUNCTIONS OF COMMUNICATION

- Student will direct an activity using AAC system using core words (e.g., come, stop, turn, go, put, make big)
  
  AKA: MANDING FOR ACTION

- Student will request items/activities using AAC system using core words
  
  AKA: MANDING

- Student will formulate 5 unique single word comments in a session
  
  AKA: TACTING

- Student will protest/communicate No using AAC system/page/voice output
  
  AKA: MANDING FOR AN ANNOYING STIMULUS TO STOP
RESOURCES

- Mark Sundberg Series Presentation to students at Western Michigan University
- https://www.youtube.com/watch?v=if31l-YG8XU
- Florida Institute of Technology Continuing Education courses for all professionals
  - http://web2.fit.edu/bst/programs/aba/ceu.php
- VB MAPP app
  - https://www.vbmappapp.com/products_services/vbmapp_app

You can start to use LAMP and ABA to address these obstacles.

<table>
<thead>
<tr>
<th>Obstacle</th>
<th>LAMP Component</th>
<th>Benefit to ABA program</th>
</tr>
</thead>
<tbody>
<tr>
<td>We don't use sensory integration</td>
<td>Readiness to Learn: student in state that allows attending and learning, requires access to motivating activities</td>
<td>Activities serve as reinforcers Help student attend and engage for longer periods Student attends to stimulus presentation and to activities for longer time High MO leads to increased Manding High MO reduces the likelihood that child finds instructional activities as aversive</td>
</tr>
<tr>
<td>Obstacle</td>
<td>LAMP Component</td>
<td>Benefit to ABA program</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>We only use ______ here.</td>
<td>Unique and Consistent Motor Plan: stable word location leads to effortless communication, low cognitive load</td>
<td>I am glad you said that! I would never use AAC systems that are not supported by outcome data. LAMP is an approved, outcome based approach in the ASHA Portal. Unique and Consistent Motor Plans means Minimal Response Effort, which leads to increased Mands and Joint attention I have seen improvements in my students’ communication skills using a stable location and consistent motor plan. This idea is supported by research (share your sources).</td>
</tr>
<tr>
<td>We only use outcome based treatments.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

YOU CAN START TO USE LAMP AND ABA TO ADDRESS OBSTACLES
YOU CAN START TO USE LAMP AND ABA TO ADDRESS OBSTACLES

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<tr>
<td>AAC devices discourage vocal speech</td>
<td>Auditory Signal: hear the word and pair it with consequences across context</td>
<td>Student gets immediate delivery of word and consequence, can help with Stimulus Control issues.</td>
</tr>
<tr>
<td>Sam has great language-“I want ____ , please.”</td>
<td></td>
<td>Auditory signal helps students learn individual word meanings and generate novel word combinations.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Can help with Echolalia and rote responding as student learns the meaning of a word across contexts.</td>
</tr>
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<tr>
<td>Gigi has a lot of language-she can label 300</td>
<td>Shared Focus: Child led activities will increase joint attention or Natural Consequences</td>
<td>I have noticed she does not have many spontaneous mands or requests, despite her ability to tact 300 words. Maybe we can look at her reinforcers to increase spontaneous mands using high motivation.</td>
</tr>
<tr>
<td>Obstacle</td>
<td>LAMP Component</td>
<td>Benefit to ABA program</td>
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</tr>
<tr>
<td>We only use ABA to teach language.</td>
<td>Natural Consequence</td>
<td>Research in Verbal Behavior points to success in using both Natural Environment Teaching, Functional Communication Teaching, as well as Discrete Trial Teaching (Sundberg 2014).</td>
</tr>
<tr>
<td></td>
<td>learn words in meaningful contexts</td>
<td>My goal is to increase communication by using the same principles as found in several different ABA based teaching strategies, using an outcome based approach to AAC.</td>
</tr>
<tr>
<td></td>
<td>Shared Focus</td>
<td>Increases generalization of Mands across contexts</td>
</tr>
</tbody>
</table>
FIGURE 3.1. A decision flowchart for selecting reinforcers in applied settings.
INSERT LAMP INTEREST INVENTORY FROM JOHN HALLORAN