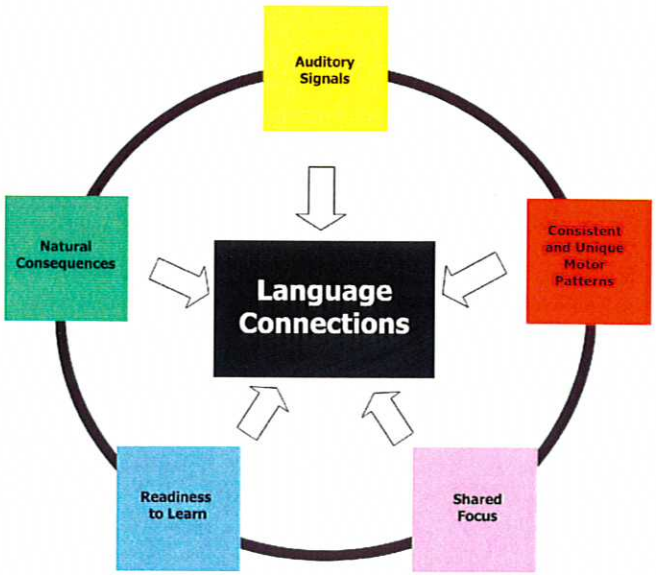
LAMP:

Language Acquisition through Motor Planning

INTRODUCTION TO PROGRAM COMPONENTS

LAMP utilizes five key elements as the foundation for language learning in the child with ASD.

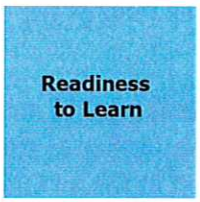
"Readiness to Learn" and "Shared Focus" provide the foundation upon which the skills leading to "Language Connections" are built. When these two skills have been addressed, the child is able to benefit from further training. Next, consistent motor patterns are learned, and these motor patterns result in the device speaking. The message spoken by the device provides the child with auditory feedback, and is then systematically met with natural consequences in the environment. The cumulative result of these components is the establishment of Language Connections.



THERAPY TECHNIQUES AND STRATEGIES

Evaluation: A comprehensive evaluation and/or profiling of the child should be completed before starting this intervention. The following information is needed about the child: Motor planning, muscle tone, and coordination; perceptual motor capacities; visual spatial abilities; and sensory modulation, including vestibular, tactile, and proprioceptive. It is the role of an occupational therapist to profile the child's individual differences based on observation, history, and specific evaluations.

It is the role of a speech-language clinician to profile the child's speech, language, and communication abilities. The following information is needed about the child: past and current speech abilities; receptive language; expressive language; pragmatic development; and communication interaction style. A Communication Form/Functions Profile and Play Interests Inventory should also be completed. See the Support Materials section of this manual for a copy of these two forms.



READINESS TO LEARN

Preparation to Learn: Prior to treatment with the AAC device, the child might need calming or alerting.

Calming activities include

- slow repetitive movements like gentle swinging or rocking;
- proprioceptive activities, particularly resistive "heavy work" like carrying, pushing, pulling, lifting, squeezing, climbing, or hanging on;
- deep pressure, like brushing, massage, being wrapped, or being squeezed;
- oral motor activities, like chewing, blowing, or sucking; and
- quiet sounds, voices, or rhythmical music.

Alerting activities include

- quick, erratic, and unexpected movements, like swinging, rolling, bicycling, dancing, spinning, or bouncing;
- oral motor activities (like eating something sour, crunchy, or bitter); and
- loud noises, voices, or music.

Sensory Levels while Learning: Select activities appropriate for the child's level of sensory functioning. The child needs to accept participation in the activity if he/she is expected to use the AAC device to request or sustain the activity. If it is necessary to force the child to interact and use the device, the child may be telling you that the activity is not working. Don't force the child to participate. Either modify or stop the activity altogether.

Shared Focus

SHARED FOCUS

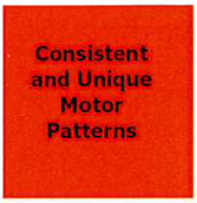
Child-Directed: Ideal intervention should be child-directed. When the child chooses the activity, then the child is more motivated and more likely to put forth the effort needed to learn something new. Spontaneous, child-led intervention encourages the child to communicate naturally, while adult or therapist structured and engineered activities tend to promote compliance. Following the child's lead instead of a lesson plan or specific routine produces the kind of communication that generalizes and grows naturally.

- Follow the child's lead: Watch for what interests the child and use that interest to create a meaningful language learning experience. In the beginning, it does not matter what the child is doing, whether he/she is picking up or dropping objects, running back and forth, or playing with a toy. It is essential to follow the child's lead and make it interactive.
- Join in with the child: Shared focus develops through interaction. Through your own affect and actions, court the child into letting you engage with him/her. Watch for a signal that suggests that he/she is interested in what you are going to do. Don't interrupt the interactive process as long as the child is continuing to participate.
- Build on the child's interest: Once you have joined the child, build on that interest and find ways to expand the child's communication. For example, the child might have been interested in swinging. You joined in the swinging by pushing him/her after he/she asked for "more" with the AAC device. Build up the interaction by showing the child how to say "fast" or "slow" and then adjust the tempo of the swinging accordingly.
- Carefully use barriers: The use of barriers can be an effective way to help the child use communication to solve the problem. Barriers could involve "gentle obstruction" when you block his/her way or put something in the way of whatever it is he/she wants. It could also involve doing something the wrong way so that he/she has to correct it.
- Let the child make the moves: It is often necessary to let the child make the moves during the interaction so that he/she is not overwhelmed. For example, you may offer a child a simple wind-up toy, which is rejected. However, if you place the toy near by, in his/her lap, or even in his/her pocket, the child might be interested in it. Being indirect is less likely to trigger avoidance and rejection.

Surprising and Novel: Capture the child's attention by doing surprising and novel things. The child may be more compelled to respond because you are not acting in a normal or predictable way. Think about what you tend to do over and over again, and do it differently.

Purposeful and Intentional: Many children with ASD lack the motor planning and/or ability to initiate purposeful behaviors. For these children, treat whatever the child is doing as intentional and purposeful. By giving the child's every move your attention as if it is the most important thing in the world, your interest and energy conveys to the child that what he/she is doing is meaningful and will get a response.

***Use of Movement*:** Movement helps maintain a shared focus and also allows language to be used more easily. Be prepared to move, providing the child with a full compliment of appropriate sensory input. Use activities that lend themselves to the use of vocabulary that helps the child direct movement, continue movement, and/or stop movement. The vocabulary recommended in this training package promotes movement and active learning.



CONSISTENT AND UNIQUE MOTOR PATTERNS

Motor plan: LAMP was developed with two "levels" of motor planning. Level 1 requires a single movement before the word is spoken by the device. Level 2 requires two movements before a word is spoken. Both levels were developed with consistent and unique motor patterns for each word produced. Use the program that best matches the child's current abilities. The motor plans for Level 2 simply add a movement to the end of each motor plan from Level 1. Motor plans learned at Level 1 never need to be unlearned if it is determined that Level 2 would have been a more appropriate starting point. Another movement is simply added to the end of the originally learned movement.

Unity® vocabularies were used because they support a consistent motor plan that builds in a systematic fashion.

Pattern not Metaphor: Children learning to communicate with LAMP learn how to say the target words without initially learning the symbol or the association of the symbol to the word. For example, the word "go" shows a frog jumping. Initially, the picture and metaphor behind the association are irrelevant. The child with ASD who is significantly language impaired learns how to say, "go" as a motor pattern or manipulative act, not a linguistic metaphor. The child is not asked to scan the overlay and find the picture that means "go." Rather, he/she is guided in completing the motor pattern. The pattern is learned and becomes automatic. As the child's language develops, he/she may learn the association and meaning behind the picture, but knowing the meaning and association is not necessary to begin talking with the AAC device.

Device Position: During the initial stages of motor learning, the AAC device needs to be in the same location relative to the position of the child. For example, if the AAC device is placed at midline and the child is using his/her right hand to execute the motor pattern to say "go," the child would be moving his/her hand slightly to the right of midline to the location of the frog icon. The next time you work with the child, you do not want to put the device way off to his/her left, which would then require him/her to move his hand across midline. During the early stages of learning, the device needs to stay in approximately the same position relative to the child's position.

***Random Selection and Perseveration*:** Some children are distracted or overly challenged by the many pictures and choices presented on an AAC device. Others may perseverate on a key, with perseveration possibly serving a communication function for the child. Before attempting to curb the perseveration, determine whether or not the perseveration is serving a useful function. Work through whatever may be triggering the perseveration, such as sensory overload. If continuing perseveration is a roadblock in the learning process, the key on the AAC device can be temporarily hidden.

Many children may be more successful if the number of keys available to them is limited. In some cases, hiding most of the keys may be necessary, but other children may be able to handle having a full display. Language that is not needed during the activity can be hidden on dynamic devices

such as the Vantage. Hiding unused keys reduces random selections, promotes learning of the motor pattern, and provides opportunity for greater success. Since activities need to be child-directed, hide keys as needed in the activity, modifying and adjusting the vocabulary available based on the needs of the child and the activity.

It is appropriate to show some words to evaluate the child's emerging motor automaticity. It is also valuable to show some keys to allow the child opportunity to learn something new from hitting an incorrect key. An error in key selection is a powerful lesson when the communication partner reacts with natural consequences or even surprising and exaggerated reactions.

***Prompts**:* The child using LAMP will be provided with physical and visual prompts when necessary to promote success.

Physical prompts start with hand-over-hand assistance, with the adult's hand placed over the child's hand. The child might need assistance with finger isolation, but he/she needs to feel his/her own finger touch and press on the appropriate key. As soon as possible, decrease the physical assistance, moving back to an arm prompt or shoulder prompt.

As the child requires fewer physical prompts, try using only a casual visual prompt, such as pointing to the device or a key. For some children using light prompts, such as flashing a light on the key can be distracting.

Some children will require a team of people working together in order to provide the physical and/or visual prompts needed, followed by the natural consequences. One person may need to provide physical assistance to the children while being as quiet as possible, while another person does the activity with the child, providing the appropriate visual prompts and natural consequences. One person might also need to hold the device for the child. An ideal team might consist of an occupational therapist, who is aware of the sensory needs of the child, along with a speech clinician or teacher who is trained in use of the AAC device and appropriate language intervention strategies.

Children with ASD tend to become quite prompt dependent. Consequently, be aware of the prompts you are using and use only as necessary to ensure success.

***Developing Automaticity**:* It is critical that the child's use of the AAC device become as automatic as natural speech. The child's selection of words must be rapid and without conscious thought to ensure that real language processing is taking place. This type of rapid, automatic use of words develops through repetition of consistent motor patterns and repeated manipulation. Automaticity is developing when movement to the key is fast with little to no visual scanning and with limited physical assistance. Some children, because of their motor planning problems, continue to need some type of physical assistance, such as a tap on the shoulder, in order to initiate movement of any kind.

Imagine the child's first intervention session with the device. It is a session of approximately 20 minutes. The goal for this session is to see some emerging automaticity and purposeful use of three new words, "go," "come," and "more."

In the session, the words "go" and "come" are used so the child can direct an adult. Keys are hidden, allowing the child to select only those two words. The child says "go" to make the adult go away and "come" to make the adult come back. The child is interested in this for ten minutes. Then another activity is introduced, where the child asks for "more" bubbles, "more" back

rubbing, and "more" jumping on a trampoline. Now three keys are available to the child. This activity continues for another ten minutes. Now the hidden keys are shown and the adult tries to re-initiate the "go and come" game. If the child can quickly go to the words "go" and "come," then automaticity is beginning to develop. If not, more work using hidden keys may be needed.

AUDITORY SIGNALS

Auditory Signals

Voice Selection: "Kit" is the most popular voice for children of either gender. However, a different voice can be selected if necessary. The voice used has not been a significant factor with the children who have used this strategy.

Volume: Adjust the volume of the device according to the child's auditory sensitivity. The volume level of the device has not been a significant factor with the children who have used this strategy.

Speech Modeling: During intervention, provide a short, simple language model. Speak precisely and slowly, yet naturally. The child is encouraged to imitate the word he/she just said with the AAC device, but it is not required. The verbal reinforcement provided (e.g., "you said 'go', here I go") also helps to encourage later word approximations by the child.

Verbal Prompts and Reinforcement: During the initial stages of intervention, provide very restricted to NO verbal prompts to reduce the amount of auditory input the child has to process. Do not clutter the interaction with verbal prompts that may not be understood by the child or that encourage unwanted verbal prompt dependency. Avoid saying things like, "press the picture," "point to the frog," or "how do you say 'go'?" It is better to say nothing at all than assault the child with excessive verbiage.

Restricting verbal prompts also helps avoid the tendency for the children to become "key pushers" – those children who keep pushing keys on the device until they find what satisfies you. Instead, provide physical prompts with no more than the word that the device will produce when the key is selected. For example, when directing an adult to pretend to run away by using the word "go," direct the child's finger to the symbol for "go" while you say "go," using appropriate intonation (e.g., go?, GO!). After the child communicates with the device, provide natural verbal reactions and reinforcements. Animated speech and compelling vocal sounds help to draw the child's attention, maintain a shared focus, and communicate other messages, such as excitement, disappointment, surprise, or disgust.

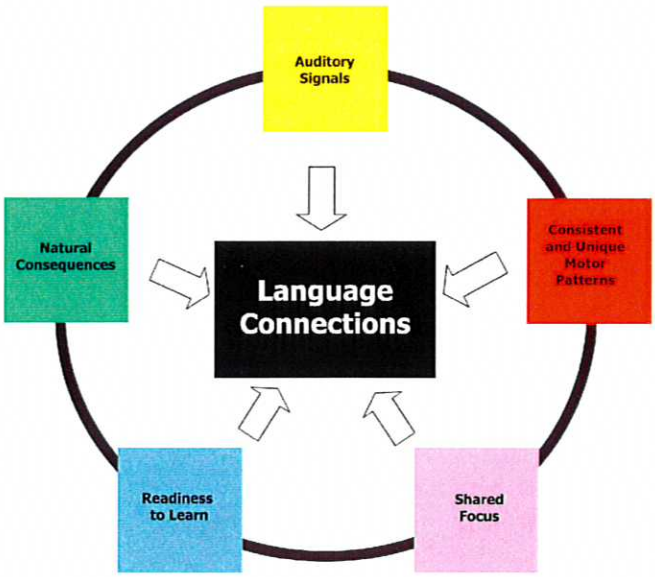
NATURAL CONSEQUENCES

Natural Reactions: The activities and words used in the intervention should result in natural consequences, with an emphasis on visual reactions. For example, "go" has a natural visual reaction, while "Wednesday" does not. "More" has a natural visual reaction, while "red" does not.

Positive and Animated: The people with whom the child is interacting should respond to the child in a positive and animated manner. Pretend activities can be useful and promote imaginative play. This helps maintain the shared focus and involvement of the communication partner with the child.

No Mistakes: No matter what the child selects on the AAC device, the rule for the communication partner is RESPOND, RESPOND, RESPOND. If the child provides the anticipated message, consequate it accordingly. When the message is incorrect, be sure to respond appropriately to the word that was spoken. Provide a natural consequence to whatever the child said with the AAC device. If the child meant to say "go," but instead said "eat" and there is no food available, then pretend to eat something, animating yourself by making loud eating noises and a big gulp at the end.

LANGUAGE CONNECTIONS



Vocabulary Taught: Initial intervention focuses on words that are relative to the activity selected by the child or the child's likes and dislikes. Select words that communicate action (verbs) or which can be used to continue an action. Consider starting with the following words because they have broad meaning and can be used during many different activities: *more, go, come, stop*. Based on the child's interests, add action words more specific to the activity: *eat, drink, jump, push, swing*. A general rule of thumb is teach words that have an obvious action and referent.

Rapid Generalization: The idea of generalization is that a word can be used in multiple contexts with variations of meaning. Rather than doing the same activity over and over, there needs to be a conscious effort to build flexibility in language meaning and use to prevent the child from thinking that a word can only be used in a specific setting to mean just one thing. For example, "go " has more than one meaning and needs to be used in varied situations. For one child, "go" might be initially used to "go flush the toilet (the thing the child really loves to do), then "go" to make the therapist go away, "go" to be pushed on the swing (another favorite passion of the child), and "go" to use the toilet. In the initial session, "go" needs to be rapidly generalized to mean more than one thing. One of the generalizations should focus on immediate, functional use. For example, use "go" in order to leave with mom after the intervention session is completed.

Earlier, the example was given of the child who was taught to say "go" and "come" in the initial therapy session (see Developing Automaticity). In order to generalize those two words and make them functional in the child's routine, the child is told to go back to class, but the door is blocked. The child is shown how to say, "go" to ask to leave and "come" to have the teacher's aide come with him. The use of "go" and "come" allows the child to have another way to control his own activities as well as the activities of others.

Multiple Facilitators: In the initial therapy sessions, it helps to have at least two people to facilitate interaction. One person helps with the modeling and hand-over-hand use of the AAC device and another person reacts and provides the natural consequences (e.g., "go"). Reverse roles periodically to encourage generalization to additional communication partners. Involve as many as possible of the child's natural communication partners in the intervention sessions.

Non-Therapy Settings: This therapy technique requires some intensive, early intervention before the new language skills can easily be used in other settings. Consistent success in the therapy setting sets the foundation for successful use in other settings. Have the family or classroom personnel join the therapy setting to assist in the generalization to new people and new environments.

FUTURE CHALLENGES

The child with autism who has learned to communicate using LAMP continues to face many communication, sensory, motor, and relationship challenges. The on-going language challenges to be faced include limited generalization, expansion of vocabulary, growth in communicative functions, syntax and grammar development, and plateaus in development of spontaneous language interaction. For most children with ASD, the communication gains in using LAMP have significantly improved their speech and language development.