Analyzing and Removing Barriers that Impede Language Acquisition

Mark L. Sundberg, Ph.D., BCBA-D

(www.marksundberg.com)

Assessment of a Child's Needs

- A formal assessment and behavioral analysis is essential for developing an intervention program
- Identify the operant level of the existing skills
- Compare those skills to those of a typically developing child
- Identify the language, social, behavioral, and learning barriers that are preventing more efficient and typical learning
- The failure to conduct an appropriate assessment results in one of the biggest problems in programs that serve children with autism: **An inappropriate curriculum**
- The VB-MAPP was designed to accomplish this assessment task

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Verbal Behavior Milestones Assessment and Placement Program: The VB-MAPP

- There are five components of the VB-MAPP
- The **VB-MAPP: Milestones Assessment**
- The **VB MAPP: Barriers Assessment**
- The **VB MAPP: Transition Assessment**
- The **VB-MAPP: Skills Task Analysis and Tracking**
- The **VB-MAPP: Placement and IEP Goals**

The VB-MAPP Barriers Assessment

- It is important to find out what a child can do (The VB-MAPP Milestones Assessment), but it is also important to know what he can't or won't do, and analyze why
- The VB-MAPP Barriers Assessment is a tool that is designed to identify and score 24 different learning and language acquisition barriers that may be affecting an individual child
- Once a specific barrier has been identified, a more detailed descriptive and/or functional analysis of that problem is required
- There are many ways that a verbal repertoire or related skill can become defective or impaired, and an individualized analysis will be necessary to determine what the nature of the problem is for a specific child, and what intervention program might be appropriate
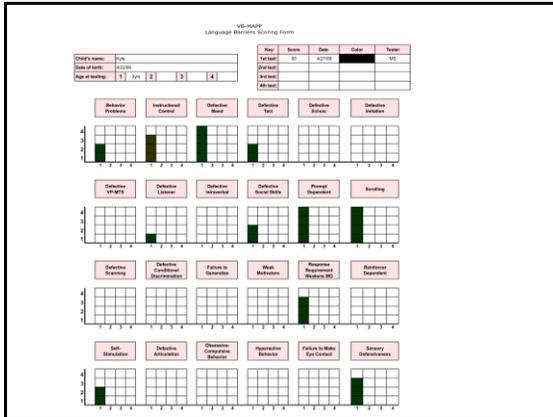

The VB-MAPP Barriers Assessment

- There are several different types of barriers that can affect learning and language development
- Strong and persistent **negative behaviors** that impede teaching and learning (e.g., non-compliance, tantrums, aggression, SIB)
- **Verbal operants** or related skills that are absent, weak, or in some way impaired (e.g., echolalia, rote intraverbals, "mands" that are really tacts)
- **Social behavior** and the speaker-listener dyad can also become impaired for a variety of reasons (e.g., limited motivation for social interaction, impaired mands, impaired listener skills)

The VB-MAPP Barriers Assessment

- **Fundamental barriers to learning** that must be analyzed and ameliorated (e.g., the failure to generalize, weak motivators, prompt dependency)
- **Specific behaviors** that can compete with learning (e.g., self-stimulation, hyperactive behavior, or sensory defensiveness)
- Problems related to **physical, biological, or medical barriers** that must be overcome or accounted for in some way (e.g., illnesses, motor impairments, sleep deprivation, traumatic brain injury, hearing and vision impairments)

The VB-MAPP Barriers Assessment

- 24 Common Learning and Language Acquisition Barriers

- Behavior problems
- Instructional control (escape/avoidance)
- Impaired mand
- Impaired tact
- Impaired motor imitation
- Impaired echoic (e.g., echolalia)
- Impaired matching-to-sample
- Impaired listener repertoires (e.g., LD, LRFFC)

The VB-MAPP Barriers Assessment

- Common Learning and Language Acquisition Barriers

- Impaired intraverbal
- Impaired social skills
- Prompt dependency, long latencies
- Scrolling responses
- Impaired scanning skills
- Failure to make conditional discriminations (C^Ds)
- Failure to generalize
- Weak or atypical MOs

The VB-MAPP Barriers Assessment

- Common Learning and Language Acquisition Barriers

- Response requirements weakens the MO
- Reinforcer dependent
- Self-stimulation
- Articulation problems
- Obsessive-compulsive behavior
- Hyperactivity
- Failure to make eye contact
- Sensory defensiveness
- (Video samples)

VB-MAPP Barriers Scoring Form

The VB-MAPP Barriers Assessment

- Scoring the VB-MAPP Barriers Form

- Rate the child on the VB-MAPP Barriers Assessment Form using a Likert-type scale of 0 to 4
- A score of 0 or 1 would indicate that there are no significant barriers, and a formal intervention plan may not be required
- A score of 2, 3, or 4 would indicate that there is a barrier that probably should be addressed as part of the intervention program
- For some children the immediate focus of the intervention program should be on removing a particular barrier
- Common immediate barriers to remove involve instructional control, behavior problems, an impaired mand, scrolling, and prompt dependency

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VB-MAPP Barriers Assessment

Impaired Verbal Behavior

- A functional analysis of verbal behavior (Skinner, Chap 1)
- A behavioral analysis of words, phrases, and sentences emitted by children and adults with language delays
- Same basic principles of behavior as nonverbal behavior
- What is the source of control?
- These sources of control will often reveal that what appears to be a correct response in form is actually incorrect in function
- Might not be the same source of control observed in a typically developing child (e.g., asking "What's your name")
- Each verbal operant can be susceptible to unwanted sources of control

Impaired Verbal Behavior

- The behavior analyst must determine what the correct source of control should be, and how that source can be established
- The functional analysis of verbal behavior is on-going
- The failure to conduct such an analysis may result in rote or defective verbal repertoires that can become difficult to change
- This is how behavior analysis is different, **this is what we do**

Analysis of an Impaired Mand Repertoire

- A substantial number of children with autism have an absent, weak, or impaired mand repertoire
- Many of these same children have extensive tact and listener skills, as well as other elevated scores on the VB-MAPP Milestones Assessment
- Often, under these circumstances it is not uncommon to see the child engage in a tantrum or some other form of negative behavior as a mand

Analysis of an Impaired Mand Repertoire

- A word acquired under S^D control may not automatically transfer to MO control
- The distinction between S^D and MO antecedent control is not systematically incorporated into many of the popular language assessment and intervention programs designed for children with autism
- There are many potential causes of a defective mand repertoire and a functional analysis is necessary to determine the cause for an individual child
- There are at least 50 possible causes of an impaired mand repertoire (Sundberg, in preparation)
- Most problems involve a combination of causes

A Few Potential Causes of an Absent, Weak, or Impaired Mand Repertoire

- Limited mand training and limited opportunities to mand
- Response form problems, and failing to try augmentative communication
- Impaired mands are established early (e.g., screaming, "more")

Intervention Strategies for Established Impaired Mands

- **START OVER**
- Use a trained professional
- Use the strongest MOs
- Use DRI and extinction for existing negative mand
- Use sign language, if necessary
- Target 1, then ASAP, 2 specific response topographies
- Use standard prompt and fade techniques
- (Videos-Julian, Trevor, Garrett)

More Potential Causes of an Impaired Mand Repertoire and Intervention Strategies

- Mand curriculum problems
- MO problems
- S^D control problems (e.g., prompt bound, scrolling)
- Consequence problems
- Generalization problems

Intervention Strategies for Mand Scrolling

- **START OVER**
- Use a trained professional
- Use the strongest MOs
- Establish two specific response topographies, then three, etc.
- Possibly use one response as a tact
- Echoic, imitation, & listener skills won't work as the second topography, IV responses with signs will (e.g., "sign book")
- Use standard prompt and fade techniques
- Don't fade out the object too soon (multiple control)
- Use DRI and extinction for existing negative mand
- (Video Kayla)

An Analysis of an Impaired Tact Repertoire

- The tact repertoire is less susceptible to becoming defective than the mand or intraverbal, due in part to the nature of the controlling variables for the tact
- Nonverbal stimulus control is more measurable and accessible, and in general, much clearer than motivational control (mand), and verbal stimulus control (intraverbal)
- It is often the case that the wrong nonverbal stimulus acquires control of a tact
- For example, when teaching tacts related to verbs, the goal is that the specific moving nonverbal stimulus evokes a specific response, not the object related to the movement

An Analysis of an Impaired Tact Repertoire

- Some children learn to emit a word that is a verb in form but not in function, as in the response "drinking juice" when just shown a cup, or "throwing ball" when shown a ball
- Similar problems can be observed in efforts to teach tacts related to other parts of speech such as prepositions and adjectives (e.g., "above" and "below"; "big" and "little")
- Gone unchecked, these tacting errors can be difficult to change and can become the source of other verbal problems later in training, such as intraverbal rote responding
- There are at least 38 potential causes of a defective tact repertoire and a behavioral analysis is necessary (Sundberg, in preparation)

Common Intraverbal Problems Experienced by Children with Autism

- Intraverbal behavior is the most prone to becoming rote for children with autism
- Absent or weak intraverbal behavior, despite strong mands, tacts, and listener (receptive) skills
- Difficulty answering questions--especially complex questions
- Excessive rote scripting
- No conversational skills
- Echolalia with intraverbal questions
- Poor peer intraverbal interaction
- Irrelevant intraverbal behavior
- Self as a listener with overt intraverbal behavior

An Analysis of the Intraverbal Repertoire

- Verbal S^{D}s are usually much more complicated than the nonverbal S^{D}s
- Vocal verbal stimuli are transitory, nonverbal stimuli tend to be more static
- Verbal S^{D}s usually contain multiple components, occurring in a brief time frame
- Multiple words as S^{D}s almost always involve verbal conditional discriminations (VC^{D}s)
- Tact, mand, and listener (receptive) prerequisites

An Analysis of the Intraverbal Repertoire

- Most adults have **hundreds of thousands** of different intraverbal relations as a part of their verbal repertoires (e.g., newspaper, books, the internet)
- Intraverbal relations, by their very nature, involve constantly changing verbal S^{D}s and verbal responses
- For example, a tree is always a tree for echoic, tacting, matching, etc., but the discussion about trees can be comprised of hundreds, if not thousands of different intraverbal relations
- Furthermore, the discussion about trees may never occur exactly the same way each time
- There are at least are 43 possible causes of an impaired intraverbal repertoire (Sundberg, in preparation)

Why the Intraverbal Repertoire may be Absent, Weak, or Impaired

- There are many potential causes of intraverbal problems. Here are a few...
- The child has not received formal intraverbal training
- The child is given training, but it's too early to focus on intraverbals
- The specific target responses are not in the child's repertoire as tacts, listener discriminations (LDs), or listener responding by function, feature, and class (LRFFCs) (e.g., "What vehicle has wings?")
- Single verbal stimuli and single verbal responses have been over conditioned
- The intraverbal curriculum is out of developmental sequence
- The child does not have sufficient training on verbal conditional discriminations

Intraverbal Intervention

- Is there a general sequence of increasingly complex verbal stimuli and VC^{D}s that can be used for assessment and intervention?
- When are typically developing children successful at these tasks?
- The 80-item intraverbal subtest of the VB-MAPP was designed with increasingly complex intraverbal tasks.
- Sundberg & Sundberg (2011)

Intraverbal Assessment: Level 7: Multiple S^{D}s with Prepositions, Adverbs, & Negation

Verbal S^D	Score	Response
What do you eat with?		
What animal moves slow?		
Tell me something that is not a food		
What do you write on?		
Where do you talk quietly?		
What is something you can't wear?		
What do you sit at?		
What is between the blankets and the bed?		
What animal goes fast?		
What's something that is not a musical instrument?		

What Constitutes Social Behavior?

- There are many complicated behavioral repertoires that fall under the rubric of "social behavior"
- Social behavior is comprised of three general repertoires:
- Nonverbal repertoires
- Verbal repertoires
- Listener repertoires

Examples of Nonverbal Behaviors

- Eye contact and visual tracking (gaze) of others
- Proximity to others
- Dress and hygiene
- Body posture
- Touching
- Facial expressions
- Movement
- Dynamic speech properties (e.g., volume, tone, prosody)
- Imitation
- Sharing and turn taking

Examples of Verbal Behaviors

- Manding to others
- Initiation of interactions (mands, tacts)
- Joint attention (mands)
- Mands for information
- Tacting for the benefit of the listener
- Intraverbal responding
- Intraverbal content
- Autoclitic mands and tacts
- Appropriate self-editing
- Reciprocal conversations (echoics, mands, tacts, intraverbals, autoclitics, self-editing, plus listener repertoires)

Examples of Listener Behaviors

- Appropriate attending to a speaker
- Reinforcing speaker behavior (eye contact, head nods, empathy, appropriate affect)
- Responding to the mands of a speaker (mediating reinforcement)
- Functioning as an S^D for verbal behavior
- Serving as an audience for specific verbal behavior (someone who cares)
- Function as a conditioned reinforcer
- Minimal interruptions, disruptions, punishment, apathy, etc.
- Personal MO/EOs controlled
- Turn taking in the speaker/listener dyad

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Examples of Social Behavior that can Involve all Three General Repertoires

- Meaningful relationships
- Conversations
- Social play
- Companionship
- Competition
- Adventure
- Shared experiences
- Entertainment
- Friendship and romance
- Cooperation
- Sympathy and comfort

Defective Social Behavior

- Weak MO/EO for social interaction
- The rules are complex, vague, and constantly changing
- Individuals may demonstrate defective, weak, or absent...
    - verbal repertoires
    - nonverbal repertoires
    - listener repertoires
    - generalization and discrimination repertoires
    - stimulus control
    - audience control
    - reinforcement history
    - extinction and/or punishment history

Defective Social Behavior: Examples of Defective Verbal Behaviors

- High rate of mands
- Mands for irrelevant or odd information
- Intraverbal sequences that are hard to follow
- Uncontrolled intraverbal behavior, rambling
- Useless or odd tacting
- Inappropriate texting (reads all posted signs aloud)
- Rote verbal behaviors
- Lying, exaggerating
- Verbal perseveration or excessive repetition

Defective Social Behavior Examples of Defective Nonverbal Behaviors

- Standing too close
- Picking your nose, sneezing without covering up
- Inappropriate touching (self and others)
- Sloppy clothing, unkept, unbathed, messy hair, etc.
- Looking away, or staring inappropriately
- Rocking, arm movements, stims
- Facial stims, and movements
- Aggressive behaviors (e.g., in play)

Defective Social Behavior: Examples of Defective Listener Behaviors

- Not making eye contact or attending to the speaker
- Not responding to mands, tacts, and intraverbals
- All about the next turn as the speaker
- Changing the topic
- Not sharing the verbal floor (interrupting)
- Not mediating reinforcement
- Excessive punishment or extinction

Why is Peer Interaction Hard for Children With Autism?

- The child has weak question asking and initiating skills (mand)
- The child has weak conversation skills (intraverbal skills)
- The child has weak peer imitation and echoic skills
- The child has weak peer listener repertoires
- The child has weak motivation for social interaction
- The peers may not wait for slow responses, or reinforce approximations
- The peers may not be able to understand a target child's articulation or signs
- The peers may present clear signals (S^D) like adults do

Why is Peer Interaction Hard for Children With Autism?

- The peers don't reinforce like adults do
- The peers may be aversive in that they compete for adult attention and other reinforcers
- The peers may not want to give up reinforcers (sharing, turn taking)
- The peers don't read body cues, facial expressions, and other non-vocal forms of communication
- The peers are not conditioned reinforcers for the target child
- The peers may have similar social and language deficits, including typically developing children

The Assessment of Social Behaviors: The VB-MAPP

- Verbal Behavior Milestones Assessment and Placement Program: The VB-MAPP (Sundberg, 2008)
- The VB-MAPP contains 170 **verbal behavior milestones** across 3 developmental levels and 16 different verbal operants and related skills
- One of those related skills is social behavior

General Issues About Teaching Social Behavior

There are many successful lines of research and intervention programs, for example...

Charlop-Christy & Carpenter (2002)
Krantz & McClannahan (1998)
Koegel & Frea (1993)
Koegel & Koegel, (1995)
McGee, Almeida, Sulzer-Azaroff, & Feldman (1992)
Odom & Strain (1984)
Stahmer & Schreibman (1992)
Taylor (2001a, 2001b)
Weiss & Harris (2001)
Wolfberg & Schuler (1993)
Wolfberg (2003)
Taubaum, Leaf, McEachin (2011)

Conclusions

- There are many potential barriers to learning and language
- The task of the behavior analyst is to identify what barriers are affecting a particular learner
- The exact nature of these barriers must be analyzed
- Verbal barriers are complex (e.g., MOs, VC^D, private events, multiple control)
- An intervention plan must be designed **IMMEDIATELY**, carried out, and monitored
- Behavior Analysis in general, and Skinner's analysis of verbal behavior in particular, can serve as an excellent framework and guide for this process

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