Meeting the Milestones: Implementing a Verbal Behavior Program for Children with Autism

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Assessment and Analysis:
The Foundation of Intervention

- The first component is an assessment and analysis of the child's existing positive and negative repertoires
- It is essential to know what **skills** a child can reliably demonstrate (e.g., mands, tacts, imitation, echoics, etc.)
- It is also essential to identify the language, social, behavioral, and learning **barriers** that are preventing or slowing down skill acquisition (e.g., prompt dependency, impaired mands, scripting, scrolling)
- Without assessment it is impossible to know **what to teach** a child, or be efficient and developmentally appropriate in the process

Assessment and Analysis:
The Foundation of Intervention

- The assessment results establish a baseline, and provide a framework for the intervention program
- The VB-MAPP assessment program (Sundberg, 2008, 2014) was designed to guide this process
- Standardized assessments, while important, do not provided the necessary data to design an individualized intervention program
- Esch, LaLonde, & Esch (2010) examined 28 language assessments commonly used for children with autism
- They showed, for example, that 26 of the assessments did not contain a measurement for manding, and many items could be scored as correct despite the use of prompts

A Behavioral Approach to Language
Intervention for Children with Autism

- Basic behavioral concepts, principles, and procedures guide **how to teach**, and also allow professionals to identify and quantify learning, as well as barriers (e.g., motivation, reinforcement, prompting, shaping, generalization)
- The development of language and social skills by typically developing children provides a valuable guide and framework for the daily curriculum for children with language delays (**what to teach**)
- Skinner's (1957) analysis of verbal behavior provides a behavioral framework of language and social behavior that can be used to guide an intervention program (Sundberg & Michael, 2001) (**what and how to teach)**

The Variations of ABA Intervention Programs

- "Structured" (table top) teaching models
- DTT/DTI
- ABA
- EIBI
- ABA/VB
- All share common features, for example:
  - systematic use of basic behavioral procedures
  - instructor led instruction
  - table-top setting
  - a progressive skills list with specific targets
  - data collection

The Variations of ABA Intervention Programs

- "Naturalistic" teaching models
- Incidental teaching
- Milieu training (Mand-model)
- Pivotal Response Training (Natural Language Paradigm)
- Natural Environment Training (ABA/VB)
- All share common features, for example
  - systematic use of basic behavioral procedures
  - teaching occurs away from a specific work station
  - focus on a child's on-going MOs, and child initiated behaviors
  - focus on social interactions
  - use of various expansion techniques
  - data collection

How is the "Verbal Behavior Approach" Different?

- All ABA-based programs use the standard behavioral technology
- The analysis of what constitutes language is the primary distinction between the models
- Most ABA models make use of the standard expressive-receptive distinction based on cognitive psychology (e.g., Piaget, Brown)
- A verbal behavior model makes use of Skinner's analysis of language as the foundation of the program, along with basic ABA technology

The Value of Skinner's Analysis of Language

- Expands and clearly delineates the traditional categories of expressive (speaker) and receptive (listener) language
- "Expressive language" is expanded across the verbal operants
  - echoic (motor imitation, copying-a-text)
  - mand
  - tact
  - intraverbal
  - textual
  - transcriptive
- "Receptive language" is expanded to four distinct repertoires
  - listener discriminations (receptive language)
  - audience participation
  - mediator of reinforcement
  - emotional responder

The Value of
Skinner's Analysis of Language

- Sundberg & Michael (2001) identify several benefits of Skinner's analysis of verbal behavior for autism treatment, some include:
- Assessment across all the verbal operants and combinations
- Intervention across all the verbal operants and combinations
- Incorporate the mand relation into assessment and intervention
- Incorporating the motivation operation (MO) into all aspects of the program
- Incorporate the intraverbal relation into assessment and intervention
- Incorporating automatic contingencies into all aspects of the program
- Use Skinner's analysis of verbal behavior to analyze impaired verbal behavior (e.g., echolalia, rote intraverbals, verbal scripting)

Basic Components of an
ABA/Verbal Behavior Program

- Teaching procedures are based on standard ABA methodology (e.g., systematic use of reinforcement, prompting, fading, shaping, etc.)
- The language assessment and intervention program is based on Skinner's (1957) analysis of verbal behavior
- Linguistic milestones from typically developing children are used as a guide for both language assessment and language intervention
- Behavior analysis in general, and Skinner's analysis of verbal behavior in particular, are used for the on-going analysis of language acquisition, and especially for **barriers** that might impede language development

Basic Components of an
ABA/Verbal Behavior Program

- Words are taught through all functional categories of language (e.g., "shoe" as an echoic, mand, tact, listener, MTS, intraverbal, textual)
- And words are taught in variety of contexts (e.g., social interactions, play, daily living activities)
- Mands (requests) are an important part of early language development
- Adults capture and create motivation to use as a teaching tool (MOs)
- Errorless prompting procedures are generally used (as opposed to punishment ("NO") and trial and error)
- Encourages frequent responding when appropriate (fluency)
- A steady, natural pace of instruction is recommended (helps keeps the child on task), not too slow-not too fast

Basic Components of an
ABA/Verbal Behavior Program

- Has a mix of structured teaching (DTT, DTI, ABA, EIBI) and natural environment teaching (NET, PRT, Incidental, Milieu)
- High frequency of targeted instructional trials (intensive)
- Augmentative communication is used when necessary (i.e., sign language, icons, written words)
- Skills are generalized immediately
- Pairing procedures are an important part of every day
- Retention probes are conducted to make sure the skills that are acquired are maintained and functional
- Playing equals learning, play is used to teach other skills
- A strong focus on social skills and speaker-listener dyads

Basic Components of an ABA/Verbal Behavior Program

- Teaching sessions should contain a mixture of verbal skills (i.e., mand, tact, echoic) with the opportunity to mand as reinforcement for the target response ("Mixed VB")
- Difficult tasks are interspersed with easy tasks to keep level of reinforcement high (i.e., momentum, control for "ratio strain")
- Transfer procedures are used to make learning easier
- Natural language is used, staff member should not use robotic language (e.g., "What is it?" "Put with same")
- Program should be consistently supervised by trained professionals
- Watch for emerging barriers

Steps to Beginning an Intervention Program: Level 1

- Use the results of the VB-MAPP Milestones and Barriers assessments to identify IEP goals and intervention priorities
- Determine the child's skill strengths and weaknesses
- Work on balancing out the skills
- Identify the barriers and develop a treatment program (e.g., SIB)
- Identify response form (speech, signs, icons, textual)
- Identify reinforcers and MO levels
- Design an individual intervention program that best fits the child
- Establish both structured (DTT) and natural environment (NET) learning activities and routines

Interpreting the Level 1 Assessment: Curriculum Placement and Writing IEP Goals

Figure 8-1
Sample VB-MAPP for a child whose scores fall primarily in Level 1.

Steps to Beginning an
Intervention Program: Level 1

- A mand repertoire is the most essential early verbal operant
- Without a mand repertoire, negative behaviors quickly acquire mand functions
- The other skills are important (tact, listener, matching, imitation, & echoic), and should be phased in ASAP (often the same day or week as first mand training)
- Mand training involves the basic ABA procedures
- Discrete trial format (Stimulus/MO→Response→ Consequence)
- Conduct frequent and intense short teaching sessions (1-25 minutes)
- Training can be conducted, at a table, on the floor, playground, etc.
- Mixed VB teaching format (mand, tact, listener, imitation, etc.)

Immediate Goals

- Teach the child to mand, free from echoic or imitative prompts
- Teach the child that he can gain access to reinforcers by manding
- Teach the child that negative behaviors will not work as mands
- Teach the child that the initiating discriminating stimulus (S^D) may be visual, auditory, tactile, etc.
- Teach the child to be a speaker and a listener
- Gain instructional control in a positive way
- Establish the instructor as a reinforcer, make learning fun
- Avoid the temptation to increase the size of the sentence too soon (e.g., "I want…"). It is more functional for the child to increase the number of mands rather than the words used in one mand

Intervention Program
Level 1: Mand Training

Motivation → Response → Specific Reinforcement

Child wants cookie   "cookie"   Child receives cookie
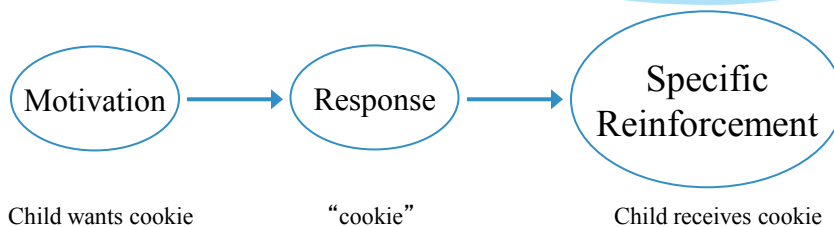
Where to Start Mand Training?

- What motivates a specific child?
- When is that motivation strong?
- Can that motivation be used (captured or contrived) to teach a mand?
- Make a list of potential motivators and the related reinforcers
- Select the first few words to teach

Words that Should be Avoided

- Words that are related to a variety of motivators (e.g., *More, Please, Mine, Yes, Help, Pointing*)
- Words that are related to motivators from general categories (e.g., *Eat, Play, Toys*)
- Words for removing an aversive (e.g., *Break, All done, Mine, No, Go play*)
- Words that are related to items that are hard to deliver (e.g., *Swimming, Bike ride*)
- Words that are related to items that are hard to remove (e.g., *Gum, Outside*)
- Words that are related to politeness (e.g., *Please, Thank you*)

Selecting the First Words to Teach as Mands

- Words that are related to strong motivation for an item
- Words that are related to items that involve slow satiation so multiple trials can be conducted
- Words that are related to a specific item (i.e., allows for prompting)
- Words that are related to items that are consumed or dissipate
- Words that are related to items that are easy to deliver immediately
- Words that are related to items that are easy to remove when necessary
- Words that involve a response form that is already in the repertoire (e.g., echoic)
- Words that do not rhyme or sound to similar to other words
- Words that will be used in the natural environment

Examples of First Words to Teach as Mands

- Specific food items (e.g., apple, chip, cookie, cracker, banana)
- Specific drinks (e.g., juice, milk)
- Toys (e.g., ball, car, bubbles, train, playdoh, puzzle, drum)
- Physical actions (e.g., up, push, spin, tickles, hugs, swing)
- Individualized reinforcers (e.g., hat, book, music, video)
- People or pets (e.g., mom, dad, Maggie)

Intervention Program Level 1: Mand Training for a Child With Some Echoics

- Identify a motivator that is currently strong (e.g., bubbles)
- Have the bubbles present
- Provide some "noncontingent" bubbles first, make it fun
- Pair the word "bubbles" with the delivery of the bubbles
- Begin training by giving an echoic prompt and delaying the delivery of the bubbles
- There are 4 antecedents (MO, object, echoic, verbal prompt)

Using a mand frame and prompts for early mand training

Antecedent	Behavior	Consequences
Motivating operation (wants bubbles)	"Ba"	Praise
Nonverbal stimulus (bottle presented)		Blow bubbles
Echoic prompt ("bubbles")		
Verbal prompt ("Say...")		
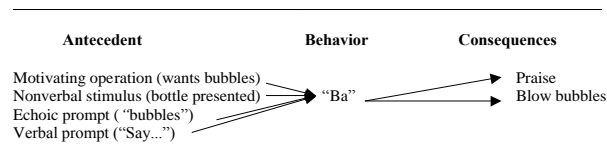
Fading the Echoic Prompt

- The goal is to "transfer control" from the echoic prompt to the MO and the object
  - Partial prompt
  - Delayed prompt
  - Combination of delay and partial

Fading out the Echoic Prompt

Fading out the echoic prompt

Antecedent	Behavior	Consequences
Motivating operation (wants bubbles)		Praise
Nonverbal stimulus (bottle presented)	*Ba*	Blow bubbles
Echoic prompt (*Say bubbles*)		
Verbal prompt (What do you want?)		
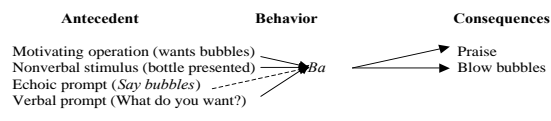
Echoic Transfer Procedure

Prompt
MO
Object
"say bubbles"

+

Fade
"Right,
Say…"

+

Transfer
Reinforce!
Blow bubbles
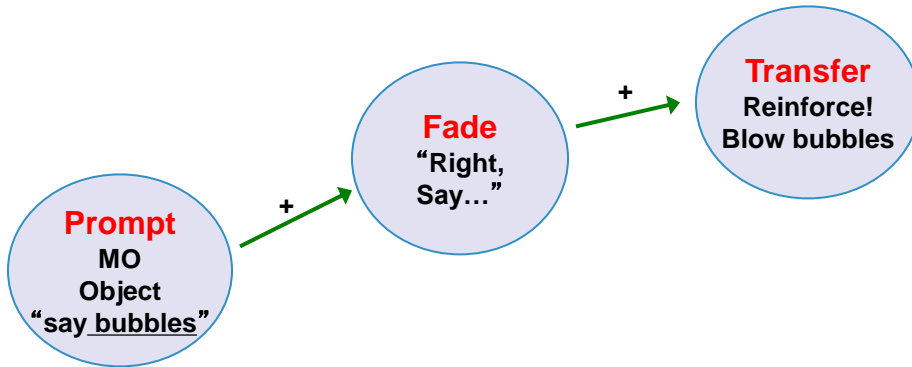
Strengthening the Response by Adding Distracter Trials

Prompt
MO
Object
"say bubbles"

+

Fade
"say…"

+

Distracter
Trial:
Tap table

+

Transfer
"say…"

+

Reinforce
Blow Bubbles
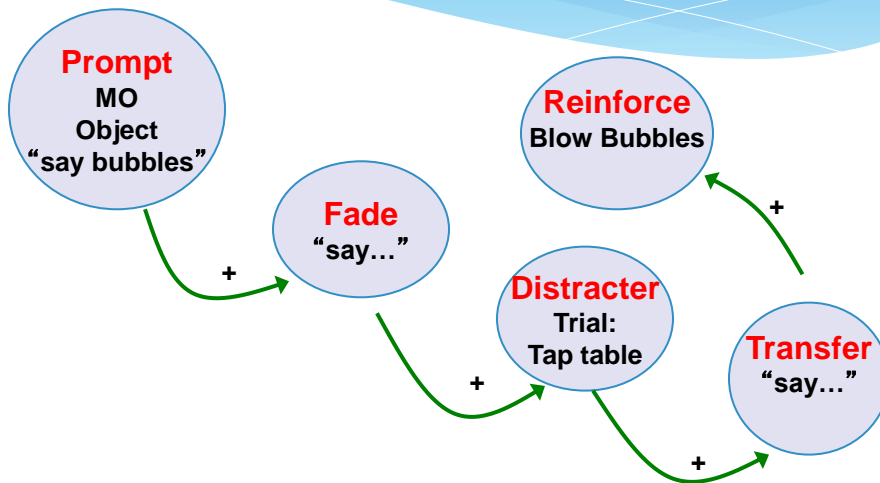
Stimulus Generalization

- A specific word should occur under a wide variety of circumstances
- Different settings
- Different people
- Different noise level and distractions
- Different carrier phrases
- Different tone of voice, pitch, intonation, prosody, and volume
- Different materials
- Combinations of all of these

Expanding the Mand Repertoire

- Following the acquisition of two unprompted mands, add 1-2 new words as mands
- Use the same criteria suggested above for selecting new words
- Don't worry about fading out the object yet
- Focus on single words only, no carrier phrases
- Data collection: First trial data
- No formal LRFFC or intraverbal training yet
- Carefully analyze errors and barriers and correct them early (e.g., scrolling, prompt bound, rote mands, overgeneralization)
- Increase the focus on tact, listener skills, imitation, echoic, and matching

When to Start Tact Training?

- Start tact training as soon as possible, However…….
- If the child does not have any mands the initial focus should be on establishing mands
- If a child cannot emit any echoic or imitative behavior the initial focus should be on using mands and pairing procedures to help to establish echoic or imitative skills
- If the child demonstrates severe behavior problems or noncompliance, it may be that these issues (along with mand training) are more of a priority
- If the child can easily emit several echoic or imitative responses, and has a few mands, then tact training should begin immediately
- Carefully select tact targets

Tact Training: Transfer From Echoic to Tact

Antecedent	Behavior	Consequences
Verbal prompt ("What's that")		
Nonverbal stimulus (sees a shoe) ➤	*Shoe* ⟶	Praise
Echoic prompt ("say shoe")		

Fade the Echoic Prompt

Antecedent	Behavior	Consequences
Verbal prompt ("What's that")		
Nonverbal stimulus (sees a shoe) ➤	*Shoe* ⟶	Praise
Echoic prompt ("say shoe")		
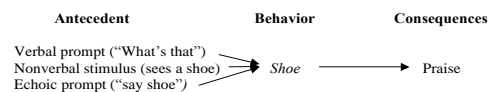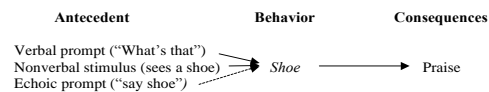
Adding New Tacts

- Use three days of first trial correct data (cold probe)
- Add the acquired target to the generalization list
- Conduct listener trials (should already be happening)
- Add a new tact when an existing target has met criteria
- Use a "Next 10 words list" to select new target tacts
- Conduct daily maintenance and generalization trials on "mastered" tacts
- Add the mastered target to the "300 common nouns" list
- This list will later be used for selecting targets for noun-verb combinations, etc., LRFFCs, and intraverbals
- Avoid the temptation to add adjectives, prepositions, adverbs, etc.

Teaching Listener Skills

- Begin with specific actions (e.g., clap, jump, sit, come here, run)
- Use the well-established behavioral procedures of prompting, fading, and differential reinforcement (Lovaas, 1977)
- Begin listener discrimination training (LD) as soon as possible
- Teach tacts and LDs at the same time (for VB-MAPP Level 1 and most of Level 2 skills) ("Mixed VB" or "multiple exemplar training")
- Array management is critical: Get away from a neat array of 3 ASAP!
- As the child enters Level 2, start to progressively move to large and messy arrays, scenes, and the natural environment

Echoic and Imitation

- Incorporate echoic and imitation into mand, tact, listener and matching sessions, as well as play, social, self-help, and everyday natural environment activities, etc. Unless…
- The skills are very weak and need specific speech therapy or training time
- Standard teaching procedures of establishing stimulus control through pairing, prompting, fading and differential reinforcement

Visual Perceptual Skills and Matching-to-Sample (MTS)

- An important part of an early intervention program
- Teaching procedures involve the standard establishment of stimulus control through prompting, fading, and differential reinforcement
- Recommend following the sequence of matching skills presented in the VB-MAPP
- MTS can be used to help establish a variety of more advanced skills such as…
- Advanced scanning skills and attending
- Listener discriminations
- LRFFC categorization
- Intraverbal categorization

SPRING Schedule   Room 1

TIME	BEN	ANNA	MARIA	MICHAEL	SHANNON (MWF)
9:00-9:10	AM routine/VB	AM routine/VB	AM routine/VB	AM routine/VB	AM routine/VB
	ICHIRO & JORDAN	KYLE	PETER & AIDAN	TYREE	ICHIRO
9:15-9:40	TACT	TACT	TACT	TACT	TACT
	TYREE & PETER	AIDAN & JORDAN	ICHIRO	KYLE	TYREE
9:40-10:05	MTS	MTS	MTS	MTS	MTS
	JORDAN	AIDAN & KYLE	ICHIRO & TYREE	PETER	AIDAN
10:05-10:15	SNACK	SNACK	SNACK	SNACK	SNACK
10:15-10:30	RECESS	RECESS		RECESS	RECESS
10:30-10:35	PREP	PREP	PREP	PREP	PREP
10:35-11:00	RD	RD	RD	RD	RD
	TYREE & PETER	AIDAN & JORDAN	KYLE	ICHIRO	PETER
11:00-11:25	IND. SESSION	IND. SESSION	IND. SESSION	IND. SESSION	IND. SESSION
	JORDAN & ICHIRO-MTS	PETER-MTS	KYLE & AIDAN-RFFC/IV	TYREE-IV	KYLE
11:25-11:45	TACT	TACT	TACT	TACT	TACT
	PETER	KYLE & TYREE	JORDAN & ICHIRO	AIDAN	TYREE
11:45-12:15	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
12:15-12:45	RECESS	RECESS	RECESS	RECESS	RECESS
12:45-12:50	PREP	PREP	PREP	PREP	PREP
12:50-1:10	FM	FM	FM	FM	FM
	AIDAN & ICHIRO	KYLE	PETER & TYREE	JORDAN	
1:10-1:30	RD	RD	RD	RD	RD
	KYLE	PETER & TYREE	JORDAN	AIDAN & ICHIRO	
1:30-1:50	GROUP	GROUP	GROUP	GROUP	GROUP
	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY-PARENTS
1:50-2:00	PACK UP-JOBS	PACK UP-JOBS	PACK UP-JOBS	PACK UP-JOBS	PACK UP-JOBS
	ICHIRO & JORDAN	KYLE	PETER & AIDAN	TYREE	

Steps to Beginning an Intervention Program: VB-MAPP Level 2

- The specific aspects of the intervention program will depend on an analysis of all the child's VB-MAPP Milestones and Barriers scores
- Consult the Placement content in the VB-MAPP Guide (Chapter 9)
- The assessor should analyze the scores in each of the skill areas and their relation to the child's performance in other skill areas
- Are the mand, tact, and LD scores fairly close to each other (balanced), or is one significantly higher than another?
- Are there particular strengths in one area that can be of special benefit to a child, or weaknesses that need to be addressed

VB-MAPP: Level 2

Figure 9-1
Sample VB-MAPP Milestones Assessment for a child scoring in Level 2.
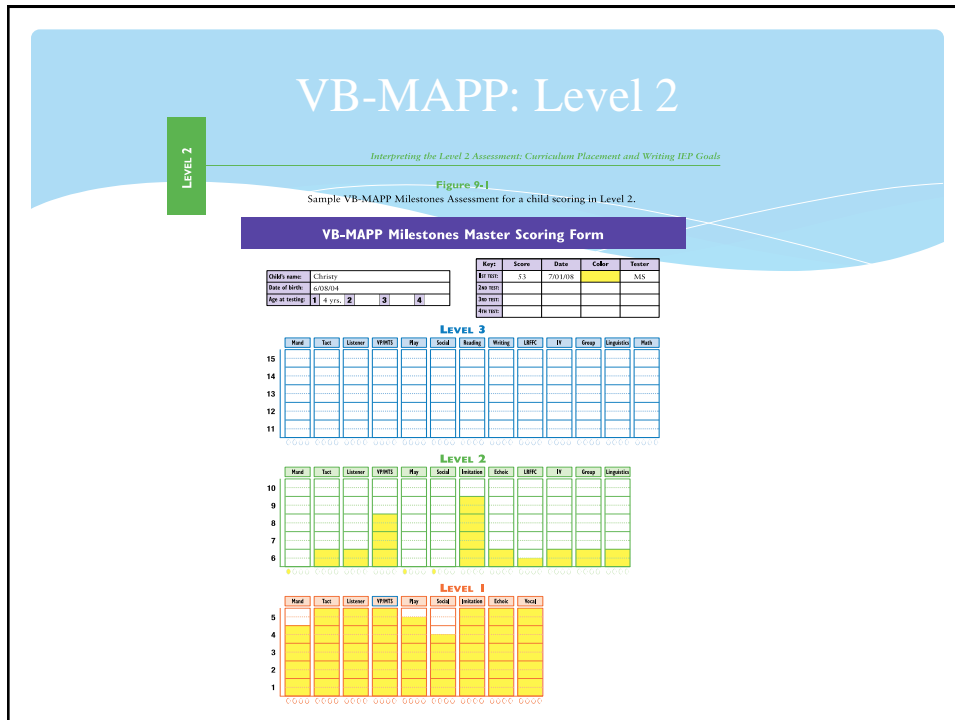
Steps to Beginning an Intervention Program: VB-MAPP Level 2

- The focus of the intervention program at this point should be on systematically expanding a child's language and social skills in a variety of ways
- The following general targets should form the core of the language intervention program:
- Expanding the size and scope of the mand, tact, and listener (LD) repertoires (by teaching more nouns, verbs, adjectives, etc.)
- Developing two- and three-component verbal and nonverbal antecedents and responses (i.e., sentences)

Steps to Beginning an
Intervention Program: Level 2

- Beginning listener responding by function, feature, and class (LRFFC)
- Beginning intraverbal training
- Developing social and verbal interactions with peers
- Developing group and classrooms skills
- Learning in less restrictive settings (e.g., natural environment, group settings, play, and arts and crafts)

Complexities in Level 2

- Level 2 presents more potential barriers, pitfalls, and linguistic traps that must be removed or, better yet, avoided (e.g., rote responding)
- The VB-MAPP Placement suggestions for each milestone and the general IEP goals are designed to provide a curriculum progression (a "road map") that can help guide the program
- Three major complexities (and teaching needs) of Level 2:
- The visual array related to MTS, LD, and LRFFC
- Verbal stimulus control related to LD, LRFFC, and especially Intraverbal
- Increasing complexity of the parts of speech (e.g., adjectives, adverbs)

Listener Responding by Function, Feature, and Class (LRFFC)

- Listener Responding by Function, Feature, and Class (LRFFC)
- A child eventually learns to identify as a listener an item or activity **without hearing the specific name** of the item or activity
- Rather, by hearing the item or activity described (talked about) by its function, its features, or its membership in a class (category)
- "In context" behavior (nonverbal + verbal antecedents)
- Progress from "contrived" to "natural"
- The LRFFC teaching trial consists of presenting the child with the array of pictures and the verbal stimulus (e.g., "You kick a...")

Listener Responding by Function, Feature, and Class (LRFFC)

<u>Verbal stimulus</u>   <u>Nonverbal array</u>

"You kick a…" ⟶

Non-verbal stimulus class

Verbal Stimulus Class
Kitchen
(Class)
Eat with
(Function)
Plastic
(Feature)
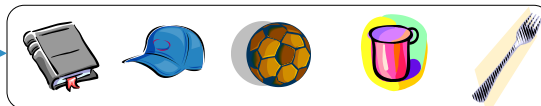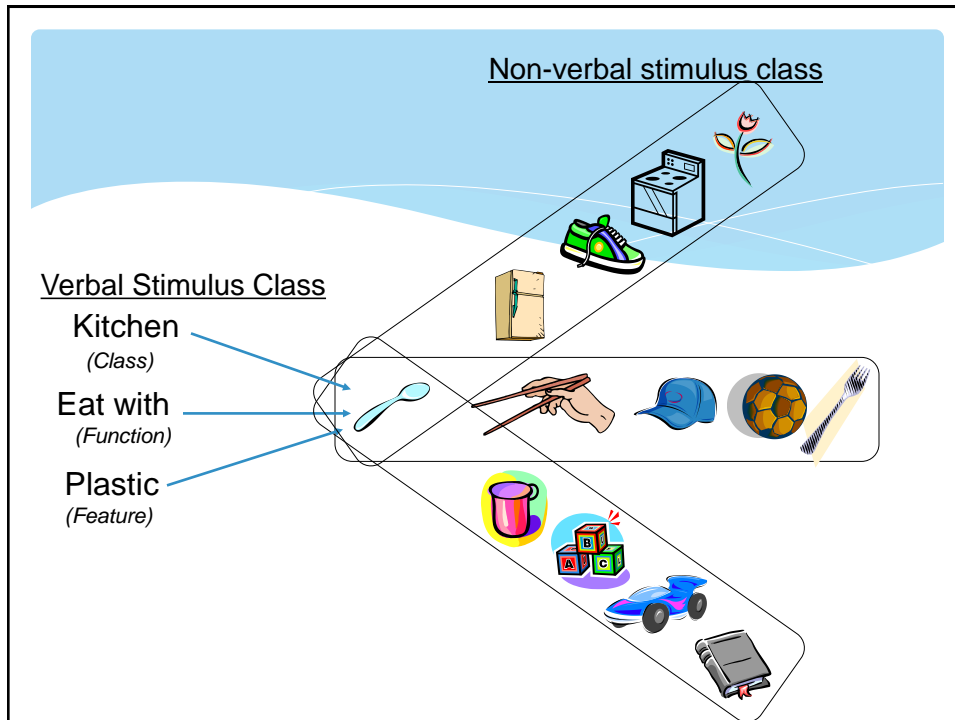
What is Intraverbal Behavior?

- Intraverbal behavior involves words that are evoked by other words
- A significant part of our day-to-day verbal behavior involves emitting words and sentences that are in response to the words and sentences of others
- Some intraverbal behavior is simple and often trivial (e.g., saying "Fine" when someone says "How are you?")
- While other intraverbal interactions are more complex (e.g., "Can you explain a verbal conditional discrimination?")
- Much of our social, intellectual, and academic verbal behavior is intraverbal

How is the Intraverbal Different from Mand, Tact, Echoic, and Listener Behavior?

Antecedent	Behavior	Consequence
Motivation (MO)	**Mand**	Specific reinforcement
Nonverbal S^D	**Tact**	Generalized reinforcement
Verbal S^D (w/ a match)	**Echoic**	Generalized reinforcement
Verbal S^D (w/o a match)	**Intraverbal**	Generalized reinforcement
Verbal S^D	**Listener**	Generalized reinforcement

Teaching Intraverbal Behavior

- A young child's early intraverbal behavior may be relatively simple such filling in the words of songs or fun activities (e.g., "Ready, set...," "Peek-a-…," "The wheels on the…")
- Fill-in-the-blanks, songs, and animal sounds, reverse fill-ins
- Conduct the intraverbal VB-MAPP subtest www.avbpress.com/downloads
- Use echoic to intraverbal transfer, or tact to intraverbal transfer procedures
- The task is to establish "verbal stimulus control"
- LRFFC can help, since often the same verbal stimuli are involved

The VB-MAPP Intraverbal
Assessment Subtest

Child's name:		Tester:
Date of birth:		Testing date (s):
Diagnosis if any:		Total score_____ (give a 0 or 1 for each item)

Group 1: Animal sounds & songs fill-ins)	Score	Write the exact response given by the child
A kitty says...		
Twinkle, twinkle, little...		
Ready, set …		
The wheels on the bus go...		
Rock-a-bye...		
A dog says...		
Peek-a…		
The itsy bitsy...		
Head, shoulders, knees and...		
Happy birthday to...		
Other:		
Other:		
Total points (10 points maximum):		

Group 2 (Name, fill-ins, associations)		
What is your name?		
You brush your...		
Shoes and...		
You ride a...		
You flush the...		
You sleep in a…		
You eat…		
One, two...		
You wash your...		
You sit on a…		
Other:		
Other:		
Total points (10 points maximum):		

Teaching the First Types of Intraverbal Behavior

- The simplest types of intraverbal behaviors are the same as those that occur early for many typical children (IV Set 1)
- Minimal prerequisites (20-30 mands and tacts level), somewhat rote, no tact, listener discriminations (LDs), LRFFC prerequisites
- Filling-in the missing words from songs, fun phrases, and socially interactive games (use **MOs**)
- This breaks VB free from echoic and tact control (**beginning to teach a child to make a non-echoic response to a verbal stimulus)**
- Basic ABA teaching procedures (prompt, fade, differentially reinforce)
- Use mostly NET teaching format, and age/developmentally appropriate content

Moving on with Intraverbal Training

- Out of context fill-in-the-blanks, prerequisites include:
- 100-200 mands, tacts, and LDs before a major focus on intraverbals
- Matching-to-sample (MTS) and some sorting skills
- Verb-noun combinations as tacts and LDs
- Listener responding by function, feature, & class (LRFFC)
- Strong generalization skills--across the board
- Tact and LDs acquired for specific target words
- **Use the "known language lists" as a vocabulary guide** (e.g., first 300 noun list, first verbs list, noun-verb list, LRFFC list, etc.) – (www.avbpress.com)

Expanding, Strengthening, and Measuring the Early Intraverbal Repertoire

- Build to 100s of simple IV relations
- New songs, different missing words, new contexts, etc.
- Reverse the order of the original IV verbal parts
- Emphasize stimulus and response **variation**
- Generalization to different people, contexts, tones, melodies, etc.
- Intersperse relevant nonverbal activities, as well as mands, tacts, and LDs
- First-trial probe data on the target intraverbal relations should be conducted on a regular basis

Procedures for Teaching Intraverbal Behavior through LRFFC

- **LRFFC to intraverbal transfer of stimulus control procedure**
- A child often begins to tact the nonverbal stimulus in an LRFFC task
- The verbal stimulus (e.g., "You see a tail on a…") and the response ("cat") provide the foundation an intraverbal relation
- The task is to fade out the nonverbal stimulus
- And eventually (if not already) fade to a WH question (e.g., "What has a tail?")
- Select words that are already strong in the child's repertoire as tacts and listener discriminations

LRFFC to Intraverbal Transfer

<u>Verbal Antecedent</u>   <u>Array</u>   <u>Response</u>

"What has a tail?"   Child touches the
   cat, and says "cat"

- The basic components of the intraverbal relation are present ("Tail" and "Cat")
- Simple task for transfer: 1) Fade out the picture of the cat
- Target intraverbal: "What has a tail?" → "Cat"
- Shannon and Grant Video

The Use of LRFFC as a
Stepping Stone to Intraverbal

- Next step: multiple exemplar training (MET, generalization)
- Specific verbal stimulus classes are established (LRFFC)
- Specific verbal response classes are established (LRFFC)
- A verbal stimulus class is where a child learns that several different verbal stimuli (e.g., *tail, meow, animal)* can evoke the same response (*cat*)
- The response class is where a single verbal stimulus (*tail*) can evoke several different responses (e.g., *cat, dog, whale*)
- LRFFC to intraverbal transfer procedures can be used to establish classes first with nonverbal stimuli, then with verbal stimuli

Non-verbal stimulus class

Verbal Stimulus Class

Kitchen
(Class)

Eat with
(Function)

Plastic
(Feature)
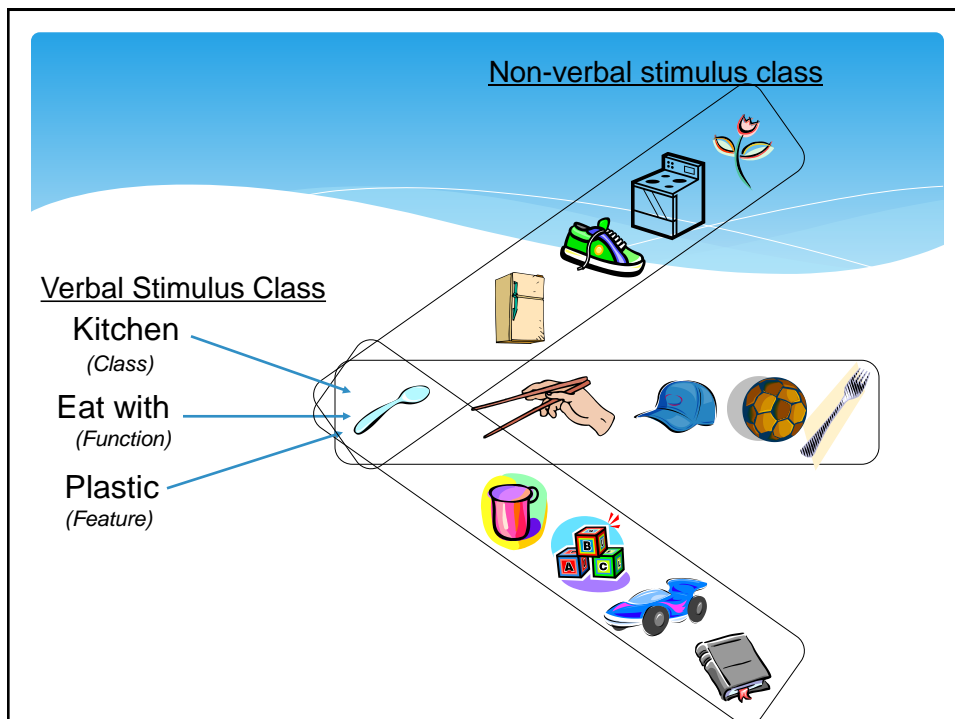
Conditional Discriminations

- <u>Conditional discrimination</u>: "When the nature or extent of operant control by a stimulus condition depends on some other stimulus condition" (Michael, 1993, p. 14)
- Matching to sample always involves two stimuli that relate to each other (conditional discrimination)
- Many advanced verbal skills involve conditional discriminations, especially intraverbal behavior

Verbal Conditional Discriminations (VC^D)

- What constitutes a verbal conditional discrimination and an intraverbal response?
- Two components of a verbal stimulus where one verbal stimulus alters the evocative effect of the second verbal stimulus, and collectively they evoke a differential intraverbal response
- Skinner (1957, p. 76) calls this a "compound verbal stimulus," but does not use the term "verbal conditional discrimination"
-     <u>Antecedent</u>   <u>Response</u>
- Verbal S^D_1 + Verbal S^D_2 Intraverbal Response

Verbal Conditional Discriminations (VC^D)

- Examples...
- <u>Antecedent</u> (Verbal S$^D_1$ + Verbal S$^D_2$)   <u>Intraverbal Response</u>

Big animal	Lion
Little animal	Mouse
Big vehicle	Boeing 747
Little vehicle	A toy bike

- VC^D=VS$^D_1$ alters the evocative effect of VS$^D_2$ or vice versa
- A correct response is dependent on VC^D between words, if individual words are the source of control errors will occur

Teaching Intraverbal Behavior to Children with Autism

- Many children with autism have a difficult time acquiring intraverbal behavior because beyond simple intraverbals ("A kitty says..."), most intraverbal responses are part of a VC^{D}s.
- For example...
- "What's your **cat**'s name"
- "What's my **cat**'s name?"
- "What did the cat **chase**?"
- "What did the dog **chase**?"

Verbal Conditional Discriminations

- Some children can acquire simple intraverbals (no VC^D involved)
- (e.g., *A kitty says…Twinkle twinkle little…, Shoes and socks…*)
- Many children with autism fail to acquire intraverbal behavior, despite strong mand, tact, and listener repertoires
- There often is some intraverbal stimulus control demonstrated, but the control is lost when verbal conditional discrimination are involved

	Verbal S^D	Response
	"Where is the refrigerator?"	"Cold"
	"What grows on your head?"	"Plants"
	"Where are the trees?"	"Leaves"
	"Where do you eat?"	"Spoon"
	"What helps a flower grow?"	"Up"

The VB-MAPP Intraverbal
Assessment Subtest

Group 3 (Simple What questions)	Score	Write the exact response given by the child
What can you drink?		
What can fly?		
What are some numbers?		
What can you sing?		
What's your favorite movie?		
What are some colors?		
What do you read?		
What is outside?		
What's in a kitchen?		
What are some animals?		
Total points (10 points maximum):		
Group 4 (Simple Who, Where, & age)		
Who is your teacher?		
Where do you wash you hands?		
Who builds a web?		
Where is the refrigerator?		
Who drives the car?		
Where do you take a bath?		
How old are you?		
Where are the trees?		
Who do you see on TV?		
Why do you use a Band-Aid?		
Total points (10 points maximum):		

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The VB-MAPP Intraverbal
Assessment Subtest

Group 5 (Categories, function, features)	Score	Write the exact response given by the child
What shape are wheels?		
What grows outside?		
What can sting you?		
What do you do with a sock?		
What can you push?		
What do you do with a straw?		
What do you write on?		
Can you name some body parts?		
What's something that's sharp?		
What do you wear on your head?		
Total points (10 points maximum):		
Group 6 (adjectives, prepositions, adverbs)		
What color is my shirt?		
What do you eat with?		
What's up in the sky?		
What's above a house?		
What do you smell with?		
What are some hot things?		
What grows on your head?		
What is under a boat?		
What animal has stripes?		
What color is your shirt?		
Total points (10 points maximum):		

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The VB-MAPP Intraverbal
Assessment Subtest

Group 7 (Multiple part questions)	Score	Write the exact response given by the child
What makes you sad?		
Name some clothing.		
Tell me something that is not a food.		
What helps a flower grow?		
When do we set the table?		
What do you do with money?		
Why do people wear glasses?		
Where do you put your dirty clothes?		
What is something you can't wear?		
What's something that is sticky?		
Total points (10 points maximum):		
Group 8 (Multiple part questions)		
What's in a balloon?		
What do you take to a birthday party?		
Where do you go if you're sick?		
Why do you wear a coat?		
What do you do before bed?		
What's your last name?		
What do you put in a sandwich?		
What musical instrument has strings?		
What do you do with an umbrella?		
Why do adults need to get gas?		
Total points (10 points maximum):		

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Intraverbal Training

- Prerequisites (200-400 mands, tacts/LD-generalized, MTS, sorting)
  - Same prerequisites previously identified (e.g., known tacts and LDs)
  - Successful completion of related LRFFC tasks
  - Successful completion of many fill-in and reverse fill-in IV
- Mostly noun-verb combinations
- Tact/LD training is still occurring (vocabulary growth continuing)
- LRFFC training is still occurring (verbal stimulus control improving)
- Generalization, stimulus and response classes are growing
- Gradual increased focus of the overall program on social, LRFFC, and intraverbal skills (less on echoic, imitation, MTS, tacting, LD—but don't stop progressing, for example, social and functional imitation)

Intraverbal Training

- Use mainly a DTT teaching format, but include plenty of NET
- Transfer acquired fill-ins to "What" format **ASAP** (IV Milestone 9)
- **Basic teaching procedures**
  - Fill-in to WH; Reverse fill-ins to WH
  - LRFFC to IV transfer
  - In-context (tact) to IVs transfer
  - Expansion: Build stimulus and response classes (MET)
  - Reading stories
  - Build to 100s of simple IV relations
  - Beginning peer intraverbal activities
- Make it fun, and provide training in the natural environment (NET)

Steps to Beginning an Intervention Program: Level 3

- Level 3 begins at 30 months of age for a typically developing child
- By this time a typical child has acquired hundreds of mands, tacts and listener responses (LDs), and easily learns new words daily
- Mands are spontaneous, frequent, and clearly controlled by the child's personal motivators, especially MOs that relate to verbal information (i.e., asking questions)
- These mands are constantly changing and very little formal training is necessary to develop new mands, in fact the problem at this age is often too many mands ("the terrible 2s")

VB-MAPP: Level 3

Level 3

Interpreting the Level 3 Assessment: Curriculum Placement and Writing IEP Goals

Figure 10-1
Sample VB-MAPP Milestones Assessment for a child scoring in Level 3.

Steps to Beginning an Intervention Program: Level 3

- Echoic and imitation skills are well established which makes teaching new words and skills easier
- The visual perceptual and matching skills are reaching the abstract level and beginning to help pave the way for academic skills
- Intraverbal skills are growing rapidly and daily, and will soon reach thousands of intraverbal connections
- Social interactions with adults and peers are a cornerstone of each day, and regularly contribute to the development of a wide variety of new skills
- New skills are usually acquired quickly, they generalize, occur spontaneously, transfer, and don't require maintenance trials

Teaching Format: Level 3

- A child whose scores fall in Level 3 is still in need of an intensive intervention, but not in the same way that a Level 1 or Level 2 child
- It remains important to seek a balance between DTT and NET training A carefully designed intervention program is still necessary, but 1:1 and 1:2 tabletop instructions may become less of a focus
- This mixed teaching format may now be used more for academic skills, independent work, generalization, and expansion of known skills

Steps to Beginning an
Intervention Program: Level 3

- In general, the focus of the intervention at this point should be on:
- Expanding the content of what the child talks about by teaching new mands, tacts, intraverbals, and LD responses
- Expanding the sentence size by teaching the child how to modify basic nouns and verbs with adjectives, prepositions, pronouns, adverbs, and so on
- Developing more complex mands, such as mands for information and mands involving the different parts of speech
- Teaching more complex intraverbal behavior (e.g., how to talk about things and events that are not present)
- Learning to use these verbal skills in socially appropriate ways

Steps to Beginning an
Intervention Program: Level 3

- Increasing the frequency and complexity of peer and social interactions
- Expanding the child's ability to learn in a group teaching format
- Movement toward a less restrictive educational setting (e.g., inclusion)
- Developing beginning academic skills
- In addition to these targets, there are other skills and intervention programs (e.g., self-help, fine and gross motor, independence, leisure, safety), along with the reduction of language and learning barriers

Conclusions

- Behavior analysis is a powerful tool
- Skinner's analysis of verbal behavior can guide an assessment and intervention program in a manner **unlike** any other theory of language
- The VB-MAPP can provide the foundation and a guide for an ABA/VB intervention program

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