Programming for Optimal Outcomes

Amiris Dipuglia
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Pennsylvania Training and Technical Assistance Network

- Despite using effective procedures, programming for and teaching discrete skills without regard to how those skills will develop and eventually become part of more complex repertoires, is insufficient
- Non-systematic and non-sequential instruction of mands, tacts, echoics, intraverbals or other skills will unlikely result in establishing functional complex verbal repertoires

A Note On Something Commonly Misunderstood About Behavior Analysis

1. Complex behaviors emitted by competent humans are rarely shaped bit by bit
2. Most human behavior is not directly shaped at all
3. Complex behaviors, however, arise from other response classes that have been shaped bit by bit
4. Palmer calls the building blocks of complex behavior "atomic repertoires" (Palmer, 2012)

Atomic Repertoires

A set of fine-grained units of behavior, each under the control of a distinctive stimulus, that can be evoked in any permutation by the arrangement of corresponding stimuli.

David Palmer, 2012

Some Atomic repertoires

- Imitation (doing what someone else does)
- Echoic (repeating words said to you)
- Tacts (saying the name of things)
- Textual behavior (reading words)
- Transcriptive behavior (copying a text)

Atomic Repertoires and Autism

Common issues:
- Failure to use skills taught in novel ways or under novel circumstances
- Failure to transfer responses to novel exemplars (generalization)
- Responding to a very limited number of cues in their environment.

One Way to Address the Issue: Teach Atomic Repertoires

- Systematic programming that involves teaching some critical atomic repertoires may result in more generalized and generative responding
- Teaching basic repertoires will not suffice, but rather is a necessary step in the process of teaching complex skills
- Determining which repertoires/skills need taught will require assessment processes
- Assessments should be efficient and yield the necessary information to determine what skills need taught

Considerations for Teaching Atomic Repertoires to Build Complexity

Teach Concepts not Items

- What is a concept? An extended tact
  - Teach multiple exemplars (full range)
  - Teach critical features
  - Establish stimulus class formation
  - Generalized to novel examples

- Teach recombination and novel responding
  - How you arrange and populate skill tracking sheets is critical (see examples)
  - Natural environment teaching

- Teach students to respond to all relevant stimuli (multiple control)

- Directly teach complex skills
  - Use of joint control procedures
  - Matrix training (Axe, 2008)

Generalize across:

- People
- Places/settings
- Materials
- Instructions (Verbal S^ds)
- Time presented

Reminder of VB-MAPP as Assessment Tool vs Adequate Criteria for Mastery

- VB-MAPP criteria for assessing generalization: mastering items across 3 exemplars (low bar)
  – Student should be able to tact almost any exemplar of the item
- Tact of critical features may facilitate concept acquisition
  – Why we teach tacts of parts and features

Definition: Multiple Control

- One or more responses controlled by <u>multiple components</u> of antecedent condition (Discriminative Stimuli)

Types of Multiple Control

- Conditional Discrimination
- Verbal Conditional Discrimination
- Joint Control

Teaching Verbal   Conditional Discriminations

- Conditional discrimination:
  - A response that occurs (is reinforced) dependent on (conditional on) more than one component in the antecedent
- Verbal conditional discrimination:
  - At least one of the components in the antecedent is verbal
- Students with autism often fail to attend to all aspects of a statement or question
  - Example: "name some big dogs."
  - Response: "Great Dane, Labrador, Retriever, Collie (Not Chihuahua Pekingese or a list of ALL big dogs)

Joint Control

- Joint Control means <u>several verbal operants</u> working at once to strenghten a response
  - This is an oversimplified explanation, but will work for us in this training
  - Involves "<u>Multiple Control</u>" (for example, the tact and echoic both operate at the same time)
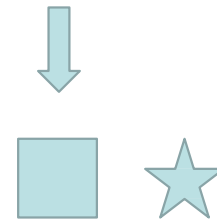
Joint Control

- Many of our responses require us to engage in more than one response (not always overt and observable by others) before we emit the end response
- Responding that is not unmediated, rather the result of a conditional discrimination based on an intervening verbal response
- Speaker generates responses which serve as stimuli that strengthens the final response
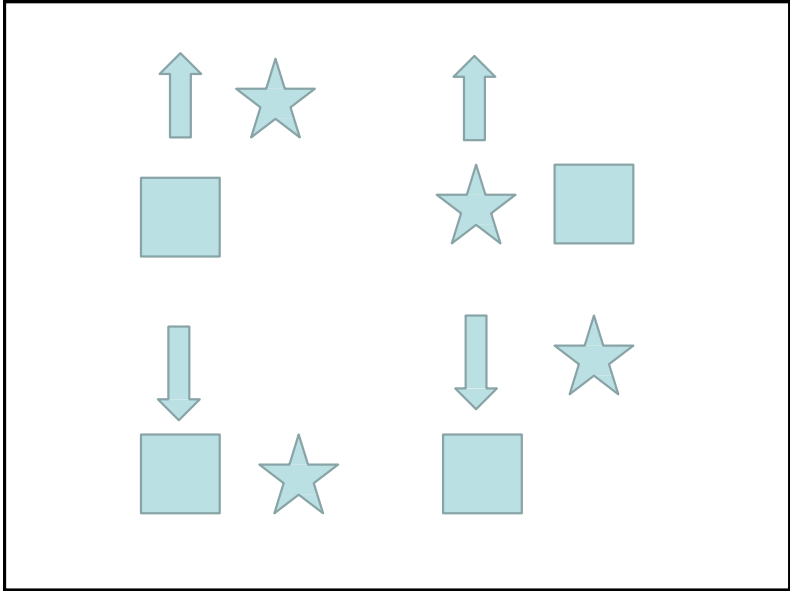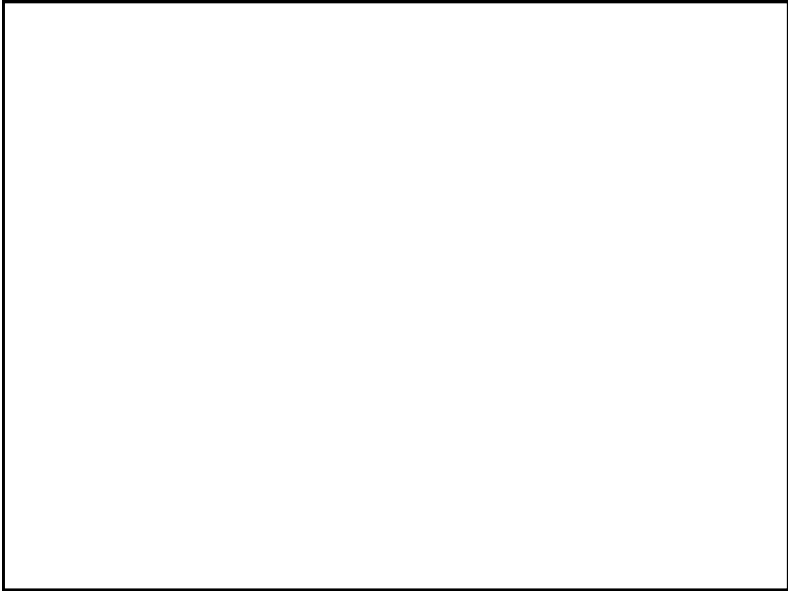
Joint Control

- Often times joint control works by first echoing something that was said, then using the echoic/self-rehearsal while tacting/or emitting an intraverbal as part of a selection response
- As the selection is made an "aha" comment or prosody change is usually emitted
  – Example: following instructions to select multiple items (grocery list)

Lowenkron, 1998

Procedural Uses of Joint Control

- Example One:
  - Teach multiple LR discriminations (pick 3 items in order)
  - Rehearse sequence before making selection
- Example Two:
  - Teach following multiple step directions
  - Rehearse sequence before following steps
- Example Three
  - Counting out a specific number of objects

Teaching Combinatorial Responding

- Establishing responses that can be combined to generate an indefinite number of novel arrangements and responses
- One example:
  - Teach tacts of items across almost any novel exemplar and to fluency
  - Tact and LR of ongoing actions: teach action across multiple exemplars of objects and multiple actions across each object taught
  - Without much effort, student can then learn to respond to an indefinite amount two component tacts involving verb-noun and noun-verb combinations

Slide 1

Skill Tracking Sheet
Student Name: _____   *Skill: Tact of Verb-Noun Combinations*

	Target	Date introduced	Date Mastered
1	Rolling Pencil		
2	Rolling Ball		
3	Rolling Marker		
4	Rolling Bottle		
5	Rolling Glue		
6	Tapping Pencil		
7	Tapping Ball		
8	Tapping Marker		
9	Tapping Bottle		
10	Tapping Glue		
11	Spinning Pencil		
12	Spinning Ball		
13	Spinning Marker		
14	Spinning Bottle		
15	Spinning Glue		
16	Coloring Ball		
17	Coloring Tree		
18	Coloring Flower		
19	Coloring Circle		
20	Coloring Car		

An Integrated System of Instruction

Assessments (VB-MAPP, CBAs, ADLs, Vocational, College Readiness, etc.) → Program/Target Selection → Teaching Procedures → Organization (materials, environment, time) → Data Systems → Staff Training/Treatment Fidelity
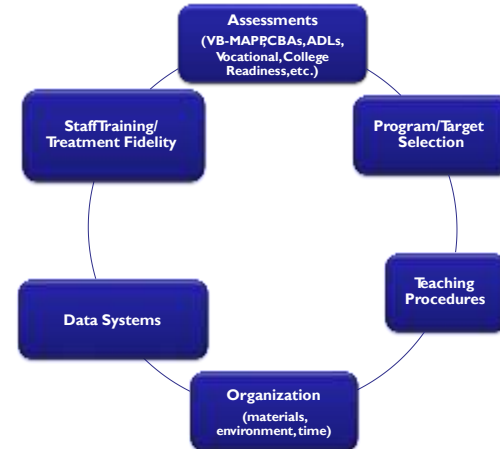
VB-MAPP as an Assessment Tool

- The VB-MAPP was developed as tool to guide programming (**not** a curriculum, but rather a **curricular guide**)
- The tool is based on a functional approach to language acquisition rather than a structural approach
  - Allows us to assess, not only what children say, but also under what conditions they say it
- The tool was meant to be guided by teams skilled in applied behavior analysis, the analysis of verbal behavior, and curricular sequences
- It is criterion referenced; not standardized

VB-MAPP as Criterion Level Assessment

- Assessment and instruction systems are probably most effective when they are integrated and form a feedback loop.

- The VB-MAPP provides a formative assessment that guides more fine grained analysis of student performance and instructional effectiveness

Clarification of Common Misunderstandings

- Primary curricula: PA Core Standards
- Verbal Behavior Milestones Assessment and Placement Program: Curricular guide to be used as one tool in PaTTAN ABA supported classes
- Other skill sequences may also serve as supplemental curricula to support the PA Core Standards (e.g. Direct Instruction sequences; Social Skills, ADLs, Vocational)

Teacher Effectiveness, PA Core Standards, and the VB-MAPP

- PATTAN Autism Initiative has linked content from VB-MAPP with the PA Core Standards
- The sequence of skills from basic repertoires through more complex combinative usages are set up to lead students to language skills that will allow higher order acquisition of concepts in content areas and social interactions
- The skills necessary to implement programming from the VB-MAPP are consistent with:
  - Establishing a culture of learning
  - Using assessment in instruction
  - Using prompts to facilitate participation
  - Setting instructional outcomes

VB-MAPP Milestones Assessment

- Three developmentally sequenced levels
  - Level 1= 0-18 months
  - Level 2= 18-30 months
  - Level 3= 30-48 months
- 16 milestone areas
- 170 measurable milestones
- Includes a task analysis which provides a more detailed description of skill sets at operant level for Milestones Assessment
- Allows further specification of instructional programs

Skill Area	Level 1	Level 2	Level 3
Mand	X	X	X
Tact	X	X	X
Listener Resp.	X	X	X
VP/MTS	X	X	X
Play	X	X	X
Social	X	X	X
Imitation	X	X	
Echoic	X	X	
Vocal	X		
LRFFC		X	X
IV		X	X
Group		X	X
Linguistics		X	X
Reading			X
Writing			X
Math			X
TOTAL:	9	12	13

VB-MAPP Task Analysis

- Allows specification of instructional programs
  - Identifies sub-list of objectives within each Milestone

- Not a formal task analysis per se

- Provides a more detailed analysis of tasks at operant level for Milestones Assessment

VB-MAPP Assessment Grid

- Provides a graphic presentation of assessment results and progress between re-assessments

- Allows simultaneous display of 4 assessments at different points in time

VB-MAPP Milestones Master Scoring Form

Scoring Supplement

- Allows assessors to document student's specific responses

- Provides an appendix that contains numerous examples of different items to assess for different milestones

PENNSYLVANIA
VERBAL BEHAVIOR
PROJECT

VB-MAPP Scoring
Supplement

Student:_____

Amiris Dipuglia, MD, BCBA & Linda Franchock, BS SPLED

June 2009
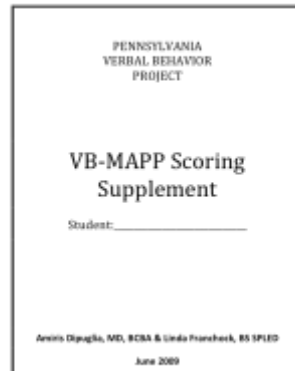
Scoring Supplement Example

	Mand		Level I
1	Emits 2 mands with echoic or imitative prompt(no physical prompts:	1.	½
		2.	1
2	Emits 4 mands w/o prompts except item and/or "What do you want?"	1.	½
		2.	
		3.	
		4.	1
3	Generalizes 6 mands across 2 people, settings, and examples.	People Setting Example	½
		1.	
		2.	
		3.	
		4.	
		5.	
		6.	1
4	Emits 5 mands in 1 hour (item can be present).	1.	½
		2.	
		3.	
		4.	1
		5.	
5	Emits 10 mands w/o prompts except item and/or "What do you want?"	1.	
		2.	
		3.	
		4.	
		5.	½
		6.	
		7.	
		8.	
		9.	1
		10.	

Appendix Example: Tact/LR Pictures

Animals

		T	R				T	R			T	R
161	Lion			171	Snake				181	Sheep		
162	Tiger			172	Lizard				182	Goat		
163	Elephant			173	Turtle				183	Cow		
164	Rhino			174	Spider				184	Horse		
165	Hippo			175	Frog				185	Dog		
166	Zebra			176	Fish				186	Rabbit		
167	Giraffe			177	Duck				187	Mouse		
168	Kangaroo			178	Turkey							
169	Bear			179	Chicken							
170	Alligator			180	Pig							

Vehicles

		T	R				T	R			T	R
188	Truck			195	Ambulance				202	Train		
189	Van			196	Police Car				203	Boat		
190	Jeep			197	Tow Truck				204	Ship		
191	Motorcycle			198	Truck-shipping				205	Helicopter		
192	Bus			199	Dump Truck							
193	Mail Truck			200	Bulldozer							
194	Fire Truck			201	Tractor							

Clothing

		T	R				T	R			T	R
206	Pants			212	Sweatshirt				218	Socks		
207	Jeans			213					219	Belt		
208	Shorts			214	Swimsuit (g)				220	Hat		
209	Dress			215	Swimsuit (b)				221	Gloves		
210	Skirt			216	Underwear (b)							
211	Sweater			217	Underwear (g)							

Furniture

		T	R				T	R			T	R
222	Couch			224	Highchair				226	Dresser		
223	Table (coffee)			225	Crib				227	Desk		

General Programming Considerations

General Guidelines for Programming

1. **Complete** VB-MAPP assessment (completion of all domains not always necessary to begin programming)
2. **Identify** the general level of the child
3. **Analyzing** the scores in each of the relevant skill areas and note performance level obtained in each column (skill domain)
   - *Determine skill sets in relation to selecting known items, items that can serve as prompts and assist in selection of target items and response forms*
   - *Note the gaps (milestones for which student did not meet the criteria) in each column*
4. **Select Instructional Programs** that are balanced across operants and at appropriate instructional level

Caveat: *Remember the criteria are intended for assessment purposes and* ***do not*** *imply mastery of the skill sets*

General Guidelines for Programming

- Select targets for instruction that are relevant for student:
  - Usually valuable to student
  - Common in day-to day life
  - Tied to general education curriculum
  - Will promote and facilitate social initiations and interactions.
  - Will promote independence
- Be sure programming is consistent with student's response form (vocal vs. sign)
- Be sure instructional materials are available for specific items selected within programs

Guidelines for Selecting Response Forms

- Assessment
  - Echoic skills
  - Imitation skills
  - Spontaneous vocalizations
- Consideration should be given:
  - Speed of Production
  - Ease of production
  - Developing a full range of verbal skills
  - Portability
  - Independent use
- History of response to intervention
  - Verify quality of implementation of training efforts

ORGANIZATION SYSTEMS

Components of Organization:

- Data Systems
- Allocation of instruction (schedule)
- Materials Organization

Data Systems: Skill Tracking Sheet

- **Known items ("easies")** are developed directly from Scoring Supplement and written on Skill Tracking Sheets with date introduced and date mastered.
- **Target items ("hard items")** should be relevant to the student and written on Skill Tracking Sheets with date-introduced only.
- **Future targets** should be relevant to the student and are written on Skill Tracking Sheets with no date.
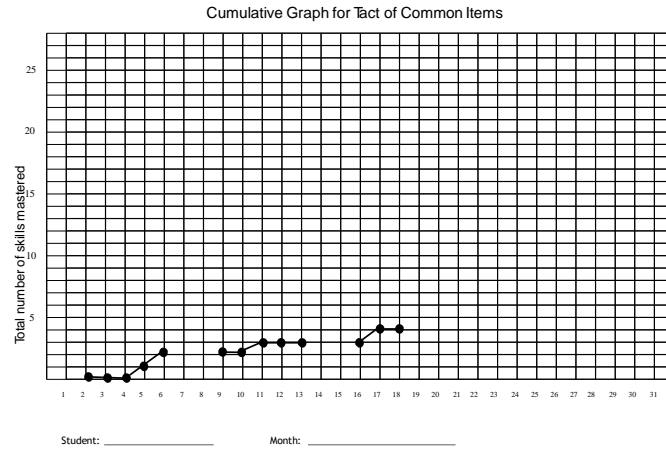
Skill Tracking Sheet

- A Skill Tracking Sheet should be developed for each active program.

Student: _____   **Mastery Criteria:** _____

Skill Tracking Sheet

Skill: **Tacts for Common Items**

	Target	Date introduced	Date Mastered
1	Cup	3-2-09	3-5-09
2	Ball	3-3-09	3-6-09
3	Book	3-5-09	3-11-09
4	Chair	3-11-09	3-17-09
5	Shirt	3-17-09	
6	Spoon	3-17-09	
7	Table	3-17-09	
8	Shoes		
9	Bowl		
10	Pants		
11	Car		
12	Apple		
13			
14			
15			
16			
17			
18			
19			
20			

Data Systems: Cumulative Graph

- A cumulative graph helps instructors visually track student rate of progress.

- In cumulative graphing, increase the dot by the number of skills **mastered** that day.

- Develop a cumulative graph for each active program.

Cumulative Graph

Cumulative Graph for Tact of Common Items

Total number of skills mastered

25

20

15

10

5

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

Student: _____   Month: _____

Data Systems: Cold Probe Sheet

Name: [   ]   Week of: [   ]

Weekly Probe Sheet

# days active	Operant	Target Skill	Previous y	Mon	Tue	Wed	Thur	Fri
1	T	Shirt		Y N	Y N	Y N	Y N	Y N
2	T	Ball		Y N	Y N	Y N	Y N	Y N
3	T	Table		Y N	Y N	Y N	Y N	Y N
4				Y N	Y N	Y N	Y N	Y N
5				Y N	Y N	Y N	Y N	Y N
6				Y N	Y N	Y N	Y N	Y N
7				Y N	Y N	Y N	Y N	Y N
8				Y N	Y N	Y N	Y N	Y N
9				Y N	Y N	Y N	Y N	Y N
10				Y N	Y N	Y N	Y N	Y N
11				Y N	Y N	Y N	Y N	Y N
12				Y N	Y N	Y N	Y N	Y N
13				Y N	Y N	Y N	Y N	Y N
14				Y N	Y N	Y N	Y N	Y N
15				Y N	Y N	Y N	Y N	Y N
16				Y N	Y N	Y N	Y N	Y N
17				Y N	Y N	Y N	Y N	Y N
18				Y N	Y N	Y N	Y N	Y N
19				Y N	Y N	Y N	Y N	Y N
20				Y N	Y N	Y N	Y N	Y N
21				Y N	Y N	Y N	Y N	Y N
22				Y N	Y N	Y N	Y N	Y N
23				Y N	Y N	Y N	Y N	Y N
24				Y N	Y N	Y N	Y N	Y N
25				Y N	Y N	Y N	Y N	Y N
26				Y N	Y N	Y N	Y N	Y N
27				Y N	Y N	Y N	Y N	Y N
28				Y N	Y N	Y N	Y N	Y N
29				Y N	Y N	Y N	Y N	Y N
30				Y N	Y N	Y N	Y N	Y N
31				Y N	Y N	Y N	Y N	Y N
32				Y N	Y N	Y N	Y N	Y N
33				Y N	Y N	Y N	Y N	Y N
34				Y N	Y N	Y N	Y N	Y N

Red: receptive ID Green: Tact Yellow: Echoic Purple: Motor Imitation Blue: Intraverbal

Criteria for mastery: _____ consecutive yes'

If program change made, indicate by drawing a phase change line on the corresponding date of the applicable target.

Notes/Reminders:

• A place to take daily data on target skills.

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Card Sort System Video

Existing Skills vs. Target Skills
Considerations for DTI Materials Organization

- **EXISTING/KNOWNS/EASIES/ MAINTENANCE ITEMS**

  Develop 3x5 index cards and/or pictures of exemplars and place in bank of known items (in our case "easy piles")

  For active programs these items are written on the Skill Tracking Sheet with the word ASSESSED or Probed Out   in the date introduced and mastered columns.

- **TARGET SKILLS**

  Develop 3x5 index cards and/or pictures of exemplars and place in bank of items to be targeted for instruction (in our case "target piles" or future targets).

  For active target skills these items are written on the Skill Tracking Sheet with a date introduced as well as listing them on the cold probe sheet

  For items that will be targeted in the future, list on skill tracking sheet with no date introduced.

Card Sort System

3x5 cards
- Motor imitations
- Echoics
- Intraverbals
- Tacts that do not involve pictures (e.g., body parts, actions)
- LRs that do not involve pictures (e.g., body parts, directions)

Picture Cards
- Tact pictures
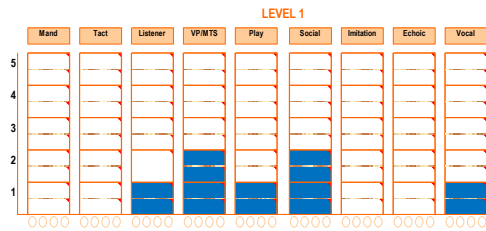- LR pictures

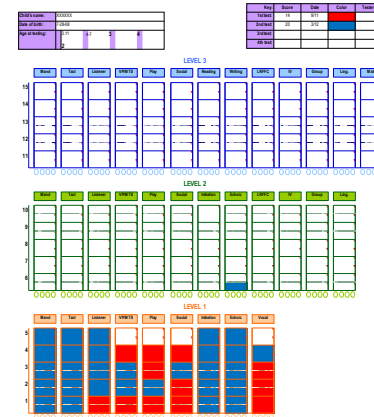## Card Sort System

Card Sort System: "Knowns" Bins

Establishing Initial Repertoires:
Common Programming Procedures
for Level 1 and Related Protocols

Level 1: A Typical Profile

Pre to Post Assessment Pattern

Early Level 1 Learner:
Supplemental Assessments

- Approach frequencies
  - How often child walks toward, reaches for or otherwise physically moves toward other people?
- Observational responding
  - Degree to which child's eyes and face turn toward changes that occur in the environment
- Potential preferred items and activities that may serve as reinforcement
  - What does the child do on their own?
  - What events, objects, or people do they stay near or manipulate the longest?
- Response variability
  - What is the range of behaviors the child emits?
  - How many different things do they do?

How to Assess Approach Behaviors

- Willingness to stay near other people
  - Frequency and duration
- Preference for type of interaction
  - What stimuli are correlated with increased frequency and longer duration of interactions?
    - What type of interaction with which objects?
    - Food, motion, laughter, surprise, sound, etc.
- General approach to others without any specific discriminative stimulus
  - If no stimuli are presented, does child approach or remain near adult?
- Approach in conditions of adult correlation with preferred items (discriminative stimulus is present)
  - If the adult "tempts" the student, do they approach more often?
  - What items/events are most likely to evoke approach?

Approach Data Sheet

Student: _____ Observer: _____ Date: _____
Staff Running Trials: _____ Start Time: _____ End Time: _____

Reinforcing Item/Activity/Event (If no explicit reinforcer, leave blank)	Circle Approach, Escape or NR (no response)		
1.	Approach	Escape	NR
2.	Approach	Escape	NR
3.	Approach	Escape	NR
4.	Approach	Escape	NR
5.	Approach	Escape	NR
6.	Approach	Escape	NR
7.	Approach	Escape	NR
8.	Approach	Escape	NR
9.	Approach	Escape	NR
10.	Approach	Escape	NR
11.	Approach	Escape	NR
12.	Approach	Escape	NR
13.	Approach	Escape	NR
14.	Approach	Escape	NR
15.	Approach	Escape	NR
16.	Approach	Escape	NR
17.	Approach	Escape	NR
18.	Approach	Escape	NR
19.	Approach	Escape	NR
20.	Approach	Escape	NR
21.	Approach	Escape	NR
22.	Approach	Escape	NR
23.	Approach	Escape	NR
24.	Approach	Escape	NR
25.	Approach	Escape	NR

Data Summary:	Total Approach	Total Escape	Total NR	Percent Approach
Totals:				
Staff (no explicit reinforcer used)				
Item/Activity:				
Item/Activity:				
Item/Activity:				
Item/Activity:				
Item/Activity:				
Item/Activity:				

Assessing Observational skills

- Commonly referred to as "attending"
- Assess tracking
  - Items in various positions
  - Field of view variables (where does the child look?)
  - Tracking moving items
- Spontaneous and evoked scanning
- Note observability of response
  - eye direction, reaching, other changes in behavior correlated with stimulus change
- Response to stimulus change
  - Onset of sound or visual presentation
  - Acute or abrupt vs gradual changes
  - Voice vs other sounds

Observational/Attending Responses:

Location: Held directly in front of student

Item/Stimulus	Looks	Reaches	Touches

Location: Held to right of student

Item/Stimulus	Looks	Reaches	Touches

Location: Held in front/above eye level of student

Item/Stimulus	Looks	Reaches	Touches

Location: Held to right/below eye level of student

Item/Stimulus	Looks	Reaches	Touches

Location: Held to left of student

Item/Stimulus	Looks	Reaches	Touches

Location: Held to left/below eye level of student

Item/Stimulus	Looks	Reaches	Touches

Assessing Preferred Events that may Serve as Reinforcers

- Observation of what the child does and what he spends time with
- How long does the child spend in relation to any activity or event
- Response to changes in available stimulation
- Direct assessment across types of stimuli (measure visual attention, reaching, approaching, etc.):
  Visual   Auditory
  Tactile   Movement
  Social   Media

Assessment of Preferred Stimuli

- Shared characteristics with established reinforcers
  - Do other events that are like the known reinforcer also serve as reinforcement?
- Conditioning reinforcers
  - Does pairing a neutral stimulus with a known reinforcer result in a reinforcing condition
- Novelty
  - Do new events serve as reinforcers?
- Formal preference assessment
  - Be careful with shifts in MO that depend on prevailing conditions with this population
  - Paired stimulus presentation, multiple stimulus presentation, and rating scales provide rough estimate at best…

Remember

- Preference assessments do not identify what will be strong as a reinforcer at any particular time: MO variable
- MO varies with:
  - Deprivation/satiation
  - Exposure (habituation)
  - Changes in stimulus conditions

Preference Assessment Observation

Students: _____   Observer:_____   Date:_____

Item/Activity	Speed of approach (slow, medium, fast)	Strength of Response (weak, strong, very strong)	Total engagement time	Frequency of approaches	Notes

Assessment of Potential Reinforcers

Reinforcing Item/Activity/Event	Reinforcing properties	List other Potential Items/Activities/Events with Similar properties

Common Programming Issues

- Tendency to program for what is already known or easy: match to sample, imitation with objects, task completion
  - These "knowns" are a consideration for programming easies
  - They are not necessarily the important target domains
- Failure to teach verbal behavior (speaker behavior) or have a plan to extend verbal skills
- Challenge of selecting response form
- Repetitive behaviors/"self-involvement"
- Limited reinforcers

Earliest Learners in Level 1

- Establish instructional control- approach behavior
  - Are adults established as conditioned reinforcers for the student: pairing process; "free" delivery (in absence of problem behavior)
- Saliency of attending response (attending to speakers voice, instructional materials)
- Identification and conditioning of adequate pool of reinforcers
- First programs:
  - Approach behavior
  - Mand
  - Imitation (objects and motor)
  - Tact
  - Match to sample
  - LR in context

The Importance of Early Mand Training

- Social Initiation
- "Control" of the environment
- Reduction of problem behavior (for problem behavior function of socially mediated positive reinforcement)
- An entry point for development of verbal repertoires
  - Critical issue for students who may lack almost all opportunities for verbal responding
- The tie to motivation and its implications for relative ease of instruction

Establishing Mand Repertoires: Level One

- Schedule adequate opportunities to mand
- Provide mand trials across a variety of motivational classes, across a variety of listeners, and across settings.
- **Always** check for motivation (or contrive motivation)
- Have a systematic plan to fade mand prompts
  - Two types of mand transfer trials: within trial and second trial transfer
- Consistently use correction procedures
- Avoid "generalized mands"
- Avoid chaining extraneous behaviors into mand responses (reach first, then sign)
- Select target responses that will be relatively easy for child to produce
- Sequence mand skills carefully: don't move too early to multiple component mands or increased MLU for mands; to yes/no mands…Focus on building full range and independent responding!

Teaching First Signed Mands

- Shaping: The process of teaching new behaviors through systematic use of differential reinforcement of successive approximations
- Value of accepting sign approximations
- Need to shape several signs at one time
- Motivating Operation variable
  - Can only teach a mand for an event that is currently of value
- Response effort consideration and initial mands
  - May need to start with adapted signs (simplified movements)

Modeling the Response Form

- Free delivery and the conditioning of the value of the mand response product
- This involves the principle of automatic reinforcement
  - The response produces its own reinforcement
  - Parity as described by Dave Palmer and others
- Eventually producing the response form has a reinforcing effect due to the conditioning history

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Systematic Prompt Fading

- Fading across topography
  - Fade initial physical prompt to begin motion
  - Fade latter parts as student begins emitting response
- Within and second trial transfers to fade prompts:
  - Within trial: prompt faded before delivery of mand item
  - Second trial: prompt faded on a second trial
- With earliest learners, fading prompts will likely involve use of faded prompts on the transfer

- Mand Video

Tact Training

- Early programming should lead to the initiation of tact training
- Tact training is a critical skill in the process of teaching complex verbal behavior
- Tact training should be initiated when:
  - Initial mand repertoire is sufficiently developed
  - Methods of prompting tacts are available (student has adequate imitative or echoic skills)
  - Responses used for tacts can be effectively discriminated by the listener

Establishing Tact Repertoires: Level One

- Teach many tacts
- Teach **sufficient exemplars** for tact targets (will cover in more detail later)
- Be sure student can tact objects
- Provide sufficient tact training opportunities to establish new skills as well as assist with generalization and fluency
- Sequence tact instruction carefully: do not stop at tacting objects
- Initially, keep verbal S^D consistent
- Be sure controlling variables are right (that what you think is a tact is really a tact and not a mand, or in the case of prompt dependency, an echoic)

Tact Video

Establishing Imitation Repertoires: Level One

- Schedule adequate opportunities for imitation trials
- Sequence action to be imitated carefully (from easy to hard)
  - Easier movements to produce will include grounded movements, bidirectional, do not involve crossing midline, are in their view)
- Prompts
  - Physical
  - Context for actions on objects
  - Plan to fade prompts (appropriate use of transfer trials)
- Sequencing:
  - Graduated jumps in task difficulty: Avoid drastic jumps in difficulty of action to be imitated
- Be sure imitative discrimination is taught

Establishing Imitation Repertoires: Level One

- For imitation with objects teach each movement across several objects and several movements across each object
- Initially, keep verbal SD consistent and teach using identical items
- Provide sufficient training to teach new skills as well as establish generalized imitation repertoire and fluency of responses

- Imitation Video

Transition from Actions on Objects to Motor Imitation: If Needed

- Consider a transition program of "actions of objects on self"
  - Hat on
  - Necklace on
  - Tap belly with object
  - Tap block on palm of opposite hand
- The action on object can be used as prompt for the motor action (faded on the transfer trial)

	Motor Imitation with Objects		
	Target	**Date introduced**	**Date Mastered**
1	Push: button on spinner toy		
2	Push: key on piano		
3	Push: button on toy phone		
4	Push:		
5	Push:		
6	Push:		
7	Push:		
8	Push:		
9	Push:		
10	Push:		
11	Put in: bear in cup		
12	Put in: bean bag in bowl		
13	Put in: block in bowl		
14	Put in: block in basket		
15	Put in: crayon in basket		
16	Put in: spoon in cup		
17	Put in: peg in bowl		
18	Put in: craft stick in basket		
19	Put in:		
20	Put in:		
21	Put on: peg on board		
22	Put on: ring on stacker		
23	Put on: lid on playdough container		
24	Put on: lid on container		
25	Put on: bowl on plate		
26	Put on: bear on block		
27	Put on: block on eraser		
28	Put on:		
29	Put on:		
30	Put on:		
31	Stack: Legos		
32	Stack: cups		
33	Stack: plates		
34	Stack: bowls		
35	Stack: blocks		
36	Stack: lids		
37	Stack:		
38	Put together/snap: pop beads		
39	Put together/snap: pegs		

39

Motor Imitation with Objects

	Target	Date introduced	Date Mastered
1	Put together/snap: toothbrush case		
2	Put together/snap:		
3	Put together/snap:		
4	Put together/snap:		
5	Put together/snap:		
6	Put together/snap:		
7	Put together/snap:		
8	Pull/take apart: pop tube		
9	Pull/take apart: lever on See 'n Say		
10	Pull/take apart: toothbrush case		
11	Pull/take apart: pop beads		
12	Pull/take apart:		
13	Pull/take apart:		
14	Pull/take apart:		
15	Pull/take apart:		
16	Pull/take apart:		
17	Tap on table: block		
18	Slide back and forth on table: block		
19	Tap on table: bear		
20	Slide back and forth on table: bear		
21	Tap on table: cup		
22	Slide back and forth on table: cup		
23	Tap on table: spoon		
24	Slide back and forth on table: spoon		
25	Tap on table: peg		
26	Slide back and forth on table: peg		
27	Tap on table: eraser (board eraser)		
28	Slide back and forth on table: eraser		
29	Tap on table: car		
30	Slide back and forth on table: car		
31	Tap on table: ruler		
32	Slide back and forth on table: ruler		
33	Tap on table: craft sticks		
34	Slide back and forth on table: craft stick		
35	Tap on table: glue stick		
36	Slide back and forth on table: glue stick		
37	Tap on belly: ruler		
38	Tap on belly: craft stick		
39	Tap on belly: block		
40	Tap on belly: bowl		

Motor Imitation

	Target	Date introduced	Date Mastered
1	Tap table (one hand)		
2	Slide one hand back & forth on table (like wiping)		
3	Clap hands		
4	Tap hand on opposite forearm		
5	Slide hand up and down opposite forearm		
6	Pat legs both hands		
7	Tap belly		
8	Rub hands together		
9	Rub hand on belly		
10	Tap table both hands		
11	Tap side of leg with one hand (like sign for dog)		
12	Knock on table		
13	Place one hand on top of other on table (palms down)		
14	Touch arm		
15	Fold hands with fingers interlocked on table ("ready hands)		
16	Tap head		
17	Touch cheeks		
18	Touch nose		
19	Stomp feet		
20	Pat elbow		
21	Wave		
22	Touch ears		
23	Touch chin		
24	Cross arms on chest (like hugging self)		
25	Stand up		
26	Sit down		
27	Jump		
28	Touch shoulders		
29	Arms up		
30	Pointer finger taps table		
31	Pointer finger to palm of opposite hand		
32	Fist to palm of opposite hand		
33	Right hand over heart		
34	Hand over mouth		
35	Sign for "pig"		
36	Hands on knees		
37	Sign for "book"		
38	Sign for "cup"		
39	Sign for "paint"		
40	Sign for "shoes"		

Listener Responding

- While listener skills are important to teach early on, such skills may be facilitated through an emphasis on speaker skills
  - Mand, echoic, tact
- There are two types of early listener responding skills targeted for instruction:
  - Following verbal directions
  - Discriminating objects in the environment when named

Listener Responding (LR): Level One

- Schedule adequate opportunities for instruction
- Sequence skills from easy to hard
  - Begin with following instructions in context
  - Teach targets for actions already mastered in imitation
  - For selecting named items, begin with small field size and far out non-exemplars (items that are not similar to the target being taught)
- Keep in mind that the tact may facilitate the development of LR discrimination
- Plan to fade prompts (appropriate use of transfer trials)
- Teach discrimination as early as possible
- Consistently use correction procedures
- Provide sufficient training to establish generalization and fluency
- In some cases, may need to teach scanning and/or response skills in isolation from the discrimination

Following Verbal Directions

- This skill is taught through several processes:
  - Condition following the direction as a reinforcer
    - State direction in simple terms
    - Use promise reinforcer or teach in context of strong MO
    - "Come here" program as an example
  - Teach through transfer from context controlled responses
  - Teach following the direction through imitation to LR transfers
    - Generally imitation of the action to be followed is taught first
    - Can be used for a range of motor actions: sit down, stand up, clap hands, tap head, etc.

Discriminating Named Objects in the Field

- Also referred to as LR discrimination
- Often difficult to teach at earliest levels of skill acquisition (it is unmediated unless child has tact or echoic skills)
- Often easier to teach when tact is acquired
- May start with selecting reinforcers when named (this may not be advised if MO between items in field is not of equivalent strength)
- May also begin with teaching "give" item in isolation on table
  - Teach skill with common items or items student regularly encounters

Discriminating Objects in the Named

- Field size faded in through use of single distractor and the relative proximity of distractors
- Prompt is usually imitative (pointing to the item named)
- Discrimination for any item is not mastered until the discrimination occurs in a field size of three
- Do not focus on this program at the expense of teaching verbal operants (mand, echoic, tact)
- Do spend time labeling things that the student sees
  - Establish parity for vocal response

Objects Versus Pictures/Identical and Non-identical Matching

- Generally, begin match to sample training with objects
- Fade in picture to picture
- Object to picture match next level
- Start with identical items
- Fade in non-identical items with **similar** features gradually (this does not include categorical matching)

Field Size (term is inter-changeable with "Array")

- May need to begin match to sample with training child to give a single item to the teacher or place single item in proximity to another without requiring discrimination
- Shape match to sample in field size of one
  - Hold up item and say "give" while holding out other hand
  - Physical prompts may be needed at first
  - Use imitative (gestural) prompts as soon as possible

Field Size

- Fade in field size of three
- Vary target location in the array
- Match to sample skill is not mastered until the match is made in a field size of at least three
- Student will eventually need to learn to match in larger arrays and messy arrays

Match to Sample

	Target	Date Introduced	Date Mastered
	NO DISCRIMINATION-Use identical items		
1	Give (block)-staff holds item up and one hand out-item in front of student on table		
2	Give (bear)		
3	Give (ball)		
4	Give (cup)		
5	Give (marker)		
6	Give (eraser)		
7	Give (book)		
8	Give (peg)		
9	Give (spoon)		
10	Give (puzzle piece)		
11	Give (block)-staff holds item up and one hand out-item on R bottom side of table		
12	Give (bear)		
13	Give (ball)		
14	Give (cup)		
15	Give (marker)		
16	Give (eraser)		
17	Give (book)		
18	Give (peg)		
19	Give (spoon)		
20	Give (puzzle piece)		
21	Give (block)-staff holds item up and one hand out-item on top (1 foot away) of table		
22	Give (bear)		
23	Give (ball)		
24	Give (cup)		
25	Give (marker)		
26	Give (eraser)		
27	Give (book)		
28	Give (peg)		
29	Give (spoon)		
30	Give (puzzle piece)		
31	Give (block)-staff holds item up and one hand out-item on R top (1 foot away) of table		
32	Give (bear)		
33	Give (ball)		
34	Give (cup)		
35	Give (marker)		
36	Give (eraser)		
37	Give (book)		
38	Give (peg)		
39	Give (spoon)		

Teaching Scanning and other Response Skills

- Avoid "look here" or "Johnny, look here"
- Use sufficient 0 second prompts but fade prompts asap
- Fade in complexity of array
- May need to start with scanning between reinforcers
- Keep field dynamic (avoid shaping up location selection bias)
- Avoid mastering in field size of 2
- Teach skills such as touching item in various locations
- Teach response (e.g. "touch", "give")

Establishing Social and Play Skills: Level One

- The main focus for early learners is conditioning items, activities and peers as reinforcers
- Motivational variables: establishing the value of social interactions
- Be careful not to target eye contact too early (rather condition others as reinforcers as above)
- Spontaneity: hard to program for! (Comes from multiple exemplar training and fluent responding) *Social items 4-5*

Dylan

- 6 Years old
- Attends Autism support classroom (elementary)
- 1st year in classroom
- Barriers for Dylan included instructional control issues, response requirement weakening MO, and impaired mand repertoire

Dylan Programming

- Initial Programming:
  - Intensive mand training
  - Establishing instructional control
- 2nd Phase Programming:
  - Imitation
  - Match to sample
  - Tacting common items
  - Vocal Shaping
  - Conditioning peers as reinforcers
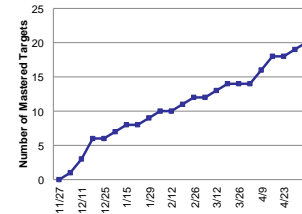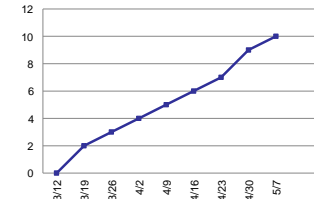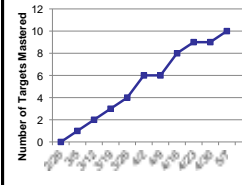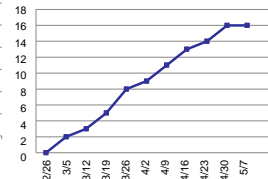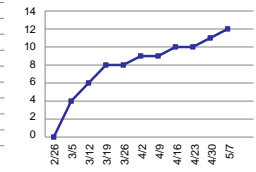
Total Cumulative Skills in 20 weeks: 68 (20 Mands)

47

Early Learners: Object Sort System

- Early learners must typically be taught context-controlled responses using objects rather than pictures
- Context-controlled response examples:
  - LR "Put in:" give student item with only a container on the table
  - LR "Give:" student holding item and teacher presents hand out
  - LR "Take:" teacher holds item out to student
  - "Do this:" teacher models putting item in container

In Box-Out Box

- Use boxes that are large enough to hold all items used in object sort system
- Clearly label boxes with moveable labels
- Small items that are used in tandem can be velcroed together
- Make boxes interchangeable, so when all items in out box, out box can be moved and serve as inbox
- Place boxes in a position where they can be easily accessed to promote short intertrial intervals

Early Learner: Object Sort Poster Examples

Straw	Ball	Spoon	Crayon	Sponge
"do this" (put in cup or bowl or basket)	"Do this" Rolling ball	"do this" (put in basket)	"do this" (move here to there)	"do this" (put in basket)
"do this" (tap on desk)	"Do this" put in cup	"do this" (tap on desk)	"do this" (put in cup)	"do this" (tap on desk)
"do this" (slide on desk)	"Do this" pick up	"do this" (slide on desk)	"do this" (tap on desk)	"do this" (slide on desk)
"do this" (pick up)	"Do this" take	"do this" (pick up)	"do this" (pick up)	"do this" (pick up)
"do this" (put on book)	"Do this" touch	"do this" (touch)	"do this" (touch)	"do this" (put on book)
"do this" (touch)	"tap" (on desk)	"do this" (put on bowl)	"do this" (put on book)	"do this" (touch)
"do this" (put on book)	"touch"	"do this" (tap on cup)	"do this" (tap on cup)	"put in" (cup or bowl)
"do this" (tap on cup)	"give"	"do this" (move here to there)	"do this" (move here to there)	"put on" (book)
"do this" (move here to there)	"take"	"give"	"give"	"give"
"put in" (cup)	"put on" (book or cup)	"touch"	"touch"	"touch"
"touch"	"pick up"	"take"	"take"	"take"
"give"	"put in" (bowl)	"pick up"	"pick up"	"pick up"
"take"	"Match Ball"	"put in" (cup or bowl)	"put in" (cup or bowl)	* "Match Sponge"
"pick up"		"tap" (on desk)	"tap" (on desk)	
"tap"		"Match Spoon"	"Match Crayon"	
"Match Straw"				

Sample Chart for Object Sort

Blue's Cues Book
LR: Give   I: Tap
LR: Open   I: Open
LR: Push (button)   I: Tap on table
LR: Touch (held in front)

Cups:
LR: Stack   I: Tap on table
LR: Put in any item   I: Tap on belly
LR: Give   I: Put item in
   I: Slide back and
     forth on table

Blocks:
LR: Give   I: Tap on table
LR: Touch (held in front)   I: Tap on belly
LR: Touch (on table)   I: Slide back and
     forth on table
   I: Put in any container

Tooth Brush Case
LR: Give   I: Tap on table
LR: Open   I: Open
LR: Touch (held in front)   I: Slide back and
LR: Touch (on table)   forth on table

Pull Tube:
LR: Pull   I: Tap on table
LR: Give   I: Tap on belly
LR: Touch held in front   I: Put item in
   I: Slide back and table
     forth on table

Playdough Can:
LR: Stack   I: Tap on table I:
LR: Give   Tap on belly I:
LR: Touch (held in front)   Slide back and
LR: Put in any item   forth on table

Sample Charts for Generalized Skills

Generalized LR

"Put in"
- Item in hand/container held in front
- Item in hand/container on table directly in front

"Touch"
- Item held in any position
- Item anywhere on table within reach

"Give" (with hand out as context)
- Item in hand
- Item anywhere on table within reach

Sample Charts for Generalized Skills

Imitation

- Clap
- Tap Table

Imitation w/Object

- Tap item on table
- Put item in container
- Push button on toy
- Slide item back and forth on table

Early Learner: Object Sort Bins

Seth

Age: 12 years

Special Education eligibility: Autism

Seth
Programming:

- Primary Response Form: Sign Language
- Mand: Manding for items sign or vocal
- Listener Responding: selecting named common items, performing actions, body part
- Tact: common items
- Intraverbal: fill-in fun phrases/common phrases
- Motor Imitation: with and without objects, future signs
- Visual Performance/Match to Sample: shapes/colors, non-identical pictures-field of 10
- Echoic: CV, some early Kauffman breakdowns

Total Cumulative Skills in 31 weeks: 261
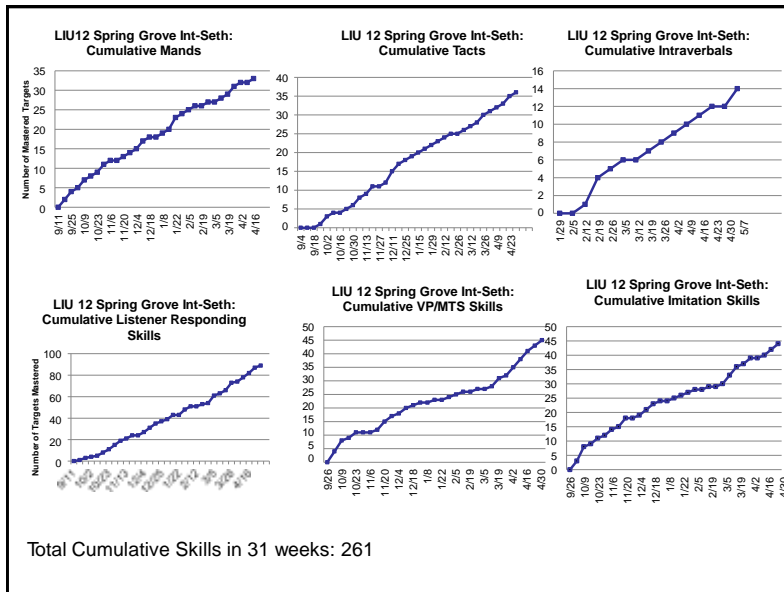
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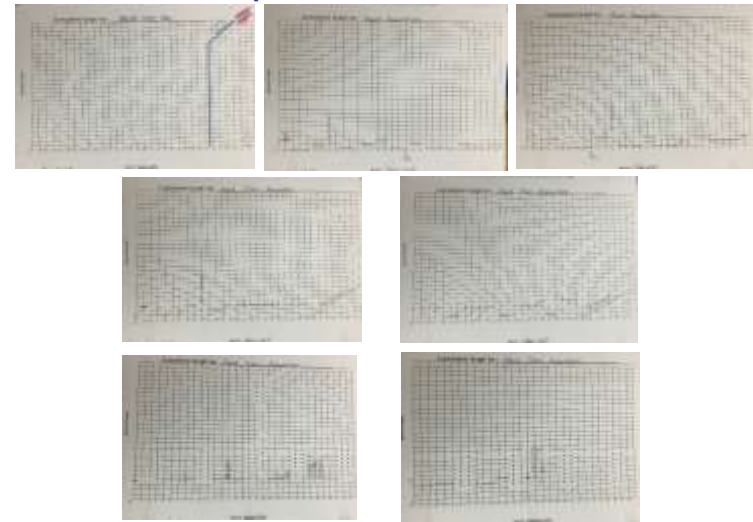
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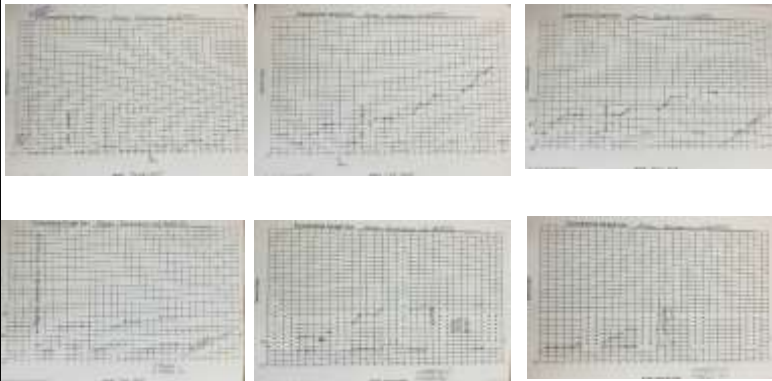
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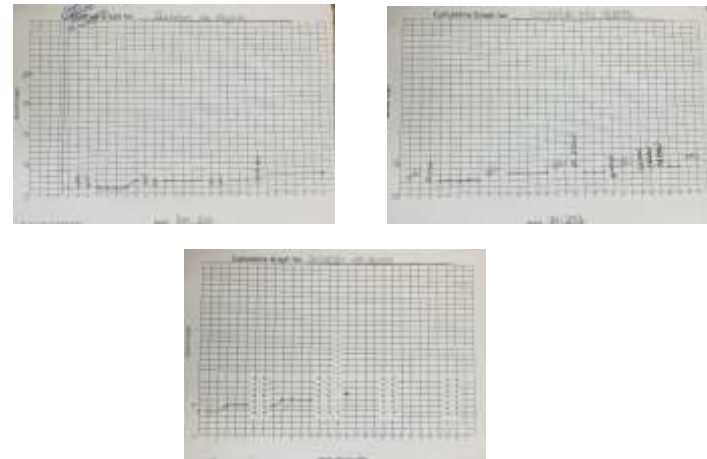
Listener Responding
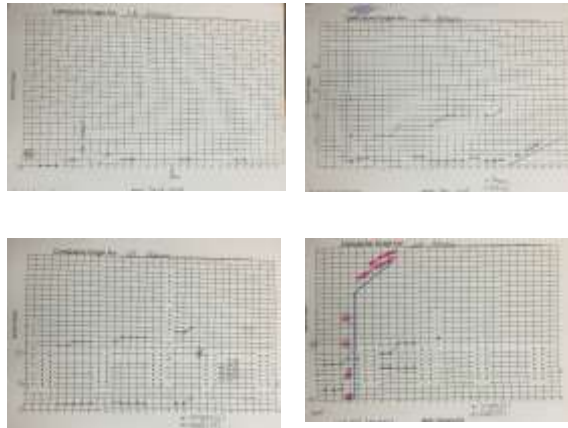
Broadening Repertoires:
Common Programming Procedures
for Level 2 and Related Protocols

Level 2 Programs: Purpose and Considerations

- Careful programming and sequencing of skills helps avoid producing unwanted barriers that will impede development of a broad language repertoire and which we must eventually address in the future.

- Considerations:
  - Don't be tempted to move too fast through these intervention programs.
  - Careful analysis of the appropriates sources of control.
  - Build a solid foundation of skills on which to base advanced skills…**build atomic repertoires!**

Mand Program Considerations

- Expand mands for items, activities, actions: be careful not to stop #5 from level 1 at the 10 criteria
- Increase rate of manding
- Mands for missing items
- Spontaneous mands and acquiring novel mands without specific training will often come with multiple exemplar training and density of opportunity to mand (may be necessary to teach spontaneous mands)
- Two-component mands (action-item, adjective item, action-adverb)
- Multiple component mands
- Y/N mands:
  - Child is not the one to initiate
  - Can become a generalized mand

Imitation Program Considerations

- Imitation of objects requiring discrimination
- Fine motor imitation
- Imitation fluency
- Multiple step motor imitation (beyond two steps generally require mediating responses)
- Imitation free of verbal S^D (fluency drills may help in teaching this step)

Tact Program Considerations

- Expand tacts for items
- Tacting ongoing actions
- Tact parts of items
- Tacting Locations
- Tact class of items
- Two component tacts (noun-noun, noun verb)
- Tact Fluency

Listener Responding Program Considerations

- Responding to varied verbal instructions (verbal S^D)
- Discriminating items in larger fields, in messy arrays, and with similar stimuli
- Continue expanding performing motor actions on command
- Discriminating items in picture/book scenes and/or the natural environment
- Discriminate parts of items

Visual Performance/Match-to-Sample

- Match identical items in larger fields, messy arrays, and with similar stimuli
- Match non-identical items (same progression as identical, if necessary)
- Replicating 3-D block designs, block designs on pictures as well as from pictures
- Replicate sequence patterns

Social and Play Skills

- Peer-Peer pairing
- Peer-Peer manding
- Play/Leisure skills: can, and should, include independent engagement.

Intraverbal Program Considerations

- Fill in responses
  - Fun activities
  - songs
- Responding to questions regarding personal information
- Intraverbal by feature, function, and class
- Answering what, who, where questions

Classroom Routines and Group Instruction

Classroom Routines
- Completing classroom routines (e.g., packing, unpacking, lining up, etc.)
- Work independently for brief periods of time and stay on task

Group Instruction
- Respond in dyads and small groups to known instructions (unison/choral responding)
  - Choral/unison responding: Students' ability to respond along with others in a group setting (responding on signal).
  - Individual Responding: Student's ability to respond when called on in a group setting.
  - Waiting for others individual responses: Student's ability to remain quiet and attentive when it is another student's individual turn to respond.

Level 2 Protocols and Guidelines

Tact of Actions

- Tact of actions introduced when
  - Student has acquired a wide range of tacts of objects and pictures
    - 100+ approximately: this is not set in stone
  - Fluency in the tact repertoire
  - When student can tact several examples of items (some generalization established)
  - When student is learning new tacts for items within only a few teaching trials

Stimuli Used in Tact of action

- Show actual model of ongoing action (act out or show video)
- Avoid two-dimensional static pictures of tacts of actions
- 2-D stimuli risk establishing tact under wrong stimulus control
  - The item rather than the action controls saying the action word

Tact of actions

- *Two types of actions to teach as tacts:*
  - *Tacts of <u>motor actions</u>*
  - *Tacts of <u>actions on objects</u>*
- *Tacts of actions on objects: usually pulled from known tacts of objects*
  - *The tact of the item may interfere with acquisition of tact of the action (a discrimination is involved.)*
  - *Tacts of actions on objects have some advantages for teaching verb-noun (and noun verb combinations.)*

Protocol for Tacts of Actions

- Assess known tacts for objects if the action involves an object
- Assess tact of action repertoire
  - some tacts of actions may be learned prior to explicit instruction
- Teach through errorless process
  - Prompt Transfer Distract Check
- For tacts of actions with objects will need to run discrimination trials:
  - What is it?
  - What is it doing?
- Data collected through cold probe procedures

Teaching the Tact of Action

- Basic Steps: Tact of Action
  - Model action and prompt tact of action with Echoic Prompt
  - Model action and Run second trial with No echoic prompt (Transfer)
  - Run distract Trial (including trial for tact of object)
  - Model action, run check trial for tact of Action

- Demonstration

Data On Object/Action Tacts

- Cold probe mastery
- Decisions on discontinuing program:
  - When novel tacts of actions are acquired with very few teaching trials
  - When tacts of actions are easily generalized to novel examples

Multiple Component Tacts: Actions-Objects

- Taught directly through discrimination training under conditions in which both components (verb-noun) exert functional control
  - The tacting of the action and the object makes sense!
- Establishing the appropriate source of control
  - Problem of rote carrier phrases
  - Avoid teaching "carrier" phrases in which the autoclitic informs the listener of the speaker's source of stimulation ("I see a...") too early
- Note: the purpose is not to increase MLU, but rather to increase functional control of listener.

Teaching the Two Component Tact

- Probably best started with tacts of <u>actions on objects</u>
  - two component tacts of motor actions may limit re-combinatorial options: "hands clapping" (not much else claps!)
  - Tacts of actions on objects are re-combinatorial:
    - <u>Across objects</u> (rolling marker; rolling pencil, rolling ball)
    - <u>Across actions</u> (rolling ball, bouncing ball, throwing ball)

Teaching the two component tact

- Run a trial for tact of object (can be done at any phase in PTDC)
- Run a trial for tact of action
- Prompt the student to emit the two component tact, usually with an echoic prompt and a verbal S^d to "say the whole thing about what you see"
- Fade prompt with a transfer trial
- Distract
- Check

» *Demonstration*

Data On Object/Action Tacts

- Cold probe mastery
- Decisions on discontinuing program:
  – When novel combinations are emitted for known tacts of items/tacts of actions without direct teaching

Skill Tracking Sheet
Student Name: _____   Skill: Tact of Verb-Noun Combinations

	Target	Date introduced	Date Mastered
1	Rolling Pencil		
2	Rolling Ball		
3	Rolling Marker		
4	Rolling Bottle		
5	Rolling Glue		
6	Tapping Pencil		
7	Tapping Ball		
8	Tapping Marker		
9	Tapping Bottle		
10	Tapping Glue		
11	Spinning Pencil		
12	Spinning Ball		
13	Spinning Marker		
14	Spinning Bottle		
15	Spinning Glue		
16	Coloring Ball		
17	Coloring Tree		
18	Coloring Flower		
19	Coloring Circle		
20	Coloring Car		

Tacts of Parts/Features

Tacting Parts/Features of Items

- The student tacts parts or features of objects. Also can be described as Parts/Whole Tacting
- When presented with an object or picture of an object can the learner label its parts?
  - For bicycle the child tacts the wheel, seat, handlebars, pedals, and chain
- The stimuli that evokes the response is the specific part/feature.

Skills Needed Before Teaching Tacts of Parts/Features

- Mastered many tacts
  - About 100 mastered tacts of objects/pictures
  - Multiple exemplars of most tacts mastered
  - Fluency of tact response should be considered
  - Acquiring new tacts of items and actions within only a few teaching trials
- Receptive discrimination for the objects or items involved

Teaching and Programming Considerations:

- Teach tacting features on items that are strongly acquired as tact
- Intersperse trials for tacting the <u>whole item</u> during training
- To prevent rote responding, don't tact parts of an item in the <u>same order</u> each time.
- May teach tact and receptive features at the same time

Teaching and Programming Considerations:

- Choose targets that are relevant for the learner from the mastered tacts on the skill tracking sheet.
  - Is the target commonly what the learner would come in contact with in his/her environment?   (e.g., phones – there are many different styles of phones including cell phones verses house phones)
- Start teaching this skill with objects that have very discrete parts.
- If not feasible to teach skill with object , use pictures to teach tact of parts and features
  - Pictures must have distinct/discernable parts if they are to be used.

Teaching Tact of Part/Feature

- Prompt trial with <u>echoic</u> for the <u>feature</u>
- Transfer to tact of feature with no prompt
- Distract trials including a tact of whole item
- Check trial for feature

» Demonstration

**Tact parts and features of items:
teaching trial example**

Trial	Teacher's Response	Learner's Response
Tact Prompt for part	Presents object - car "What's this part called?" wheel (while pointing to wheel)	"Wheel"
Tact transfer	"What's this part called?"	"Wheel"
Tact distracter	"What's this called?" (picture of cup)	"cup"
Echoic distracter	"Say pretty bunny"	"pretty bunny"
Tact trial item	Presents object - car "Tell me what the whole thing is called"	" a car"
Tact check	Presents object - car "What is this part called"	"wheel"

		Target	Date Introduced	Date Mastered
1	Pencil:	Eraser		
2		Point		
3	Car:	Wheels		
4		Wipers		
5		Headlights		
6		Door		
7		Seatbelt		
8		Seat		
9		Window		
10		Trunk		
11		Steering wheel		
12	Bus:	Yellow		
13		Wheels		
14		Door		
15		Windows		
16		Stop sign		
17		Headlights		
18		Wipers		
19		Seat		
20		Steps		
21		Steering wheel		
22	Shirt:	Sleeves		
23		Collar		
24		Buttons		
25		Tag		
26	Pants:	Legs		
27		Zipper		
28		Snap		
29		Button		
30		Pockets		
31		Tag		

Tact of Feature to Listener Responding

- Acquiring the tact of the feature may facilitate the transfer of responding to the feature as a listener: "Touch the mane."
- May occur most readily through the phenomena of joint control.
- Can also transfer to selection of the item when asked: "Which one has a mane?"

Tact of Item when provided with named feature:

- In this verbal conditional discrimination, the name of the feature is used to evoke a tact of the whole item:
  - In the presence of a toy horse:
    - S^d: "what has a mane?" R: "horse"
- Usually only introduced once the discrimination of the tact of item and tact of feature are strong
- Often introduced as a part of intraverbal training (teaching the tact of item by feature is generally used to develop intraverbal response)

Tacting Category/Class

Tact of Item when provided with named class:

- In this verbal conditional discrimination, the name of the class is used to evoke a tact of the whole item:
  - In the presence of an array of items that includes a cat:
    - S^d: "Tell me the one that's an animal"   R: student scans, tacts "cat" upon seeing the cat
- Usually only introduced once the discrimination of the tact of item is strong
- Response involves both responding as a listener and emitting the tact
- Often introduced as part of intraverbal training

Tacting the Class of Items

- The student tacts the category/class of objects. When presented with an object or picture of an object can the student names the class
  - S^d: in the presence of a cat "a cat is a kind of_____"   R: "animal"
- The stimuli that evoke the response are the relevant features that are necessary criteria for inclusion in a particular class of items

*

Skills Needed Before Teaching Tact Class

- Mastered many <u>tacts</u>
  - At least 150 mastered tacts of objects/pictures
  - About 40 tacts of ongoing actions
  - About 25 tacts of parts/features across many items
  - Multiple exemplars of most tacts mastered
  - Fluency of tact response should be considered
  - Learning novel tacts of items, actions, and parts within few teaching trials
- Receptive discrimination for the objects or items involved

Teaching and Programming Considerations:

- Teach tact of class on items that are strongly acquired as tact
- During training, intersperse trials for tacting the whole item
- Tact and LR class are taught at the same time
- At any one time, teach two classes
- Teach each class until the student can tact novel items when provided with the named class as well as provide the class of items not previously targeted

Tact Class of items: teaching trial example

Trial	Teacher's Response	Learner's Response
Tact item by class-prompt	"Tell me an animal" (picture of cat in array with other items)- prompt by pointing out cat	Learner sees and says "Cat"
Tact item by class transfer	"Tell me an animal" (picture of cat in array with other items in different location)	"Cat"
Tact distracter	"What is this part called" (while pointing to whiskers)	"whiskers"
Echoic distracter	"Say baby""	"baby
Tact item by class check trial	"Tell me an animal" (picture of cat in array with other items)	"Cat"

Verbal Conditional Discriminations for Class

- Tacting class is <u>complex verbal behavior</u>
- The student learns to respond based on what is said AND what is seen (or otherwise experienced):
  – In the presence of the question: "What is it?" and a picture of a cat, the child responds "cat"
  – In the presence of the verbal S^d "A cat is a type of____" and a picture of a cat, the child responds by naming the class ("animal", "pet", etc.)
  – Note: verbal conditional discriminations can be part tact and part intraverbal responses

Skills Tracking Sheet:
Student Name:_____Skill: Tact of Class/Tact of Item by Class

Target	Date introduced	Date Mastered	Target		Date introduced	Date Mastered
Tell me an animal: Cat			A cat is a type of:	Animal		
Dog			A dog is a type of:	Animal		
Horse			A horse is a type of:	Animal		
Pig			A pig is a type of:	Animal		
Cow			A cow is a type of:	Animal		
Elephant			A elephant is a type of:	Animal		
Lion			A lion is a type of:	Animal		
Zebra			A zebra is a type of:	Animal		
Sheep			A sheep is a type of:	Animal		
Monkey			A monkey is a type of:	Animal		
Tell me a food: Pizza			A pizza is a type of:	Food		
Hamburger			A hamburger is a type of:	Food		
Hotdog			A hot dog is a type of:	Food		
Sandwich			A sandwich is a type of:	Food		
Spaghetti			Spaghetti is a type of:	Food		
Soup			Soup is a type of:	Food		
Rice			Rice is a type of:	Food		
Chicken			Chicken is a type of:	Food		
French Fries			French fries are a type of:	Food		
Eggs			Eggs are a type of:	Food		

Integration with Other Verbal Operants

- Teaching tacts of class is one aspect of teaching a <u>full verbal repertoire</u> and <u>concepts</u>
- The process of teaching class is often integrated with teaching Features, Functions and Class across Tacts, Listener Responding and Intraverbals (more to come later)

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Tacts Adjectives

Adjectives as Comparative Concepts

- This skill is related to teaching parts/features of items
  - The feature to be tacted is somewhat more abstract (not about the "name" of the part)
- Many adjectives involve making a comparison about some characteristic of an item or items
  - Examples: Size, shape, color, texture
- Teaching will necessarily involve making sure that the characteristic involved is what evokes the tact and not any other attribute

Tacting Adjectives

- Start programming for adjectives when the student has acquired many tacts (100+)
- Will likely be more easily acquired if tacts of parts and actions are already mastered
- Student has acquired some level of <u>verbal conditional discrimination</u>

Tacting adjectives: considerations

- Make the critical attribute clearly <u>distinguishable</u>
  - Initially, use only items that are <u>EXACTLY</u> the same but that <u>differ</u> in only <u>one</u> <u>attribute</u>, which is the attribute that you are teaching.
- At first, avoid using <u>pictures</u>.
  - A red card does not convey redness
  - A picture of a fire does not convey hot
  - A picture of an ice cube does not convey cold
- Use objects that are <u>fluent</u> as <u>tacts</u>
- May teach receptive and tact at the same time.
- Teach items that are relevant to the student.

Teaching Sequences

- Teach two attributes at the same time and use <u>identical</u> objects that vary only in the <u>property</u> you want to teach. (Example: Two bears that are identical except one is big and one is little; Two pencils that are identical except one is long and one is short).

Tacting adjectives: considerations

- Teach one set at a time and mix easy trials between sets.
- Be sure to intersperse <u>tact trials</u> for the object with trials for tacting its <u>properties</u> to prevent <u>stimulus control</u> errors. In other words run discrimination trials.
- Change your <u>field</u> around every time you teach to prevent rote responding.
- Randomize the presentation of trials (Teach big, big, little, big – mix it up).
- Intersperse teaching trials with easy trials.
- Follow steps outlined below. If student fails at any step then continue teaching that step until criteria is reached.

Teaching adjectives: protocol

- Begin instruction by teaching several sets of <u>identical stimuli</u> for each attribute that vary only in the dimension you are teaching.
  - Big/little identical dogs
  - Big/little identical balls
- Be sure that the adjective controls the response and not any other variable
  - For size: use the same object as an exemplar of both bigness and smallness; same for length and most other comparative adjectives
- As soon as possible be sure that the identical sets involve <u>three</u> or more exemplars varying only in the relevant <u>attribute</u>
- Once sets are mastered, probe <u>novel sets</u> that are also identical but differ in the dimension you are teaching.
- Eventually introduce comparative exemplars that vary by other <u>irrelevant</u> attributes

Tacting adjectives: teaching trial example

Trial	Teacher's Response	Learner's Response
Tact trial with echoic prompt	The S^d is two identical bears, one is big and one is small. The teacher points to the big bear and states… "Let's talk about size". "What size?"… " Big"	"Big"
Tact transfer	"What size?"	"Big"
Tact trial with Echoic prompt	Teacher points to small bear and states… "What size?"… " Small"	"Small"
Tact transfer	"What size?"	"Small"
Receptive distract	"Touch your ear"	Touches ear
Tact check	"What size?"	"Small"
Intraverbal distract	"What's your name?"	"Jacob"
Tact check	"What size?"	"Big"
Continue with tact checks. Vary asking big and small with distracter trials in-between as shown above. End run through with the below tact check.		
Tact check	"What is this thing called"?	"A bear"

Skill tracking adjectives

	Date Introduced	Date Mastered
Target: Long/Short		
Identical Sets:		
Pencils		
Straw		
String		
Probe Novel Identical		
Ribbon		
Non-identical pairs		
Previously taught as alternate attribute (if comparative)		
NET		
Intraverbal Opposites:		

Tacting adjectives:
data based decision making

- Ongoing analysis of student responding to determine when and how to fade prompts.
- Decisions on when to discontinue program should be based on student's ability to tact a wide variety of adjectives, follow instructions that involve adjectives in novel (untrained) situations, across settings, and instructors.
- Student's ability to acquire novel targets without intensive teaching.

Tacts of Prepositions

Scope of this training component

- Prepositions may involve:
  - Tacting a relative spatial location of one object to another (static items: over/under; in front/behind)
  - Tacting the relative temporal location of one event to another (before/after)
  - Tacting the relative dynamic motion of one object to another (towards, going over; going around)
- We will focus only on teaching static prepositions in this training
- The principles will transfer to other types of prepositions

Tacting prepositions

- A tact of a preposition is tact of the relative position of two items

- Be sure that such tacts are under the correct stimulus control:
  – Student may inadvertently learn to tact some other attribute of the arrangement other than the position one item to the other (such as differences of the items in features or other characteristics.)
- In order to ensure that the relative position of one item to the other is learned, design instruction to flawlessly teach the relation

Prerequisites to Tacts of Prepositions

- Broad tact repertoire (100+ tacts for items, tacts for actions, adjectives, multiple component tacts (noun-verb, adjective-noun), and acquiring about at least 3 novel tacts per week)
- Ability to echo phrases.
- Verbal conditional discriminations

Tacting Prepositions: Considerations

- Teach prepositions in sets of two and use several pairs (3-6 pairs) of stimuli to teach each set
- Use echoic prompts on errorless trials
- Response to be prompted is multiple component tact of the prepositional arrangement
  - "under the table"
  - "behind the box"
  - "between the shoe and the cat"
- Intersperse trials for tact of items involved (as distract trials.)
  - May also include tacts of features or other mastered tact skills
- Have student master through cold probe each of the sets you have selected
- When all sets are mastered probe a novel sets

Teaching prepositions: protocol

- Initially teach two prepositions as active programs in order to establish discrimination
- Use arrangements of stimulus items so that they present the full range of relative positions targeted for the concept
  - Coin on the top right side of a box
  - Coin on the top left side
  - Coin on the center of box
  - Coin on the top edge of the box
- Contrast the target preposition with interspersed trials for the other targeted preposition or previously mastered prepositions
- Once sets are mastered, probe with novel examples of the stimulus arrangement
- When mastered in intensive teaching, probe and if necessary teach, in the natural environment

Tacting Prepositions: Teaching Trial Example

Trial	Teacher's Response	Learner's Response
Tact trial with echoic prompt	S^d's – dog and a car. The dog positioned in front of the car S^d: "Where is the dog?" Prompt: "in front of the car"	"in front of the car"
Tact transfer	S^d: "Where is the dog?"	"in front of the car"
Tact trial with echoic prompt	"Where is the dog?" "behind the car"	"behind the car"
Tact transfer	"Where is the dog?"	"behind the car"
Distractor	"What part of the car is this?"	"bumper"
Tact check	"Where is the dog?"	"in front of the car"
Distractor	"What is it?"	"dog"
Tact check	"Where is the dog"	"Behind the car"

Integration with Other Operants

- Remember the LR must be taught across a variety of response formats
  - S^d: "put this on the box"
  - S^d : "touch the one that is on the box"
  - S^d : "get on the box"
  - S^d : "get the book that is on the box"

- Again: note the role of verbal conditional discriminations.

Skill tracking prepositions

	Date Introduced	Date Mastered
Target: In		
Target Sets:		
Coin/Box		
Clip/Cup		
Bear/House		
Novel sets		
Pencil/Bag		
NET:		

	Date Introduced	Date Mastered
Target: On		
Target Sets:		
Coin/Box		
Clip/Cup		
Bear/House		
Novel sets		
Pencil/Bag		
NET:		

Teaching Prepositions:

- Decisions on when to discontinue program should be based on student's ability to tact a wide variety of prepositions and novel examples, follow instructions that involve prepositions in novel (untrained) situations, across settings and instructors.
- Student's ability to acquire novel targets without intensive teaching.

Listener Responding and Multiple Discriminations

Multiple LR Discrimination

- Not explicitly listed on VB-MAPP Milestones
- Is included at 8-d LR task analysis
- Is an important skill; usually taught at a level similar to tacts of actions and features
- Student has acquired wide range of single LR discriminations and responds easily to such tasks.
- Student must have strong echoic/imitation and tact repertoire for items to be discriminated

Demonstration of Teaching Procedure
Multiple LR Discrimination with Joint Control

- Steps:
  - S^d presented (select 3 items in sequence)
  - Do not use imitative prompts
  - Rehearsal phase: have student echo or imitate the 3 item sequence and then self-echo or self-imitate
  - Have the student rehearse more than you think is necessary, but a minimum of 3 times
  - Re-present the S^D and have student respond

    - Model with vocal and signed responses

Yes No "Tacts"

GENERAL OVERVIEW OF PROCEDURES

- Answering "yes" or "no" in response to questions about a non-verbal stimulus. For example:
  - When shown a pencil and asked "Is this a pencil?" the participant would say "yes."
  - When shown a pencil and asked "Is this a drum?" the participant would say "no."
- Yes and No responses are actually:
  - Verbal behavior about verbal behavior (autoclitics)
  - The speakers tendency to say whether they would tact the item as spoken.

CONCEPTUAL ANALYSIS

Teacher Says: Is this a pencil?

"pencil"

(covert echoic)

Teacher Says: Is this a drum?

"drum"

(covert echoic)

Rehearsal: "pencil, pencil, pencil…"

(covert self-echoic)

"pencil"

(tact)

Rehearsal: "drum, drum, drum…"

(covert self-echoic)

(presence of joint control)

(absence of joint control)

"YES"

(descriptive autoclitic)

"NO"

(descriptive autoclitic)
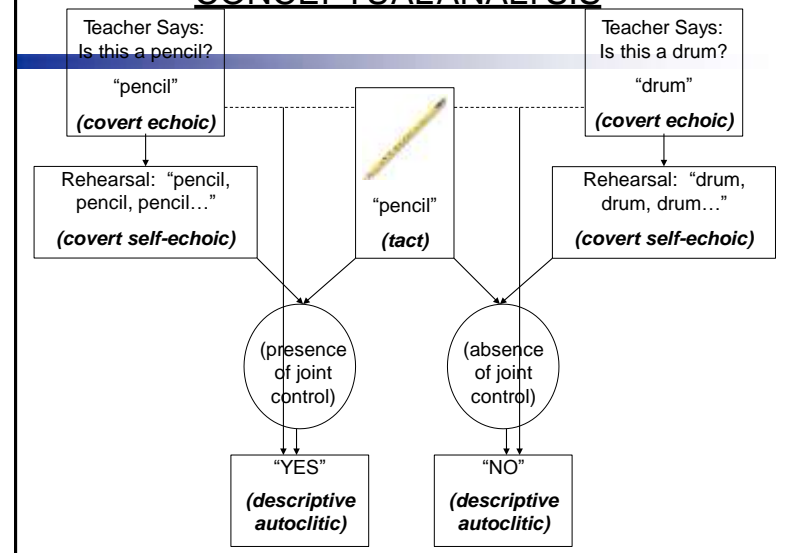
Data Collection

- For yes-no tacts: Use trial by trial data

- Data is recorded by scoring each question as correct (+) or incorrect (-).

Teaching Procedures

- Place object on table directly in front of Student.
- Point to the object and ask the specified question
- If **correct response**, reinforce
- If **incorrect response**, teach using joint control:
  - Point to the object again and repeat the question.
  - Next the instructor draws the Student's attention to the object.
  - Have student tact and rehearse the name of the object three to five times
  - Following this rehearsal, the instructor pauses for 1 to 2 seconds and then represents the question while pointing to the object.
  - If correct, reinforce

Second Error Correction

1. Pause and model the correct response (i.e., "yes" or "no")

2. Pause again and state the correct tact of item: "This is a *(object name)*."

3. Have student tact the item

4. Represent question and follow teaching procedure with rehearsal strategy

Question	Correct/Incorrect	
Is this a pencil? ("yes")	+	-
Is this a pickle? ("no"-pencil)	+	-
Is this a dinosaur ("yes")	+	-
Is this a calendar? ("no"-pencil)	+	-
Is this a pretzel? ("no"-block)	+	-
Is this playdoh? ("yes")	+	-
Is this a TV? ("no"-dinosaur)	+	-
Is this a block? ("yes")	+	-
Is this a guitar? ("no"-block)	+	-
Is this a turtle? ("no"-fork)	+	-
Is this playdoh? ("yes")	+	-
Is this playdoh? ("yes")	+	-
Is this a drum?("no"-pencil)	+	-
Is this a dinosaur? ("yes")	+	-
Is this a tissue? ("no"-block)	+	-
Is this a pool? ("no"-fork)	+	-
Is this a movie? ("no"-block)	+	-
Is this a block? ("yes")	+	-
Is this a book? ("no"-playdoh)	+	-
Is this a pencil? ("yes")	+	-
Is this a block? ("yes")	+	-
Is this a raisin? ("no"-pencil)	+	-

1. Select the first training item (one not acquired during the baseline probe).

2. Develop 20 questions (10 yes as correct response and 10 no as correct response).

3. Randomize sequence of questions across all presentations for each item.

- video

Question	Correct/Incorrect
Is this a marker? ("yes")	+ -
Is this a shovel? ("no")	+ -
Is this a marker? ("yes")	+ -
Is this a zebra? ("no")	+ -
Is this a marker? ("yes")	+ -
Is this a marker? ("yes")	+ -
Is this a Play-doh? ("no")	+ -
Is this a bike? ("no")	+ -
Is this a sandwich? ("no")	+ -
Is this marker? ("yes")	+ -
Is this glue? ("no")	+ -
Is this a marker? ("yes")	+ -
Is this a book? ("no")	+ -
Is this a fence? ("no")	+ -
Is this a marker? ("yes")	+ -
Is this a marker? ("yes")	+ -
Is this a marker? ("yes")	+ -
Is this a donut? ("no")	+ -
Is this a marker? ("yes")	+ -
Is this an Ipod? ("no")	+ -

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Probes of Untrained Stimuli

- Once a target item is acquired, probes of untrained stimuli should be developed

- Following the probes, the next training item is randomly selected and introduced

Relation Between Tacts and Intraverbals

The Relation Between Tacts and Intraverbals

- We talk of things that are present before we talk about things that others say to us
- Intraverbal relations/interactions evoke more relevant responses when the speaker and listener share actual experiences regarding content of verbal behavior ("words" can evoke private events that are tact-like)

  "Xedango are greep"   vs. "We sit on chairs"

The Role of the Tact in Intraverbal Acquisition

- Aside from common phrases and fill-ins for familiar songs, intraverbal training is not usually implemented until:
  – Many tacts of items are acquired
  – Tacts of parts/features and actions are acquired
  – Tacts of class are acquired
  – The student tacts while responding to LR discrimination items (this is not a definite precursor skill, but is a good indication that acquisition will be easier.)

Intraverbal Webbing

Intraverbal Feature, Function, Class (FFC's) and Webbing

- The student will fill in phrases and answer questions regarding the feature, function, and class of items.

- **Example**: When presented with the question (item not present) "What do you write with?" the student will answer "pencil".

- The stimuli that evoke the response is the other person's verbal behavior (the fill in the blank phrase or question).

Prerequisite Skills and Considerations for IV-FFC Training:

- Many tacts items (tact for item involved must be known)
- For function: Tact and LR of item and ongoing action involved.
- For features: Tact and LR of the items, parts and features of the item involved.
- For class: Tact and LR of items in the class as well as tacting the class of items.
- Having a solid base of these skills will avoid establishing intraverbal rote responding. For example, some children may be able to respond "car" when asked to name something with wheels, but may not know what wheels are.
  - *When prompting the intraverbal, generally, use mastered tacts. For example, when teaching the fill in response for "You swim in the _____", the prompt would be showing the student a picture of a pool.*

Intraverbal FFC's and Webbing
Stimulus and Response Classes

Car		Bed		Ball		Cat	
Stimulus Class (Convergent)	Response Class (Divergent)	Stimulus Class (Convergent)	Response Class (Divergent)	Stimulus Class (Convergent)	Response Class (Divergent)	Stimulus Class (Convergent)	Response Class (Divergent)
Something you drive is a	What do you do with a car?	Sleep in a	What do you do with a bed?	You throw a	What do you do with a ball?	You pet a	What do you do with a cat?
Something you ride is a	What do you do with a car?	Something with pillows is a	A bed has	You bounce a	What do you do with a ball?	What has a tail?	A cat has a
Something with wheels is	A car has	Something with blankets is a	A bed has	You kick a	What do you do with a ball?	Something with whiskers is a	A cat has
Something with wipers is a	A car has	Something with a mattress is a	A bed has a	You catch a	What do you do with a ball?	Something with fur is a	A cat has
Tell me a vehicle	A car is a	Tell me a furniture	A bed is a	Something round is a	A ball is	Tell me an animal	A cat is an
Something with a seatbelt	A car has a			Tell me a toy	A ball is a		

Intraverbal FFC's and Webbing

- Utilize a separate skills tracking sheet for feature, function, and class (see examples)
- Initial intraverbal responses for each item   as well as those that apply only to one item will be taught using the usual prompt-transfer-distract-check procedure.
- Once these first FFC's for each item are mastered you will begin the first step of the webbing process.

Preparation of teaching materials:

- For single responses:

Intraverbal FFC: Teaching Trial Example

Trial	Teacher's Response	Learner's Response
Intraverbal Trial with Tact Prompt	"Moo says a____" (with picture of cow present)	"Cow"
Intraverbal Transfer	"Moo says a ____" (no picture)	"Cow"
Intraverbal distracter	"Your first name is?"	"Marty"
Receptive distracter	"Give me the popcorn"	"Gives picture of popcorn"
Intraverbal transfer	"Tell me the one that bounces" (no picture)	"Cow"

Protocol: Intraverbal FFC's and Webbing Phase 2

- Pick the concepts to teach as web(from FFC's taught). From the examples in the above table these could be: things that have wheels, vehicles, furniture, things that are round, toys, animals, things with tails.
- The student should already have one mastered response to each FFC area.
- Continue to add new responses to each of these classes (one at a time).
- As the student masters each response, require naming all of the previously learned responses when asked for them one at a time. For example: "tell me a vehicle …car". Yes, "tell me another vehicle"…."train"…….

Preparation of teaching materials:

- For concepts with more than one response:
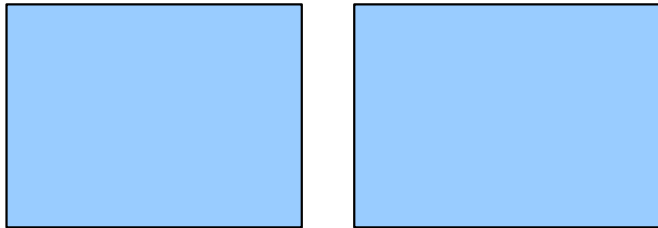
- Write the verbal S^d on a blue 3x5 card and list responses that will be targeted within that concept
- As student masters each item, it should be highlighted on the card

Preparation of Teaching Materials

- If student emits a response for a novel item not currently targeted, mark with a plus (+) as shown below:

Once student can emit multiple novel items, mark the right bottom corner with word "Novel" and add card to easies

- Novel responses

- If you have two consecutive probes correct response for a novel item, it should be highlighted on card and considered mastered
- Responses emitted that are not on card can be added in at any time

Materials Organization for Webbing

- Develop marker cards with titles of concepts (only for those with multiple responses being taught)
- Organize in small card holder/bin in alphabetical order for quick access
- Each tab will include pictures of all <u>mastered items</u>

Teaching Procedures for additional members of a class:

Seven steps:

1. Present verbal S^d and wait for student to emit response for mastered item (repeat as necessary for all mastered members of the class)
   - Example: "Tell me a vehicle" (student responds with mastered item "car")
2. Repeat verbal S^d followed by an immediate prompt
   - Example: "Tell me another vehicle" and show picture of bus for student to tact (may reinforce here if necessary depending on VR)
3. Distract (Run a few easy trials)
4. Repeat steps 1 and 2 (may need repeated more than once)
5. Distract
6. Check
   - Example: "Tell me a vehicle": "car", "tell me another vehicle": "bus"
7. Differentially reinforce

Intraverbal FFC's and Webbing Phase 3

- As new responses are added to the class, also teach the relevant FFC's of the added response.

- Eventually the student will have mastered several responses for each class and, therefore, be able to emit relevant verbal responses to a randomly varied set of questions/verbal S^ds.

Webbing Maps

- It is helpful to create summaries of what the student already has mastered (as a prompt for the instructor)
  – This allows instructor to present questions in a flexible manner to whatever responses a student may emit.

To accomplish this you can set up a binder or folder with clear tabs for each class so you can quickly reference them.

Sample Webbing Map Summary

❖ 2 way arrows indicate student has also mastered the reversal

❖ Highlight means student has other members of that concept mastered
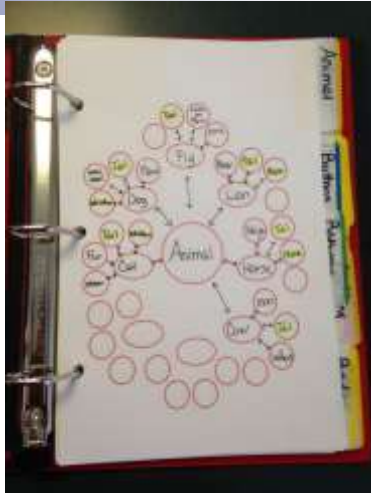
Animal
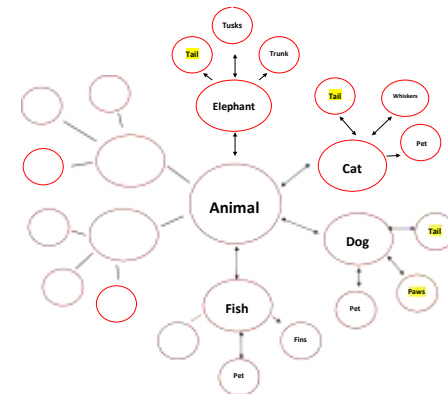
Tail
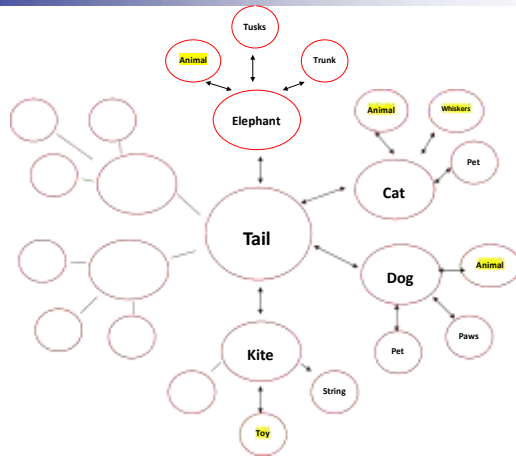
Vehicle
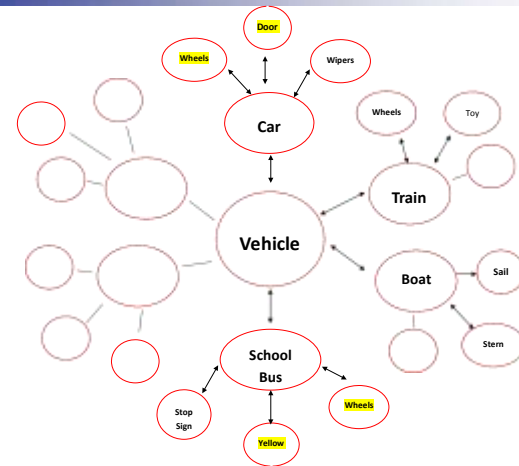
Intraverbal FFC's and Webbing
Data Based Decision Making

- Ongoing analysis of student responding to determine when and how to fade prompts.

- Decisions to discontinue program should be based on student's ability to provide novel intraverbal responses within categories, web within and across concepts, across settings and instructors as well as student's ability to acquire novel targets without intensive teaching.

Skills Tracking Sheet for IV Class

	Target	Date introduced	Date Mastered
1	"A car is a type of " (Vehicle)		
2	"A bus is a type of " (Vehicle)		
3	"A Boat is a type of " (Vehicle)		
4	"A Train is a " (Vehicle)		
5	"A Airplane is a type of " (Vehicle)		
6	"A helicopter is a type of " (Vehicle)		
7	"A shirt is a kind of " (Clothing)		
8	"Pants are a kind of " (Clothing)		
9	"A jacket is a kind of " (Clothing)		
10	"A hat is a kind of " (Clothing)		
11	"Socks are a kind of " (Clothing)		
12	"A dress is a kind of " (Clothing)		
13	"A sweater is a kind of " (Clothing)		
14			
15			
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25			

	Target	Date introduced	Date Mastered
1	Tell me a vehicle: Car		
2	Bus		
3	Boat		
4	Train		
5	Airplane		
6	Helicopter		
7	Tell ,e a clothing: Shirt		
8	Pants		
9	Jacket		
10	Hat		
11	Socks		
12	Dress		
13	Sweater		
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Sample Student Data

Graden: Current School Year

- Tact Program:
  - Actions (completed)
  - Parts/features
  - Class (completed)
  - Adjectives (completed)
  - Multiple component (completed)
  - Prepositions (completed)
- LR:
  - Actions (completed)
  - Select multiple named items (completed)
  - Adjectives (completed)
  - Follow multiple component directions (completed)
  - Prepositions (completed)
- Intraverbal:
  - IV webbing (feature, function, class)

Graden: IV FFC

Danny Verb-Noun

Beyond the Basics:
Common Programming Procedures
for Level 3 and Related Protocols

Purpose of Level 3 Programs

- To continue building on basic learning skills that include more complex language skills.

- Building toward academic performance, group instruction and more complex verbal and social relations (will not cover in depth academic components)

- Procedures need to include:
  - Generalization
  - Spontaneity
  - Transfer between operants
  - Social and verbal interactions with peers
  - Use of new skills in a functional and meaningful way in the student's day to day natural environment.

Teaching Mands at Level 3:

- Mands for removal of aversive stimuli (remember why this is at level 3!)
- Mands for attention
- Mands for information

Expanding the Tact Repertoire

- Tact at least 4 specific aspects of items when presented with rotating verbal questions about the item.
- Tact adjectives (relative concepts: long, big, etc)
- Tact prepositions (may need advanced analysis; is a relative concept)
- Yes/No tacts (remember this is really an autoclitic and quite complex to teach: conditional discrimination or joint control protocols suggested)
- Tact exclusion from category
- Tact pronouns, adverbs
- Tact private events, emotional states, and social situations (with extreme caution of teaching under the right sources of control)

Listener Responding

- Follow instructions involving multiple components (selecting multiple named items, following multiple step directions)
- Following instructions involving adjectives
- Following instructions regarding prepositions
- Follow instructions regarding pronouns and adverbs
- Discriminate among common social situations and emotional states

Expanding Repertoire of Visual Performance/Match-to-Sample Skills

- Matching items in the natural environment
- Extend or continue patterns and sequences
- Sorting items into categories
- Matching models of art/craft type activities

Social and Play

- Responding to peer mands
- Play/Leisure skills…independent
- Play/Leisure…with peers
- Verbal exchanges with peers
- Other relevant social sequences

Intraverbal

- Increased range of intraverbal responses; can include expanding FFC's
- Respond to "WH" questions
- Answer intraverbal yes/no questions
- Describe events, movies, stories
- Answer questions about a story read
- Answer multiple questions regarding a specific topic

Classroom Routines and Group Instruction

Classroom Routines
- Work independently in a group and stay on task
- Retrieving and putting away materials for instruction

Group Instruction
- Respond in larger groups to known instructions (unison/choral responding)
- Learning new behaviors in a group format

Academic Skills in Conjunction or Beyond VB-MAPP

- If student not at grade level, use sequenced and evidence-based curricula to teach academic skills (Reading Mastery, Corrective Reading, Distar Math, Connecting Math Concepts, Language for Learning, Sensible Pencil).

- Make sure students have necessary skills to begin these programs…Placement test does not necessarily give you this information.

- Curriculum-based assessment and familiarity with PA Core Standars are a critical component of programming for academic skills

Damon

Age: 9 years

Category of eligibility: Autism

Damon Programming:

- Mands for Information
- Peer to Peer Mand
- Social Skills Training
- Intraverbal skills (imbedded in social skills training)
- SRA Reading Mastery 1st Grade
- Adapted/sequenced math curriculum

A Helpful Planning Sheet:

Programming Checklist & Worksheet   Student: _____ Date: _____ Program: _____

Student Checklist	Completed	Notes
Confirmed that program is at proper level (from student's assessment(s)	Y N	
Checked for critical component skills before starting new program or increasing the difficulty level of current program (probe or data)	Y N	
Developed a clear definition of the expected student behavior and mastery criteria	Y N	Behavior: Mastery Criteria:
Scheduled practice opportunities to use skill (NET, contrived, captured)	Y N	How often: When: Where: With Whom: Material(s):

Teacher Checklist	Completed	Notes
Reviewed teaching procedures, including prompt and prompt fade procedures	Y N	
Determined a sequence of instruction	Y N	
Determined targets that are relevant to the student	Y N	
Determined/developed data collection system to monitor progress	Y N	
Determined and gathered materials for instruction	Y N	
Planned for generalization	Y N	People Setting Examples
Provided staff training and resources if necessary	Y N	Who What When

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Prior to New Program Selection:

- Issue of response adduction
- Probe for skill acquisition without specific teaching

Some Final Thoughts:

- The challenges presented by many students with autism makes programming an insurmountable task.
- There is much work to be done and efficiency of teaching is not a luxury but a necessity
- The recommendations provided in this presentation are not intended to suggest this is the only way to do things or that there may not be a better was (now or in the future). They are simply considerations, systematic procedures and recommendations for arranging instruction in ways that will likely overcome the common pitfalls
- Teaching basic repertoires for children with autism that lead to combinatorial, novel responding must be a central component of instruction
- Establishing complex repertoires requires an analysis of controlling variables

- **http://webapps.pattan.net/files/PaTTANAutismResources.zip**

Thank You for Your Participation!

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Contact Information   www.pattan.net

Amiris Dipuglia
adipuglia@pattan.net

Pennsylvania Training and Technical Assistance Network (PaTTAN)
6340 Flank Drive, Harrisburg, PA 17112
(717) 541-4960
1-800-360-7282 (toll-free in PA Only)

Commonwealth of Pennsylvania
Tom Wolfe, Governor

Pennsylvania Department of Education
Pedro Rivera, Acting Secretary

Patricia Hozella, Director
Bureau of Special Education