



Verbal Behavior, Verbal Behavior Milestone Assessment and Placement Program (VB-MAPP) and the Picture Exchange Communication System (PECS)

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Superheroes social skills training, Rethink Autism internet interventions, parent training, EBP classroom training, functional behavior assessment: An autism spectrum disorder, evidence-based practice (EBP) training track for school psychologists

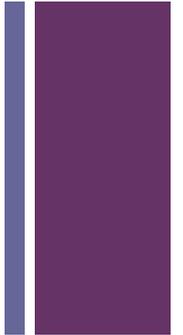
US Office of Education Personnel Preparation Grant H325K12306

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+ Objectives



- Language Acquisition Theory Overview
- B.F. Skinner's Analysis of Verbal Behavior
- Verbal Behavior Milestones Assessment and Placement Program (VB-MAPP)
- Picture Exchange Communication System (PECS)
- Quiz

+ Language Theories

Language is the communication of an individual's thoughts and feelings through a system of signals (sounds, gestures or written symbols) that is understood by another individual.

■ Cognitive/Constructivist Theory

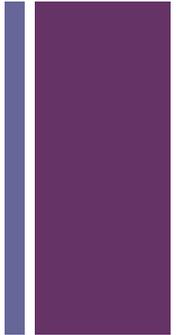
■ Jean Piaget

- Stage Theory
- Expressive and Recessive cognitive processes for language
- Most dominate theory for language
- Many interventions and behavioral applications for autism

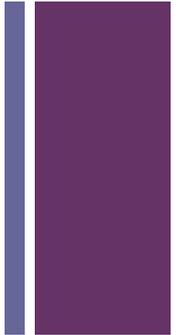
■ Socio-cultural Theory

■ Lev Vygotsky

- Culture is the primary factor for development
- Social plane and psychological plane
- Zone of Proximal Development (ZPD)
- Scaffolding



+ Language Theories



■ Environmental Theory

■ Jerome Brunner

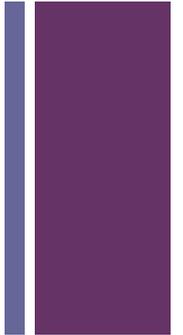
- 3 Modes of Representation
- Language Acquisition Support System (LASS)
- Scaffolding and Motherese

■ Linguistic/Nativist Theory

■ Noam Chomsky

- Biologically basis for language acquisition
- Language Acquisition Device (LAD)
- Universal Grammar
- Components of language

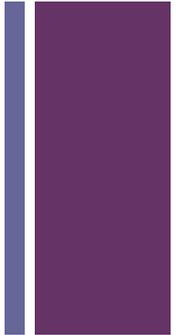
+ Language Theories



■ Behaviorist Theory

- B.F. Skinner
- Verbal Behavior are learned under appropriate conditions of stimulation, response and reinforcements.
- Listener and Speaker Roles in development
- Form and Function
- Unit of Analysis
- Verbal Operants

+ Verbal Behavior



■ Verbal Operants

■ Mands

- Speaker asks for (deMANDS) what he wants
- First verbal operant learned by a child
- Directly benefits the speaker

■ Tacts

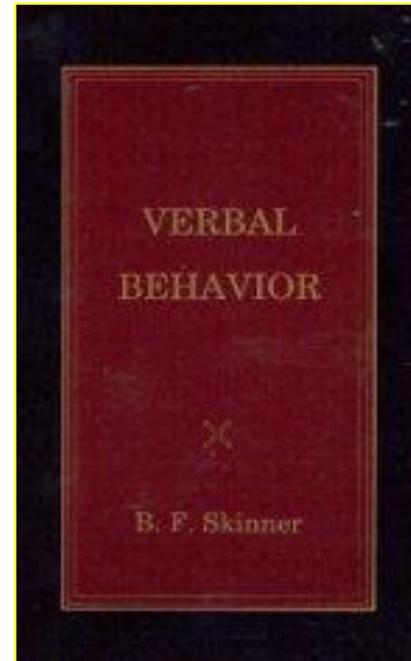
- Speaker names things and actions (makes conTACT) through senses

■ Echoic

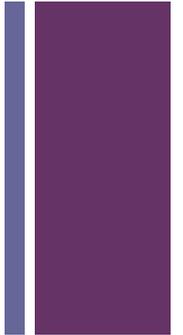
- Repetition

■ Copy to Text

- Repetition by written response



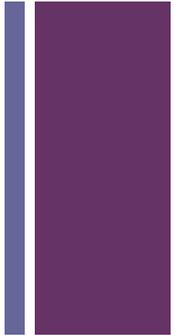
+ Verbal Behavior



- Verbal Operants
 - Intraverbals
 - Speaker responds to the verbal behaviors of others
 - Answering questions, filling in the blanks
 - Textual
 - Understanding what is read
 - Transcription
 - Writing or spelling words that are spoken
- Interventions focus on verbal operants and less on expressive or receptive skills and reinforcements
- Applications include language assessment and interventions



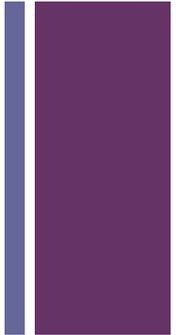
Verbal Behavior Milestone Assessment & Placement Program



- Created by Mark Sundberg
- Criterion-referenced assessment tool
- Guides goals and objectives for both benchmark and development
- Monitoring system
- Assists in placing children in an appropriate educational environment
- Based on B.F. Skinner's analysis of verbal behavior
- Designed for individuals with developmental disabilities, traumatic brain injuries and expressive or receptive delays



Verbal Behavior Milestone Assessment & Placement Program

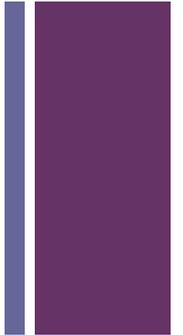


- VB-MAPP
 - Conducting the Assessment
 - Testing Age (any language delayed individual regardless of age)
 - Administration Requirements
 - Basic Understanding of Verbal Behavior, Behavior Analysis and the Components of the Linguistic Structure
 - Methods of Measurement
 - Formal Testing, Observation, Formal or Observation, and Timed Observation
 - 5 Components
 - Skills Assessment, Barriers Assessment, Transition Assessment, Task Analysis and Skills Tracking, and IEP Goals

- Administration Handout

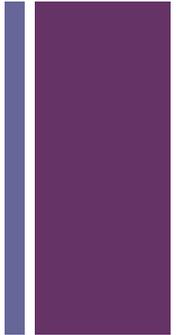


VB-MAPP (Materials for Assessment)



- Materials: testing items (typically everyday items used/seen in the natural environment), test booklet, timers, pencils
- Information: data sheets, mastered target lists, goal/objective progress reports
- Reinforcers: appropriate for the student, easily consumable and/or given up
- Environments: classroom with peers, separate room, playroom with & without peers, playground with peers

+ VB-MAPP (Tips for Administration)



- Administration Tips
 - Reinforcement assessment
 - Establish rapport – pair yourself with fun activities
 - Keep materials and reinforcements out of student’s reach and easily accessible to the tester
 - Reinforce student for correct responses and appropriate behaviors
 - Use an appropriate level of enthusiasm
 - Allow time for breaks
 - During breaks do not play with highly reinforcing items
 - Intersperse known tasks with more challenging tasks
 - Give appropriate responding time (3-5) seconds
 - Do not repeat a task more than 3 times
 - Always end testing on a positive note and a correct reinforcement

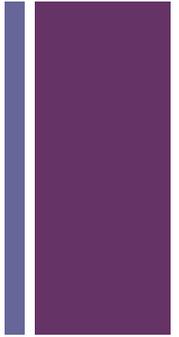
+ VB-MAPP – 5 Components (Skills Assessment)

■ Skills Assessment

- Assesses a representative sample of student's current skills
- 170 verbal milestones across 9-13 skill areas across 3 developmental levels:
 - Level 1 = 0-18 months
 - Level 2 = 18-30 months
 - Level 3 = 30-48 months
- Skills are measured through direct testing, timed & untimed observations, & mastered target lists
- Mand, tact, motor imitation, listener responding, independent play, social behavior and social play, visual perceptual and matching to sample, spontaneous vocal behavior, echoic, intraverbal, linguistic structure, classroom routines and group skills, reading, writing, listener responding by feature, function and class, and math



VB-MAPP (Skills Assessment Scoring)



- Skills Assessment
 - 5 items and 5 possible points for each skill area
 - Total for the 5 items is mark on the top of each skill area
 - Totals for each skill area are added for all three levels and placed on scoring form
 - Each item scored as a 0, $\frac{1}{2}$, or 1 based on criteria in protocol
 - Quick score option
 - Three boxes in all section for multiple administrations
 - Total score on the echoic sub-test is converted to a milestone score on the scoring form

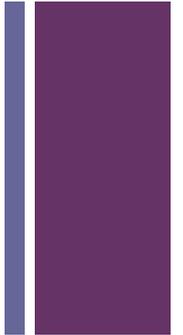
+ VB-MAPP – 5 Components (Barriers Assessment)

■ Barriers Assessment

- Designed to identify barriers to learning and language acquisition
- Looks at 24 common learning and language barriers
- Barriers identified may require intervention prior to incorporating other goals
- A more detailed descriptive and/or functional analysis of the challenging behavior is required
- Negative behaviors, instructional control, defective mand, defective tact, defective motor imitation, defective echoic, defective matching to sample, defective listener repertoires, reinforcement dependent, obsessive-compulsive behavior, hyperactivity, defective intraverbals, defective social skills, prompt dependent, scrolling responses, defective scanning skills, failure to make conditional discriminations, failure to generalize, weak or atypical motivators, self-stimulation, articulation problems, failure to make eye contact, sensory defensiveness



VB-MAPP (Barriers Assessment Scoring)



- Barriers Scoring
 - Rate student on a scale of 1 to 5
 - 1-2 = no significant barriers
 - Formal intervention plan may not be required
 - 3-5 = there is a barrier
 - Should be addressed prior to or as a part of the intervention program
- For some students immediate focus on the intervention may be the removal of a barrier rather than language instruction
- Most common barriers to remove include instructional control problems or behavioral problems

+ VB-MAPP (Transition Assessment)

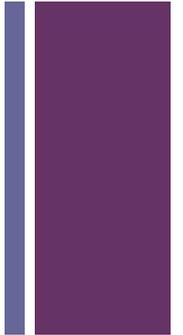
■ Transition Assessment

- Provides quantifiable information that can be used to determine appropriate educational placement
- Looks at 18 skill areas across 3 categories
- Overall VB-MAPP Milestone score, overall barrier score, barriers score on negative behaviors and instructional control, milestone scores on classroom routines and group skills, milestone scores on social behavior and social play, range of reinforcers, rate of skill acquisition, independent academic work, generalization, retention of new skills, natural environment learning, transfer without training, adaptability to change, spontaneous behaviors, self-directed leisure time, general self-help, toileting skills, eating skills



VB-MAPP

(Transition Assessment Scoring)



■ Transition Scoring

■ Rate student on a scale of 1 to 5

■ 1-2 = needs maximum support

- Likely self-contained with constant support

■ 3-4 = needs moderate support

- Likely in some mainstreamed classes with support available as needed
- Support should begin to be faded out

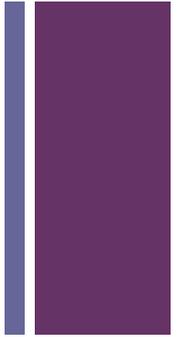
■ 5 = minimal additional supports needed

- Likely in most all classes with typically developing peers
- Student should be closely monitored to ensure new academic and social skills are developed at appropriate rates



VB-MAPP

(Task Analysis and Skill Tracking)

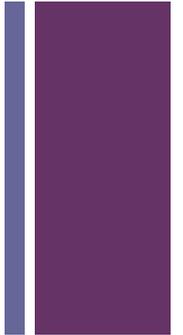


- Task Analysis and Skill Tracking Assessment
 - Breaks down the individual milestone skills into measurable prerequisites
 - Over 1000 steps/skills supporting 170 milestones
 - Also allows for more detailed skills tracking



VB-MAPP

(Placement and IEP Assessment)



- Placement and IEP Assessment
 - Provides general guidelines for how to interpret assessment results
 - Overall focus of goals for each scoring level
 - Types of teaching strategies that should be used for each scoring level
 - Specific IEP goals are provided for each milestone and barrier
 - The assessment corresponds with the verbal behavior intervention program

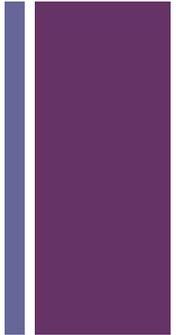


VB-MAPP

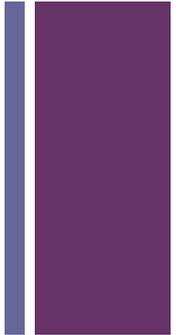
(Using the Assessment Results)

■ How to use the Assessment

- At this point 3 component assessments have been completed
 - Milestones, Barriers to Learning and Transitions
- Each of the component assessments provides information that can be used in multiple sections of a student's IEP
- Milestones Assessment + Task Analysis & Skill Tracking
 - Identifies IEP goals , related services needed and allows for progress monitoring
- Barriers Assessment
 - Identifies if a BIP is needed, IEP goals , identifies if accommodations are needed and allows for progress monitoring
- Transition Assessment
 - Provides measureable criteria for LRE placement, identify performance level, identifies accommodations and allows for progress monitoring



+ VB-MAPP (Practice Case)

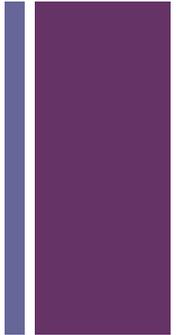


- Practice Case – Anne
 - Using the VB-Mapp Practical Exercise
- Practice Case - Adam
 - Interpreting the results

- Practice Case Handout



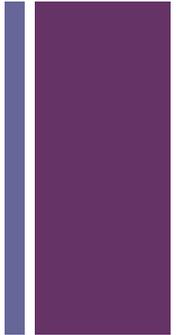
VB-MAPP (National Standards Report)



- The VB-Mapp was not critiqued in the National Standards Report
 - It was included in the studies under the Behavioral Package
 - The Behavioral Package was rated as an established treatment
 - More research is needed

- *National Autism Center (2009). The National Standards Project – Addressing the Need for Evidence Based Practice Guidelines for Autism Spectrum Disorder. Retrieved March 27, 2013, from <http://www.nationalautismcenter.org/pdf/NAC%20Standards%20Report.pdf>*

+ VB-MAPP (Research)

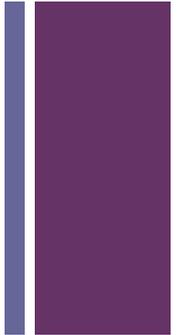


■ *Intraverbal Behavior and Verbal Conditional Discriminations in Typically Developing Children and Children with Autism*

- ❖ This study included 39 typically developing children (23-61 mo old) and 71 children with autism (35 mo to 15 yrs)
- ❖ They were assessed using the VB-Mapp intraverbal scales.
- ❖ Approximately 8,500 intraverbal responses were collected from the 110 participants.
- ❖ The older the child the higher the score received.
- ❖ Considerable variability among same aged children.
- ❖ Children with autism vs. typically developing children results were:
 - ❖ 2-year olds – mean of 12 correct vs. mean of 32 correct
 - ❖ 3 year olds – mean of 18 correct vs. mean of 42 correct
 - ❖ 4 year olds – mean of 24 correct vs 58 correct
 - ❖ 5 year olds – mean of 38 correct vs. 80 correct
- Interverbal skills are an advanced skill and should only be taught after the child has a strong grasp on echoics, manding, and tacting.
- *Sundberg, M. & Sundberg C.A. (2011) Intraverbal Behavior and Verbal Conditional Discriminations in Typically Developing Children and Children with Autism. Analysis of Verbal Behavior, 27, 23-43.*



VB-MAPP (Research)

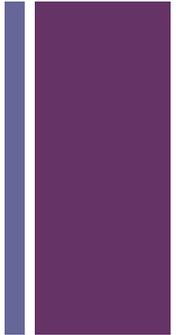


■ Contriving Establishing Operants to Teach Mand for Information

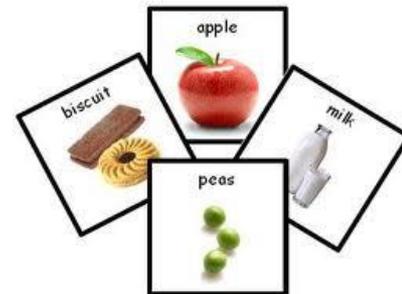
- ❖ This study examined the ability of autistic children to mand appropriately for information by asking questions appropriately.
 - ❖ 2 different experiments in this study
 - ❖ Kevin a 5 year old boy and Billy a 6 year old boy both with autism
 - ❖ 2 items were selected for each participant, one that had a high rate of reinforcement and then one that had no history as a reinforcement
 - ❖ When told go get (item) the child was expected to mand “where”
 - ❖ If the whole word “where” was elicited the reinforcement was played with for 30 minutes
 - ❖ Baseline for both boys was 0 after 4 trials the preferred item went up to 60% correct and for non-preferred item increased to 40% for Kevin and after 7 attempts it went up 60% for preferred item and 0% for non-preferred item for Billy.
 - ❖ Manding for “where” at 100% for Kevin was obtained at 11 trials for preferred item and 12 trials for non-preferred item. For Billy 100% occurred at 14 trials and only reached 80% by end of trial 18.
 - ❖ Children with autism can learn to mand relatively quickly if using EO's for mand training.
- Sundberg, M., Loeb, M., Hale, L., & Eigenheer, P. (2002). *Contriving establishing operations to teach mands for information. The Analysis of Verbal Behavior, 18, 15-29.*



Picture Exchange Communication System (PECS)

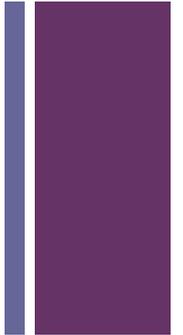


- PECS is used to help the student to spontaneously initiate communicative exchanges.
- PECS can be used with children or adults who are not yet initiating requests, comments, or any type of communication.
- People using PECS are taught to approach and give a picture of a desired item to a communicative partner in exchange for that item.
- While advancing through the phases of PECS, the student learns to sequence words to create sentences.
- Using PECS, students learn to gain the attention of the communication partner in order to make a request.
- There are six phases to learning PECS.





Picture Exchange Communication System (PECS) - Outcomes



- Spontaneous communication exchanges initiated by child
- Learning of sequence, words to create sentences
- Facilitates speech
- 2/3 of children who use PECS develop speech
- The communication partner is verbalizing in conjunction with showing the picture communication symbols
- All attempts at speech are encouraged

+ PECS (Phases)

■ Phase 1 – How to Communicate

- Plan to teach with a variety of reinforcers
- One picture at a time
- 2-Person prompting strategy
- Physical prompter says NOTHING
- Prompter only assists student with movement
- Pick-up, Reach, Release Picture
- First reinforcer is free
- Open hand from communicative partner
- Symbol modifications

■ Phase 2 – Distance and Persistence

- Go get picture, find the listener, take picture to listener



Request an item

Receive the item

+ PECS (Phases)

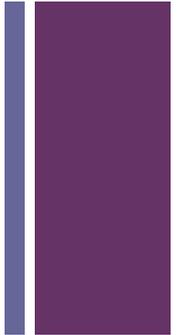


- Phase 3 – Discrimination
 - Choose from among many symbols in their communication book
 - Preferred vs. non-preferred
 - Colors vs. black & white
 - Physically rearrange pictures
- Phase 4 – Sentence Structure
 - Use simple sentence to request spontaneously
- Phase 5 – Answering, “What do you want?”
 - Plan to teach a variety of forms requesting /unstructured
- Phase 6 – Commenting
 - Student is able to communicate with anyone, anywhere



PECS

(National Standards Report)



- An emerging intervention strategy
 - 13 studies were included in the assessment of effectiveness
 - “Although one or more studies suggest that a treatment produces beneficial treatment effects for individuals with ASM, additional high quality studies must consistently show this outcome before we can draw firm conclusions about the treatment effectiveness” – NAC, 2009

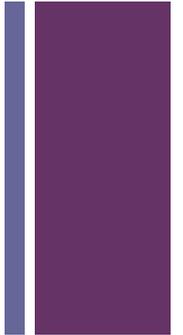
■ *National Autism Center (2009). The National Standards Project – Addressing the Need for Evidence Based Practice Guidelines for Autism Spectrum Disorder. Retrieved March 27, 2013, from <http://www.nationalautismcenter.org/pdf/NAC%20Standards%20Report.pdf>*

+ PECS (Research)

■ *Effectiveness of the Picture Exchange Communication System (PECS) on Communication and Speech for Children With Autism Spectrum Disorders: A Meta-Analysis*

- ❖ This meta-analysis reviewed the current empirical evidence for PECS in affecting communication and speech outcomes for children with ASD (Flippin, Recska, & Watson, 2010).
 - ❖ A systematic review of the literature on PECS w between 1994 and June 2009 was conducted.
 - Eight single-subject experiments - (18 participants) and 3 group studies (95 PECS participants, 65 in other intervention/control) were included.
 - ❖ Results indicated that PECS is a promising but not yet established evidence-based intervention for facilitating communication in children with ASD ages 1–11 years. Small to moderate gains in communication were demonstrated following training. Gains in speech were small to negative
-
- ❖ *Flippin, M., Reszka, S. & Watson, L. (2010). Effectiveness of the Picture Exchange Communication System (PECS) on communication and speech for children with Autism Spectrum Disorders: A Meta-analysis. American Journal of Speech-language Pathology, 19, 178-195.*

+ PECS (Research)



■ *A Communication-Based Intervention for Nonverbal Children With Autism: What Changes? Who Benefits?*

- ❖ This study examined the form and function of spontaneous communication and outcome predictors in nonverbal children with autism using PECS.
 - ❖ Eighty-four children from 15 schools participated in a randomized controlled trial of PECS. They were aged 4–10 years (73 boys).
 - ❖ Spontaneous communication using picture cards, speech, or both increased significantly following training.
 - ❖ Spontaneous communication to request objects significantly increased, but spontaneous requesting for social purposes did not.
 - ❖ Less severe baseline autism symptomatology was associated with greater increase in spontaneous speech and less severe baseline expressive language impairment , with larger increases in spontaneous use of speech and pictures together.
- ❖ *Gordon, K., Pasco, G., McElduff, F., Wade, A., Howlin, P. & Charman, T. (2011). A communication-based intervention for nonverbal children with autism: What changes? Who benefits? Journal of Consulting and Clinical Psychology, 79, 447-457.*

+ Discussion

- Questions?
- Comments?
- Quiz

