The VB-MAPP: Conducting the Assessment and Identifying Intervention Priorities

Mark L. Sundberg, Ph.D., BCBA-D
(www.marksundberg.com)

The Importance of Assessment

- Assessment (analysis) drives the intervention
- An initial assessment provides a baseline (operant skill level)
- On-going assessment provides tracking and outcome data
- On-going assessment can guide program adjustments
- The failure to conduct an adequate assessment can result in an inappropriate and ineffective curriculum for a child, as well as a waste of valuable teaching time and resources
What Should be Assessed for Children with Autism?

- It is essential to identify a child’s existing verbal, nonverbal, and social skills (e.g., mands, echoics, listener skills, peer initiation)
- It is also essential to identify the language, social, behavioral, and learning barriers that are preventing or slowing down skill acquisition
- Most common language assessment tools for children with autism fail to provide this necessary information (Esch, LaLonde, & Esch, 2010)
- For example, 28 out of 30 assessments fail to assess a child’s mand repertoire (Esch et al, 2010), and none provide an assessment of possible barriers

The Value of a Criterion-Referenced Assessment

- Norm-referenced vs. criterion-referenced
- A norm-referenced tests ranks and sorts students using percentile measures relative to a large sample of peers (e.g., IQ tests, SAT, PPVT, “Bell curve”)
- A criterion-referenced test provides a measure of a student’s mastery of a pre-determined group of skills (e.g., math skills)
- A criterion-referenced test provides specific information as to what a student (or professional) can or cannot do in a certain domain (e.g., manding, national board medical exam, BACB exam)
- A criterion-referenced assessment provides the operant level (baseline) of a domain of skills for an individual learner, and can directly point to intervention needs and priorities
A Behavioral Approach to Assessment for Children with Autism

- Basic behavioral concepts and principles allow professionals to identify and quantify learning, as well as barriers (e.g., motivation, reinforcement, stimulus control, generalization)
- A behavioral analysis of typical human development provides a frame of reference for an assessment (e.g., Bijou & Baer, 1965; Schlinger, 1996; Novak & Pelaez, 2003; Skinner, 1957)
- Skinner’s (1957) analysis of verbal behavior provides a behavioral framework of language and social behavior that can be used to guide an intervention program (Sundberg & Michael, 2001)

The Value of Skinner’s Analysis of Language

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

1. **The VB-MAPP: Milestones Assessment** measures 16 domains with 170 language, learning, and social milestones, across 3 developmental levels (0-18 months, 18-30 months, 30-48 months).


3. **The VB MAPP: Transition Assessment** is a summary assessment of 18 domains and can serve as a guide for planning a child’s educational needs.

4. **The VB-MAPP: Supporting Skills and Task Analysis** provides a checklist of hundreds of additional skills that may not warrant milestone status, but support the development of each of the domains (e.g., mands for attention, tacts of auditory stimuli).

5. **The VB-MAPP: Placement and IEP Goals** provides recommendations for program development based on the child’s VB-MAPP profile, and his specific scores on the 170 milestones and the 24 Barriers.

Also contains a bank of over 200 IEP objectives directly linked to the milestones and barriers assessments.
The VB-MAPP Milestones: How to Score the Assessment

- 16 domains are presented in three developmental levels:
- The elementary verbal operants (e.g., echoic, mand, tact, intraverbal)
- The listener skills
- Vocal output
- Independent play
- Social skills and social play
- Visual perceptual skills and matching-to-sample
- Grammatical and syntactical skills
- Group and classroom skills
- Beginning academic skills

There are 3 developmental levels:

- 0-18 months Typical development
- 18-30 months Typical development
- 30-48 months Typical development
Level 1 measures 9 domains with 45 milestones

Level 2 measures 12 domains with 60 milestones

Level 3 measures 13 domains with 65 milestones

First 6 domains appear in all three levels

Motor imitation and echoic appear only in levels 1 and 2

LRFFC, IV, group, and linguistic measures are added in levels 2 and 3

Reading, writing, and math are added in level 3

Vocal play (babbling) is dropped in levels 2 and 3

First 6 domains appear in all three levels
**Milestones Assessment: LEVEL 1 (0-18 MONTHS)**

(T) = Direct testing;  (O) = Observation;  (E) = Either testing or observation;  (TO) = Timed observation

<table>
<thead>
<tr>
<th>MAND</th>
<th>TOTAL SCORE:</th>
</tr>
</thead>
</table>

**Does the child use words, signs, or pictures to ask for desired items or activities?**

Enter a score of 1, ½, or 0, based on the scoring criteria in the VB-MAPP Guide.

1. **Emits 2 physical gestures:**
   - Any gesture (e.g., showing, pointing to, touching, etc.)

2. **Emits 2 gestures (physical) and 1 verbal:**
   - Physical gestures, plus verbal (e.g., “Give me!”)

3. **Generalizes 6 mands across 2 people, 2 settings, and 2 different examples of a reinforcer (e.g., mands bubbles from mom and dad, inside and outside, a red bottle and a blue bottle) (E)**

4. **Spontaneously emits (no verbal prompts) 5 mands — the desired item can be present:**
   - (TO: 60 min.)

5. **Emits 10 different mands without prompts (except What do you want?) — the desired item can be present (e.g., apple, swing, car, juice) (E)**

Comments/notes:

---

**How to score the cells:**

**Mand Level 1**

- Enter the child’s personal information
- Enter date
- Enter color
- Enter tester(s)

**5 Milestones for each Domain, at each level**
Milestones Assessment: LEVEL 1 (0-18 MONTHS)

(T) = Direct testing;  (O) = Observation;  (E) = Either testing or observation;  (TO) = Timed observation

**MAND**

**TOTAL SCORE:**

**Does the child use words, signs, or pictures to ask for desired items or activities?**

1. Emits 2 words, signs, or PECS, but must use physical prompts (e.g., cracker, book) (T)

2. Emits 4 different mands without prompts — physical prompts (e.g., music, Slinky, ball) (T)

3. Generalizes 6 mands across 2 people, 2 settings, and 2 different types of reinforcement (e.g., mands with bubbles, mands with red bottle) (E)

4. Spontaneously emits (no verbal prompts) 5 mands — the desired item can be present (TO: 60 min.)

5. Emits 10 different mands without prompts (except, What do you want?) — the desired item can be present (e.g., apple, swing, car, juice) (E)

**Comments/Notes:**

**4 ways to obtain the relevant data**

**Enter the total score here**

**Add any relevant information such as specific words, or oddities such as all 10 mands are for different toy dinosaurs**

**The scoring instructions and criteria are contained in the VB-MAPP Guide**

**Mand 2-M**

**Emit 4 different mands without prompts (except, What do you want?) the desired item can be present (e.g., music, Slinky, ball). (E)**

**Objective:**
To determine if a child mands without echoic prompts, and for a child using signs or selecting icons, mands without imitative or pointing prompts, respectively.

**Materials:**
Gather items or plan actions that function as reinforcement for the child.

**Example:**
A child may not want to eat when he is on a swing and wants to be pushed, and he emits 4 prompts — physical, echoic, or imitative prompt.

**1 point score:**
Give the child 1 point if he mands for 4 different reinforcers without the adult saying the target word (echoic prompt), giving an imitative or pointing prompt, or for a child using signs, speaking the word (intravocal prompt). The desired item or activity can be present, as well as the verbal prompt, “What do you want?” (or something similar).

**½ point score:**
Give the child ½ point if he emits 3 of these types of mands.

**Designed for 4 testing periods, but more can be added**
There is no time limit.

Multiple assessors can participate.

Repeat the trial if necessary.

Skills can be tested one at a time, or all together.

Enter the total score here.

Fill in the corresponding cells with the scores obtained.

Enter the scores obtained corresponding cells with the scores obtained.

Fill in the corresponding cells with the scores obtained.

Enter the total score here.

Fill in the corresponding cells with the scores obtained.

Enter the total score here.
Fill in the oval for a domain that was tested, but a "0" score was given.

1/2 point scores look like this.

Some milestones might get "0" while higher milestones are met.

3 things to look for in a VB-MAPP profile:

(1) Primary level

(2) Are the skills fairly in balance with each other?

(3) Are there stronger skills that can be used to teach weaker skills?

Primary milestones are might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Primary milestones are might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.

Some milestones might get "0" while higher milestones are met.
There are 5 levels and 100 possible points.

The sounds are developmentally sequenced.

The first three levels differ by the number of syllables.

The last two involve prosody and other measures.

Score the response as X, /, or blank.

Enter the total score here.

Enter the scores here.
Convert the scores on the corresponding milestone form. The specific instructions are in the VB-MAPP Guide.

Enter the total score here.

Enter the raw score here, as well as any comments.

Fill in the cell.
The VB-MAPP Barriers Assessment

- It is important to find out what a child can do (The VB-MAPP Milestones Assessment), but also important to be aware of the problems and challenges he or she faces.
- The VB-MAPP Barriers Assessment is designed to identify and score 24 different learning and language acquisition barriers.
- Many of these barriers are identified in the DSM-5 (inflexible routines, repetitive behaviors, deficits in social communication, sensory defensiveness, fixated interests).
- Once a specific barrier has been identified, a more detailed descriptive and/or functional analysis of that problem is required.
- An individualized functional or descriptive analysis will be necessary to determine the nature of the problem, and what intervention program might be appropriate for the child.

The VB-MAPP Barriers Assessment

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

- **Fundamental barriers to learning** that must be analyzed and ameliorated (e.g., the failure to generalize, weak motivators, prompt dependency)
- **Specific behaviors** that can compete with teaching (e.g., self-stimulation, hyperactive behavior, or sensory defensiveness)
- Problems related to **physical, medical, or biological barriers** that must be accounted for in some way (e.g., articulation or motor imitation errors may be due to physical limitations, matching errors may be due to visual limitations, listener errors may be related to hearing problems, poor performance may be due to illness, sleep deprivation, severe allergies, medication changes, pain, etc.)

The VB-MAPP Barriers Assessment

- 24 Common Learning and Language Acquisition Barriers
  - Behavior problems
  - Instructional control (escape/avoidance)
  - Impaired mand
  - Impaired tact
  - Impaired motor imitation
  - Impaired echoic (e.g., echolalia)
  - Impaired matching-to-sample
  - Impaired listener repertoires (e.g., LD, LRFFC)
The VB-MAPP Barriers Assessment

• Common Learning and Language Acquisition Barriers
  • Impaired intraverbal
  • Impaired social skills
  • Prompt dependency, long latencies
  • Scrolling responses
  • Impaired scanning skills
  • Failure to make conditional discriminations (CDs)
  • Failure to generalize
  • Weak or atypical MOs

• Common Learning and Language Acquisition Barriers
  • Response requirements weakens the MO
  • Reinforcer dependent
  • Self-stimulation
  • Articulation problems
  • Obsessive-compulsive behavior
  • Hyperactivity
  • Failure to make eye contact
  • Sensory defensiveness
## VB-MAPP Barriers Scoring Form

<table>
<thead>
<tr>
<th>Child name: Sophie A.</th>
<th>Date of birth: 7/11</th>
<th>Age of barrier: 2 yrs. 3 mos.</th>
<th>Male</th>
<th>Score: 3</th>
<th>Barriers:</th>
<th>Score:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### General Criteria for Scoring Each of the 24 Barriers
- Enter a score using a 1-4 likert scale.
- Leave the barrier blank for a score of "0" (no barrier).
- More detailed instructions can be found in the VB-MAPP Guide, Chapter 6.

### Instructions
1. **Enter the child’s personal and other information here.**
2. **Enter a score using a 1-4 likert scale.**
3. **Leave the barrier blank for a score of "0" (no barrier).**
4. **General criteria for scoring each of the 24 Barriers can be found on pages 25-29 in the Protocol.**
5. **More detailed instructions can be found in the VB-MAPP Guide, Chapter 6.**
Enter the score in the barriers form

Enter the total score here

Many of the barriers can be detected while conducting the milestones assessment (e.g., non-compliance, scrolling)
A common goal for many educators and parents of children with special needs is to integrate the child into a mainstream setting. There are many different levels of integration and the Transition Assessment was designed to identify the skills that increase the probability that a child will be successful in a less restrictive setting. No single skill will be a good determiner of success, but a collective body of skills can help educators and parents make decisions. The VB-MAPP Transition Assessment provides a tool to help determine if a child has the necessary prerequisite skills to learn in a less restrictive classroom environment. There are 18 skill areas on the Transition Assessment.
General criteria for scoring each of the 18 transition items can be found on pages 31-34 in the Protocol.

More detailed instructions can be found in the VB-MAPP Guide, Chapter 7.

Enter the score here.

Enter the score in the transition form.
This section contains over 300 tasks leading up to milestones, and over 500 additional "supporting skills" that are not directly related to a milestone but are developmentally framed by the milestones.

More detailed instructions can be found in the VB-MAPP Guide, Chapter 2.
Skills 6-a, 6-c, & 6-d are supporting skills; and skill 6-b is part of the milestones task analysis.

**Skills 6-a, 6-c, & 6-d**

<table>
<thead>
<tr>
<th>Skill</th>
<th>Tact — Level 2</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-a</td>
<td>Tacts 4 different people, pets, or characters by their specific name (can include name and deed) (T)</td>
<td></td>
</tr>
<tr>
<td>6-b</td>
<td>Tacts 2 actions when asked, for example, “What am I doing?” (e.g. jumping, stepping) (T)</td>
<td></td>
</tr>
<tr>
<td>6-c</td>
<td>Acquires a new tact in less than 20 training trials (T)</td>
<td></td>
</tr>
<tr>
<td>6-d</td>
<td>Tacts 5 items in a 15 second period (fluency) (T)</td>
<td></td>
</tr>
</tbody>
</table>

**Skills 6-M**

<table>
<thead>
<tr>
<th>Skill</th>
<th>Tacts 25 items when asked, “What’s that?” (e.g. book, shoe, car, dog, hat) (T)</th>
</tr>
</thead>
</table>

Skills 6-a, 6-c, & 6-d are supporting skills; and skill 6-b is part of the milestones task analysis.

**Enter the score on the task analysis and skills tracking form.**
The VB-MAPP Placement and IEP Goals

- The placement section (VB-MAPP Guide, chapters 8-10) contains an interpretation and suggestions for programming for all 170 milestones
- It also contains over 200 template IEP goals covering all 170 milestones
If a child has met this milestone, what’s next?

**SOCIAL BEHAVIOR AND SOCIAL PLAY – LEVEL 2**

<table>
<thead>
<tr>
<th>SOCIAL 6-M</th>
<th>Initiates a physical interaction with a peer 2 times (e.g., push in a wagon, hand holding, Ring Around the Rosie).</th>
</tr>
</thead>
</table>

A child who attends to peers, imitates peers, and wants to interact with peers, but does not have the necessary verbal skills, may engage in a variety of a form of social interaction. It is important at this point in social development to teach the target child and peers. Successful relationships between children will decrease the likelihood of social anxiety and withdrawal. The most functional type of reciprocal behavior between children is manding. Tact and intraverbals are important, but are more complex and come later. The child must learn four types of mand-related behaviors, two as a speaker and two as a listener. As a speaker the child needs to learn to (1) mand to a peer to obtain a reinforcer (e.g., a second person on a teeter-totter), and (2) mand to a peer to remove an aversive (e.g., not taking turns on a swing). As a listener, the child needs to respond to the hand of a peer to deliver a reinforcer (e.g., get on the teeter-totter), and (3) respond to the hand of a peer to remove an aversive (e.g., get off the swing). These are complicated behaviors because they, like all mands, are controlled by motivational variables and may be complicated to identify and control. Even more complex is teaching a child to emit the socially correct behavior when the MO is strong (e.g., not hit to get a turn on the swing, or to passively surrender a reinforcer to a peer).

The easiest of these four different mand relations to teach a child is to mand for a desirable item from a peer. This often must be taught in a contrived situation, but can be easily accomplished using a manding to peers procedure. It is important when teaching this behavior to fade out adult prompting (e.g., “Ask Joe for the gummy bear”) and reinforcement (e.g., “Nice sharing!”), because the goal is for the social behaviors to come under the antecedent and consequental control of the peer, not the adult. Spontaneous responding to peers will be difficult to achieve if adults continue to control the social contingencies.

Suggested IEP Goals for Social Behavior and Social Play: Level 2 (select only 1 or 2 goals and modify them as appropriate for the individual child):

- The child will spontaneously mand to peers at least 25 times per day.
- The child will spontaneously respond to the mands from peers 25 times in a single day.
- The child will engage in cooperative, constructive, or physical play activities with peers lasting at least 5 minutes.
- The child will spontaneously mand to peers using questions, directions, instructions, etc. (e.g., “What’s that? “Where is your lunch?” “Come on, get your bike”) at least an average of 25 times per day.
- The child will take turns and share reinforcers with peers without prompts at least 5 times in a day.

More cautions: potential barrier development

Issues to consider in establishing the skill

Where to start

Contains an analysis of the skill and how it interfaces with other domains

A bank of possible IEP goals are provided for each group of 5 milestones

Suggests programming direction

All 200 IEP goals can be downloaded in one Word file at www.avbpress.com/downloads

25
Behavior analysis has much to offer autism assessment and treatment

Skinner’s analysis of verbal behavior is a powerful tool

Assessment is essential for an effective and efficient intervention program

The VB-MAPP can provide important direction for any style of intervention program
Conclusions

• Skinner (1978) stated
• “Verbal Behavior…will, I believe, prove to be my most important work” (p. 122)