Acknowledgements

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  - Sharon Lee Armstrong, PhD, research investigator and associate professor in the Psychology Department at La Salle University for her collaboration and expert work on the assessment validation project.
  - Elisa Shipon-Blum, D.O., treatment specialist/physician and founding director of the Selective Mutism Anxiety Research Treatment (SMarT) Center for her support and access to patients in the initial assessment project and publication.

Learner Outcomes

1. Attendees will be able to explain the critical role of speech-language pathologists (SLP) in the management of children with selective mutism (SM).
2. Attendees will be able to describe methods of evaluating speech-language and vocal control in children with SM.
3. Attendees will be able to describe therapeutic techniques used to treat speech-language and vocal control in children with SM.

Diagnostic Profile of the Child with Selective Mutism

- Failure to speak in specific social situations despite speaking in others
- Social communication is affected
- Duration of at least 1 month (after first month of school)
- The disturbance is not better accounted for by a communication disorder, pervasive developmental disorder, or mental disorder

- Prevalence for SM is .47 (1 in 213 children) to .76 (1 in 132 children) (Viana, Beidel, & Rabian, 2009).

What is the Etiology for Selective Mutism?

- Risk for SM
- Environment (Anxious/controlling parents, School-related problems, Immigrant status)
- Anxiety
- Neurodevelopment (Language/speech problems, Developmental Delay, and Neurological Anomalies)
- Genes & Temperament (Behavioral Inhibition)

Muris & Ollendick, 2015)
Breakdown of Communication in Selective Mutism

The Evaluation

Areas of Direct Communication Assessment

| Voice: Ability to initiate phonation for speech purposes when anxious. |
| Language: Receptive and expressive vocabulary and narrative language (considering semantics, syntax, morphology, and pragmatic language). |
| Speech: Production of speech sounds to convey our thoughts via words for co-articulation and fluency. |
| Auditory Memory: Serial Recall: Repetition of numbers forward and backward. |
| Visuospatial: Block construction with replications of 2- and 3-dimensional stimuli. |

Beginning the Evaluation Process

Prior to arrival at clinic:
- Behavioral intake measures sent to parents and teachers - bring to evaluation
- Provide letter to family about expectations and evaluation process and bring 1 other adult

Arrival at clinic:
- Review and sign informed consent, photograph/video release, and confidential information release
- Parents trained to support testing (reading and turning stimuli pages)
- Tips and scripts provided
- All scoring and interpretations by licensed professionals with live monitoring and video
- Begin parent training for actual assessment at clinic

Gathering Information: Behavioral Intake Measures

- **BASC-3** – Behavior Assessment System for Children (Reynolds & Kamphaus, 2006, 2015)
  - Structured Developmental History – Questionnaire and Interview
  - Parent and Teacher Rating Scales
- **Selective Mutism Questionnaire (SMQ)** (Bergman, Keller, Piacentini, & Bergman, 2008)
- **Screen for Child Anxiety Related Disorders (SCARED)** (Birmaher, Khetarpal, Cully, Brent, & McKenzie, 1995)
- **Anxiety Disorders Interview Schedule (ADIS)** (Silverman & Albano, 2004)
- **Clinical Evaluation of Language Fundamentals (CELF-5) Pragmatics Profile & Observational Rating Scale** (Wiig, Semel, & Secord, 2013)
- Other professional reports and IEPs from school and therapies

The Evaluation Day Line-Up

- **Information** gathered from parents and forms signed
- **Voice** evaluation
- **Oral mechanism exam**
- **Swallowing** (if noted as an issue)
- **Articulation** (context-based)
- **Fluency** (context-based)
- **Speech-language** assessment (including auditory memory and visuospatial skills)
- **Hearing** screening
- **Free play** for language sampling
- **Parent conference** with professionals (SLPs/Psych/etc.)
- **Report** sent to parents with follow-up conference call
Need to Know

- Performance in school
- Comprehension when others talk
- Self expression
- Play skills
- Does talkativeness vary with different people in different situations and places?

Recording Sessions: Skype / Zoom / GoToMeeting / FaceTime / QuickTime

需自己的帐户和网络存取来录音。

App for Smart phone or iPad as camera to stream from phone to computer

Wireless Mirroring/Streaming

Voice Assessment: What We Have Learned

- Social anxiety and physiological tension in the vocal mechanism often make it difficult and uncomfortable for those with SM to vocalize (Ruiz & Klein, 2014).

- Surface EMG (sEMG) indicated greater laryngeal tension in children when attempting to say their names than when vocalizing a vowel sound or when seated at rest (Ruiz & Klein, 2018).

- Symptoms of social anxiety may cause withdrawal, especially from unfamiliar social encounters. This can result in an inability to speak (Martinez, Tannock, Manassis, Garland, Clark, & McInnes, 2015).
Children With SM Often Want to Talk

7 of 15 children indicated (by pointing) that it was “almost impossible” for them to get their voice out at the beginning of the evaluation.

A Review of the Vocal System in Action

Assessing the Voice for Vocal Tension

- Acoustic Analysis (Voice Test App)
- Pulse Ox monitoring to measure blood oxygenation and pulse rate before, during, and after sustained phonation and speaking tasks.
- Surface Electromyography (sEMG) to assess laryngeal tension during sustained phonation, speaking, and at rest.

Surface Electromyography (sEMG)

- Surface electrodes are placed on either side of the thyroid cartilage
  - Average 10 – 18 µV
  - Baseline is taken and rise in tension monitored to quantify changes in laryngeal tension during phonation or when asked to speak.
- Child's laryngeal tension is measured
  - At rest
  - Vowel /i/ /a/
  - During speech

sEMG Output Measuring Laryngeal Tension
### Case Examples for sEMG, Pulse, & Oxygenation

<table>
<thead>
<tr>
<th>Case</th>
<th>Sex</th>
<th>Race</th>
<th>Age (yr)</th>
<th>Test Time (min)</th>
<th>Diag.</th>
<th>sEMG-Rest (µV)</th>
<th>sEMG-Vowel (µV)</th>
<th>sEMG-Speech (µV)</th>
<th>Final Pulse (bpm)</th>
<th>Oxygenation (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>M</td>
<td>6</td>
<td>10</td>
<td>20</td>
<td>10</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>75</td>
<td>98</td>
</tr>
<tr>
<td>C2</td>
<td>F</td>
<td>6</td>
<td>10</td>
<td>20</td>
<td>10</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>75</td>
<td>98</td>
</tr>
<tr>
<td>C3</td>
<td>F</td>
<td>6</td>
<td>10</td>
<td>20</td>
<td>10</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>75</td>
<td>98</td>
</tr>
<tr>
<td>C4</td>
<td>F</td>
<td>6</td>
<td>10</td>
<td>20</td>
<td>10</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>75</td>
<td>98</td>
</tr>
</tbody>
</table>

### Explanation of Findings

- Pulse and oxygenation ratings are often within normal limits both at start and end of testing.
  - This is likely due to the child’s automatic reaction to “not speak against the tension.”
  - This reduction in the sympathetic nervous system response is an involuntary reaction.
    - “If I don’t speak, I feel better!”

---

### Children with selective mutism displayed greater laryngeal tension with more demanding vocal requests that decreased over time with comfort

![Graph showing laryngeal tension over time](image)

- **sEMG-Rest**: 15.67
- **sEMG-Vowel**: 24.74
- **sEMG-Speech**: 35.11

Effect sizes:
- **d = .41**
  - small
- **d = .32**
  - small
- **d = .80**
  - large

---

### Speech-Language Assessment

With Selective Mutism

Parents assist us in presenting test stimuli (given training) so that we, as professionals, can get a more accurate picture of the child’s true abilities in the areas of speech and language.

We are monitoring live, scoring, and interpreting findings.

The testing you are about to learn is a validated approach!

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**Assessing Spoken Language Competence in Children With Selective Mutism: Using Parents as Test Presenters**

*Karen L. Katz, PhD, and Lisa W. Kerber, PhD*

*Abstract*

Children with selective mutism (SM) display a failure to speak in social situations despite being able to do so elsewhere. The use of parents to present test stimuli is a proven approach for improving language performance in SM, and the question remains as to whether differences are observed between children with SM and typically developing (TD) peers. This study aimed to compare the phonological and narrative language abilities of children with SM and TD children using parent-presented stimuli. Children with SM were compared to TD peers using parent-presented stimuli.

**References**

We want to assess children’s competence – not just consider their outward performance that tends to be compromised with selective mutism!
Standardized Assessment Tools Used

Directly Administered Language Assessments
(All Testing Video-Audio-Taped)

**STANDARDIZED MEASURES**

1. **PPVT-4 & 5** (Peabody Picture Vocabulary Test) (Dunn, 2019)

2. **EVT-2 & 3** (Expressive Vocabulary Test) (Williams, 2019)

3. **TNL-1 & 2** (Test of Narrative Language) (Gillam & Pearson, 2017)

**CRITERION-REFERENCED MEASURES**

Language Sample Analysis
Speech Articulation

Procedures: The Training of Parents
Selected Guidelines

Parent with Child: Parent Should

| At beginning of session... | Say, “Mommy (or Daddy or another person) is going to be doing this activity with you. It’s not going to be like at home when we are talking together because I have to follow directions.” |
| If child doesn’t readily answer wait 5-10 seconds... | Then say, “Take a guess.” Some items can be asked twice. You will be notified. |
| If child asks if s/he answered correctly... | Say, “I don’t know what they want” and go to the next item. |

Procedures: The Training of Parents

Parent with Child: Parent Should

| Keep score sheet out of view. Evaluators will score later. | Say, “I am just writing when we finish things.” |
| When child slows his or her responses or is fidgety... | You will take a break if possible. Do not ask if he or she is finished as they usually say yes and stop working. |
| If child says, “I can’t do it or I don’t know”... | Say, “Give it a try.” |
| When they seem to be trying to think of an answer and it is taking more than expected time (5-10 seconds)... | Do not give any added cues or extra help. Move on to the next item. |

Is there a difference between parent and professional providing test stimuli to children with Selective Mutism? When SLPs Gave the Tests... Children With SM Scored Poorer Z Score Comparisons of Parent Vs. SLP (Counterbalanced)

Ease of Language Tasks Vary for Children With SM (With Parents as Test Stimuli Presenters on TNL)

Answering questions about stories was easier than making up stories.
The more pictures provided, the easier it was for children to speak.
Language Deficits Identified in SM

1. Talking about things not in immediate presence (decontextualized language)
2. Speaking in complex sentences that include independent and dependent clauses
3. Lower MLU (approx. 3 morphemes less per sentence) than typically developing peers
4. Using story grammar to retell a story just read to them
5. Using story grammar to generate a story from a photo in view
6. Pragmatic language deficits

Klein, Armstrong, & Shipon-Blum, 2013.

Vocabulary and Narrative Language Skills in Clinic Group of Children With SM

<table>
<thead>
<tr>
<th>Measure</th>
<th>Group</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPVT (Recep. Voc.)</td>
<td>41</td>
<td>M=99.29 (SD=16.91)</td>
</tr>
<tr>
<td>EVT (Express. Voc.)</td>
<td>M=99.66 (SD=17.24)</td>
<td></td>
</tr>
<tr>
<td>TNL Compreh. Lang.</td>
<td>M=94.41 (SD=3.69)</td>
<td></td>
</tr>
<tr>
<td>TNL Express. Lang.</td>
<td>M=8.06 (SD=3.85)</td>
<td></td>
</tr>
</tbody>
</table>

- 19.5% were at -1 SD or below
- 18.4% were at -1 SD or below
- 41.2% were at -1 SD or below
- 47.1% were at -1 SD or below
- 7.2% were +1 SD or above
- 13% were +1 SD or above
- 29.4% were +1 SD or above
- 9.5% were +1 SD or above

Scores reflect children’s skills when parents were alone in room with them providing testing stimuli (reading directions and turning pages in book only). All performances were videotaped live, monitored, scored, and analyzed by the professionals.

Sequence of SM Evaluation Report
(Typical sections - Varies depending on individual)

- Identifying Information
- Presenting Concern
- Purpose of Testing
- Assessment Measures
- Background Information
  - Family Environment
  - Recreations/Friendships
  - Pregnancy/Birth
  - Developmental History
  - Medical History
  - Relevant Behavior
- Speech-Language Communication
  - Vocabulary
  - Receptive and Expressive Language
  - Speech Fluency
  - Speech Production
  - Voice and Oral Exam
  - Auditory Processing (Serial Memory)
- Hearing and Vision
- Visuospatial Skills (Block Construction)
- (May include other areas and measures)
- Behavioral Observations and Questionnaires
  - Behavior Assessment System for Children – Parent and Teacher Ratings
  - Screen for Child Anxiety and Related Disorders
  - Pragmatics Profile
  - Selective Mutism Questionnaire
  - Informal Play / Interactions
- Overall Impressions
- Diagnosis
- Follow-Up Recommendations
- Signature, Name, Credentials
  - Contact Information

Overview: Vocal to Verbal

1. Focus on vocalization rather than verbalization.
2. Reinforce the power of their voices.
3. Introduce speech tasks when vocal tension is lessened and vocal control improves.
Focus on *vocalization* rather than *verbalization*

- Gain control of voicing in non-speech tasks
  - **Humming** – vocal tension is often minimized as sound is directed through the nose.
  - **Pitch changes** – stretch and relax the vocal folds.
    * High pitch vs. low pitch
  - **Change loudness** – coordinate breathing and voice.
    * Loud vs. soft
  - **Turning voice ON and OFF** on command and whispering.

Use Apps like the **Spinny Wheel** to practice by Bill Jackson.

Reinforce the Power of Their Voices

- To avoid verbal interaction and to reduce anxiety all children should be systematically approached using Apps like:
  - **BLA-BLA-BLA** (App by Lorenzo Bravi)
  - **Speak Up Too** (App by Sensory House)

- These Apps permit children to use their voices to change or activate games.

Introduce speech tasks when vocal tension is lessened.

- **Humming into /m/ words**
  - mmmmm*money*
  - mmmmm*mlk*
  - mmmmm*mommy*

- **Humming into /m/ sentences**
  - mmmmm*my mommy makes money*
  - mmmmm*michelle misses my mommy*

Articulatory Movement Activities

- Use Apps that focus on fun making sounds. Begin with the humming [m] sound.
- Instruct phoneme placement as discrete articulatory contacts - voiceless sounds first.
- Produce nonsense syllables and CV, VC, and CVC words. Try **LipSync Holograms**.

It’s not only about helping children with SM to talk, it’s about what to say once they begin talking!
Establish Motivation and Rewards
Make sure the child knows what s/he is working toward!
- Use highly motivating items with small goals.

Important Treatment Considerations
1. The more time not talking, the more it sticks!
   Get treatment early!
2. Situations and certain people can become “contaminated.”
3. Keep communication low key with low pressure.
4. Defocus on face - focus on objects/props.
5. It is easier to respond than initiate.
6. If no response, ask again and wait 5 seconds (avoid direct eye contact).
7. If Wh-questions are not answered, move to forced-choice questions (2 or 3 options given). If forced-choice are not answered, move to yes-no questions.

Progression of Communication Levels

<table>
<thead>
<tr>
<th>Level 1: Non-vocal Communication</th>
<th>Level 2: Indirect Vocalization</th>
<th>Level 3: Direct Vocalization</th>
<th>Level 4: Scripted Vocalization</th>
<th>Level 5: Spontaneous Vocalization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communicates by pointing, gesturing, nodding, drawing, or writing</td>
<td>Speaks using a recording device, familiar person, stuffed animal, doll, or action figure (in separate area or with barrier)</td>
<td>Makes sounds, syllables, and words with “Mmhm” (yes) or “Uhhuh” (no) and sounds for letters in words</td>
<td>Speaks with rehearsed words, phrases, and sentences with imitation, choral speaking, and/or reading</td>
<td>Speaks spontaneously using sentence completion, wait-times, and forced-choice options.</td>
</tr>
</tbody>
</table>

More About Communication Than Talking Initially

- Work with children individually and in a small group.

- Selected techniques:
  Use signs/pictures to communicate, choral speaking, whispering, imitation, and giving wait time and asking again.

- Role-playing (rehearsal) and video self-modeling can build confidence.

Helping the Teacher Engage the Child

- Include the child in activities promoting feelings of worth. Engage the child in non-speaking communicative tasks in school:
  - Paper deliverer (handing out)
  - Light switcher (on and off)
  - Plant waterer (providing care)
  - Library organizer (book shelves)
  - Note deliverer (from teacher to others)
  - Other practical suggestions in school setting

In Classroom

- Establish a separate area in room for selected play with one-plus-one classmates – special tasks including interview games. Rehearse first.

<table>
<thead>
<tr>
<th>Favorites</th>
<th>Suzie</th>
<th>Chad</th>
<th>Melody</th>
</tr>
</thead>
<tbody>
<tr>
<td>Animal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Color</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Game</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>TV Show</td>
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</tr>
</tbody>
</table>

Fading-In Approach: Person, Place, and Activity

- Change only one thing at a time!
- If introducing a new person, keep place and activity the same
- Help increase comfort with new people
  - New person (teacher) enters the room where child and parent or SLP ‘key worker’ are engaged in an activity (such as coloring)
  - Teacher walks in and gets something and leaves
  - Next time teacher stays a bit longer and glances over at activity
  - Next time teacher says something about the activity and engages with other adult and then leaves
  - Next, the teacher sits down near to the activity and watches a bit, making a few comments to the adult
  - At one point the teacher briefly joins in the activity and makes a comment about what she sees, using labeled praise related to the students’ actions – Remember PRIDE

Note: This is set up ahead of time so the adults know the plan.

Remember to use PRIDE When Communicating With the Child

- Labeled Praise
- Reflect
- Imitate
- Describe – behavioral descriptions
- Enthusiasm – at appropriate level

Carpenter, Pulliafico, Kurtz, Pincus, & Comer (2014)

Games to Foster Interaction and Speech

- Guess Who
- I Spy
- Bingo
- Cards – War, Go Fish
- Hangman
- Jeepers Peepers
- Battleship
- Ned’s Head

More games for children with SM by age can be found in the link below:

http://www.selectivemutism.org.uk/info-game-ideas-for-sliding-in/
In All Settings Work on Pragmatic Language Skills as Tolerated

1. Use language for different purposes:
greet, respond, request, describe, complain
2. Change language to suit situations and people:
parents, friends, teachers, others
3. Follow conversational rules:
take turns, stay on topic, initiate, relate events, tell stories, and more

Decontextualized language is more challenging than language that is context-based!

Clinicians Must Educate Parents & Teachers

The Negative Reinforcement Cycle Enables Selective Mutism

Integrated Behavioral Therapy (IBT) for SM uses a feeling chart, reward system, a hierarchy talking ladder with exposure practice to help children make progress and reduce relapse (Bergman, 2012; Muris & Ollendick, 2015).

Suggestions for Parents

- Parent can rehearse before they go some place with child.
- Try video modeling – tape and playback (Kehle, Bray, Byer-Alcorace, Theodore, & Kovac, 2011).
- Never trick or coerce the child to talk. Don’t show a video or play an audio without child’s okay.

Teachers as a Source of Comfort

- Foster comfort in the classroom and school.
- Increase comfort by having parent bring the child to the classroom prior to school starting.
- The child will make progress more quickly if communication with the teacher is one-on-one. Talking quietly to the teacher at her desk may be acceptable.

Educational Planning

- The Individualized Educational Plan (IEP) or a 504 Plan for accommodations can help the child with SM function more successfully in school. For suggestions see the link below.

- https://www.selectivemutism.org/online-library/education-planning-iep-idea-and-504/

Remember

- Reduce direct focus from the child
- Reduce direct eye-contact but focus on objects in front of you when engaging with the child
- Avoid saying “talk” or “speak” but rather use “make sounds” or “use your words”
- Avoid exuberant praise if and when the child does talk
- Use labeled praise as appropriate
- Handing over a written card or whispering to someone who then says what is wanted (to clerks, waiters, others) is better than talking for the child.

(Oerbeck, Sore, Wintzen-Larsen, Langrud, & Kristensen, 2014)
Clinicians, Parents, and School Personnel Must All Work Together


