

Assessing Speech-Language Skills in Children with Selective Mutism

Evelyn R. Klein, Ph.D., CCC-SLP, Dr. Elisa Shipon-Blum, Sara Cohen, M.S., Emma Petrucci, & Ashley Keates



Speech-Language-Hearing Science at La Salle University, Philadelphia, PA

Abstract

Evaluating children with selective mutism (SM) is challenging because they rarely talk to unfamiliar people. However, in order to receive needed professional services in the schools with an individualized educational plan (IEP), standardized test results are required. This study investigated a novel approach to obtain needed test results for speech, auditory memory, and receptive and expressive language. Twenty nine (29) children between the ages of 5 and 12 years old (previously diagnosed with SM) took part in this study. Since children with SM rarely talk to unfamiliar people, and since more direct and systematic language assessments are needed, parents were trained in testing procedures. Children were randomly assigned to either 'parent first' or 'professional first' test groups using a counterbalanced design. During testing, parents were viewed by project staff via a one-way mirror and videotaped for later transcript analysis. Each child was measured on receptive and expressive vocabulary, narrative language skills, and auditory word memory. Speech articulation and fluency were also evaluated. In addition, parents and teachers completed questionnaires providing information about each child's behavioral functioning. Of the 29 children assessed, the new testing procedure identified 12 with an expressive language disorder and 5 with a receptive/expressive language disorder. Children with SM who exhibited expressive language deficits performed significantly better on tests of receptive language and vocabulary than on expressive language formulation measures when assessed by their parents. The finding that 58% of the children tested in this new format had a language-based disorder (expressive or receptive-expressive) and that 62% of the sample had a speech disorder (articulation or fluency) suggests that a Communication Disorder could be a source helping to fuel the anxiety in children with SM. This research supports the benefits of guided parent involvement for evaluating children with SM.

Background

Selective Mutism (SM) is an anxiety disorder that affects children in select social settings. It affects approximately 7 out of 1,000 children. Onset generally occurs before 5 years of age and is usually evident in preschool. Anxiety, especially social anxiety, and language deficits are hallmarks of SM (McInnes, Fung, Manassis, Fiksenbaum & Tannock, 2004). Children with SM require early intervention otherwise they generally become isolated and non-communicative. It is critical that children with SM receive formal assessment so they can qualify for special services in the schools. The problem remains that children with SM rarely speak to unfamiliar adults and therefore standardized assessment cannot be conducted. Formal assessment is rarely done (Cleator & Hand, 2001).

Children with SM speak in specific social settings, usually at home, where they feel secure and comfortable but fail to speak when there is an expectation to do so, such as at school. To receive a diagnosis of SM this disturbance must last for at least one month (excluding the first month in school) and interfere with educational or occupational achievement and/or social communication. The failure to speak (mutism) is not due to lack of knowledge and is not better accounted for by a communication disorder (American Psychiatric Association, 2000). Current research indicates a decreased threshold of excitability in the amygdala. The amygdala senses danger in the setting and a protective reaction of mutism occurs (Dunaway, 2006). Some children, in the most severe non-communicative stage, stand motionless and stiff, expressionless and avert eye gaze. They seem frozen and appear to be ignoring the person who is trying to communicate with them.

It is important for children with SM to be evaluated by a Speech-Language Pathologist in order to determine if a Communication Disorder exists. Botting (2002) found that narratives provide a clinically useful way of assessing both linguistic and pragmatic language and are considered one of the most valid ways to measure communication competence. According to the work of Cohan, Chavira, Shipon-Blum, Hitchcock, Roesch, & Stein (2008), children with SM were likely to have a communication delay and/or mild behavior problem in addition to social anxiety. Testing children who have SM often relies upon informal audio or videotaped samples of children engaged in conversation at home (McInnes, Fung, Manassis, Fiksenbaum, & Tannock, 2004). Home administered speech-language samples are often inadequate and do not provide standardized, norm-referenced results. To help gather information about children's speech and language skills, parents received training on how to administer selected measures under the guidance of a speech-language pathologist and psychologist. Parents were monitored throughout the testing and scoring was conducted by the professional.

Research Questions

This purpose of the study was to answer the questions:

1. Can parents effectively administer speech-language tests to their children with Selective Mutism (SM)?
2. Was there a significant difference in speech-language test results of children with SM when evaluated by parents and professionals?
3. What were the results of speech-language testing for children diagnosed with SM?

Methods

Participants

- Twenty nine (29) children participated in a free study after their parents gave permission for them to be evaluated for speech-language and behavioral concerns.
- Information about the study was made available through a website [selectivemutismcenter.org] and through the medical practice of a treatment professional specializing in children with SM.
- Families came from many states in the U.S.
- Parents registered for the testing at the Jenkintown, PA office where children took part in testing that lasted approximately 2½ hours.

TABLE 1. Means and Standard Deviations for Age & Weight

	Mean	Standard Deviation
AGE	7.16 yrs.	1.58 yrs.
Birth Wgt.	7.31 lbs.	1.62 lbs.

Range from 4.06 lbs. to 10.5 lbs.

- Gender = 15 females and 14 males (all Caucasian)
- 35% were on medication for anxiety
- 38% were on medication for allergies / asthma
- 66% had anxiety in the immediate family
- 52% were first-born in their family

Percent of children scored as Anxious	62%
by Parents & Teachers on BASC-2	
Percent of children scored as Withdrawn	93%
by Parents & Teachers on BASC-2	

Scaled scores on the BASC-2 Withdrawal Scale were significantly higher than Anxious.

	PARENTS	TEACHERS	
ANXIETY:	T=60.46 (SD=13.18)	T=61.82 (SD=12.61)	NS
	high	high	
WITHDRAWAL:	T=77.52 (SD=13.84)	T=69.00 (SD=12.72)	p=.005**
	very high	high	

Note: Average T score = 40 - 60; mean = 50; SD = 10.

Procedures

- Parents of children with a prior diagnosis of SM volunteered to be in the study.
- Parents completed questionnaires during the time they were not testing (Consent Forms, CELF-4 Observation Scale, Behavior Assessment Scale for Children: BASC-2, Parent Relationship Questionnaire, and Developmental History Forms).
- Parents were randomly assigned to either the 'parent-first' or 'parent-second' testing group and trained in individual test administration procedures. Parents were viewed through a one-way mirror and testing was video-taped for later analysis.
- Both parents and professionals administered the tests in the following order: Peabody Picture Vocabulary Test (PPVT-4) (Dunn & Dunn, 2007), Expressive Vocabulary Test (EVT-2) (Williams, 2007), Test of Narrative Language (TNL) (Gillam & Pearson, 2004), and the Word Memory subtest from the Test of Auditory Processing Skills (TAPS-3) (Martin & Brownell, 2005).
- After testing, a brief consultation took place between the parents and professional to clarify details and ask/answer questions.
- A follow-up clinical report was sent to all families with results and recommendations.

Results

Question 1: Can parents effectively administer selected speech-language tests to their children who have a diagnosis of Selective Mutism (SM)?

Parents of one-third of the sample were randomly selected to be observed on testing practices using the *General Tests Administration Practice Checklist* (Sattler, 2001). This questionnaire has 40 items that are measured on a 5-point Likert Scale and includes aspects of testing from maintaining frequent eye contact and arranging materials so the child cannot review test items to reading all directions verbatim and using standardized procedures. Each parent-administered measure was scored by two reviewers for interrater reliability. The two raters were within one-point of each other on average across all the tests observed. No significant difference was found in scores by the two raters. Overall, the level of accuracy for parent test administration was:

	Parent Test Administration Accuracy
PPVT-4	96.6%
EVT-2	96.9%
TNL	96.8%
Word Memory	96.9%

Interclass Correlation Coefficients (ICC) indicated 'substantial' interrater reliability. There was no significant difference between interraters on any measures administered (p>.05). Parents were accurate evaluators.

Question 2: Was there a significant difference in speech-language test results of children with SM when evaluated by parents and professionals?

Repeated measures ANOVAs were conducted to determine if order of test administration by parents or professional impacted test performance. The following effects were found: PPVT-4, children scored higher during 2nd testing when parent was 2nd to test F(1,26)=7.54;p=.01; effect size (partial eta squared) = .23
EVT-2, children scored higher when parent was 2nd to test F(1,14)=9.03; p<.01; effect size = .39
TNL-Comprehension (receptive), children scored higher when parent was testing (regardless of evaluator order) F(1,14)=8.67;p=.01, effect size = .38
TNL-Oral Narration (expressive), children scored higher when parent was testing (regardless of evaluator order) F(1,12)=4.96; p<.05; effect size=.29
Word Memory of TAPS-3, not significant for number of words recalled given that professional used a card sequencing task (nonverbal serial ordering) and parents used a serial verbal recall task.

TABLE 4. Means (average of both 1st and 2nd testing events) and SD for Test Scores by Parent and Professional

	SS Mean	St. Dev.	Sig.
PPVT-4 Parent	111.48	11.30	
PPVT-4 Prof.	105.17	23.56	NS
	[mean=100, sd=15]	Effect Size (Cohen's d = .23)	
EVT-2 Parent	110.52	14.00	
EVT-2 Prof.	104.50	15.40	p<.05
	[mean=100, sd=15]	Effect Size (Cohen's d = .20)	
TNL Comp. Parent	9.52	3.01	
TNL Comp. Prof.	8.62	2.25	p<.01
	[mean=10, sd=3]	Effect Size (Cohen's d = .17)	
TNL Exp. Parent	6.24	3.72	
TNL Exp. Prof.	5.43	3.67	p<.05
	[mean=10, sd=3]	Effect Size (Cohen's d = .11)	
Wd. Mem. Parent (pics)	4.65	.94	
Wd. Mem. Prof. (verbal)	4.48	.67	NS
	[span of items in serial recall]	Effect Size (Cohen's d = .10)	

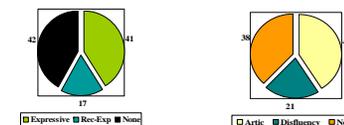
Question 3: What were the results of speech-language testing for children diagnosed with SM?

Children with SM can present as having speech-language difficulties when tested by a professional due to anxiety but when tested by parents their responses tend to be more accurate.

The following figures reflect results when children were tested by their parents (trained and guided for assessment).

- 41% of total had an expressive language disorder
- 17% of total had a mixed receptive-expressive language disorder
- 41% of total had speech articulation errors
- 21% of total had stuttering-like disfluencies

FIGURE 1. Percent of language and speech disorder types



Summary

Determining if an expressive language formulation disorder exists can be challenging with children who have SM. Training parents to administer tests was instrumental in accomplishing this goal. Parents were reliable and accurate evaluators. A significant difference between expressive and receptive language scores (when administered by parents), t(16)= 6.56, p<.05 was found. Children who did not respond to the professional during testing could not be counted in the paired t-test analyses. Children with expressive language formulation difficulty scored more than 5 scaled score points higher on receptive language testing (M=8.76, SD=3.38) than they did on expressive language (M=3.65, SD=2.09), Cohen's d effect size = 1.82. Overall, 41% of the children in this study exhibited an expressive language disorder and 17% exhibited a mixed receptive-expressive language disorder. The remaining 42% with SM had language skills determined to be within normal limits for their age. Also, 18 children (62% of sample) exhibited notable speech articulation errors or stuttering-like disfluencies.

Limitations of this study relate to the smaller sample size available for testing. In addition, it may be that parents who brought their children for evaluations were more concerned about speech-language problems. It is also possible that children scored more poorly than they would have if testing took place in the "safe and comfortable" environment of their home. A follow-up study is in the planning stages.

Receiving a diagnosis of SM, according to the DSM-IV-TR, specifies that the disturbance is not better accounted for by a Communication Disorder. The results of our study suggest that the diagnosis of SM should not be exclusive of a concomitant Communication Disorder since this occurred in more than half of our sample. A Communication Disorder may be an underlying reason why children develop SM. The testing methods used in this study hold promise as a new paradigm for testing children with SM. [See references on separate page.]

References:

Assessing Speech-Language Skills in Children with Selective Mutism

- American Psychiatric Association (2000). *Diagnostic Statistical Manual –IV-TR*. Washington, DC: APA Publishing.
- Botting, N. (2002). Narrative as a tool for the assessment of linguistic and pragmatic impairments. *Child Language Teaching and Therapy*. Manchester, UK: Sage Publications.
- Cohan, S.L., Chavira, D.A., Shipon-Blum, E., Hitchcock, C., Roesch, S.C., & Stein, M.B. (2008). Refining the classification of children with selective mutism: A latent profile analysis. *Journal of Child and Adolescent Psychology, 37*(4), 770-784.
- Cleator, H., & Hand, L. (2001). Selective mutism: How a successful speech and language assessment really is possible. *International Journal of Language & Communication Disorders, 36*, 126-131.
- Dunaway, C. (2006). A counseling approach for children with selective mutism. Retrieved from www.speechpathology.com September 26, 2006.
- Dunn, L.M., & Dunn, D.M. (2007). *Peabody Picture Vocabulary Test* (4th edition). Minneapolis, MN: Pearson Assessments.
- Gillam, R.B., & Pearson, N.A. (2004). *Test of Narrative Language*. Austin, TX: Pro-Ed, Inc.
- Martin, N.A. & Brownell, R. (2005). *Test of Auditory Processing Skills* (3rd edition). Novato, CA: Academic Therapy Publications.
- McInnes, A., Fung, D., Manassis, K., Fiksenbaum, L., & Tannock, R. (2004). Narrative skills in children with selective mutism: An exploratory study. *American Journal of Speech-Language Pathology, 13*, 304-315.
- Sattler, J. (2001). General test administration practices checklist. *Assessment of children: Cognitive applications* (4th edition). La Mesa, CA: J. M. Sattler, Publishers.
- Williams, K.T. (2007) *Expressive Vocabulary Test* (2nd edition). Minneapolis, MN: Pearson Assessments.

ASHA 2008 Presenters:

Evelyn R. Klein, Ph.D., CCC-SLP, Dr. Elisa Shipon-Blum, Sara Cohen, M.S., Emma Petrucci, & Ashley Keates
La Salle University Speech-Language-Hearing Science Programs, Philadelphia, PA