SSW Reports

BEWARE! A TEENAGER LIVES HERE

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When people seek evaluations for children aged 10 and above, we often advise them that tests of auditory processing are not as sensitive in these older children but we will try. Reports may contain the message that "the problems that the person is experiencing may be greater than the actual numbers indicate." Our focus in this issue is that older child or adult whom we can identify and what we can try to do to help them and their families.

When Other Conditions Exist Can We Test for APD?

Susan Brandner

Dennis, an 18-year-old young man, was unhappily brought in for testing. He knows there is nothing wrong with his hearing and does not understand why his mother dragged him for the evaluation. After briefly speaking with his mother, I brought him into the office to explain what I would be testing for and why. Because he is 18, I gave him the choice of having his mother observe the testing or not – he preferred that she not be there and we continued with the testing. Dennis was cooperative throughout the evaluation.

There is a family history of auditory processing difficulties, but he has been diagnosed with ADHD and Obsessive Compulsive Disorder; he does not take any medication at this time. His mother completed the ADHD/CAPD Questionnaire developed by Kim Tillery Ph.D. (in Masters, Stecker & Katz *Central Auditory Processing Disorders-Mostly Management* -1992) and noted some behaviors that are associated with ADHD only, some behaviors that are only associated with CAPD and some behaviors associated with both conditions. It appears that Dennis has both conditions.

One of the most significant behaviors that his mother reports is that Dennis is and always has been very sensitive to noise. He will sit in the house with a sweatshirt hood on his head, in an attempt to muffle background sounds. Over the years Dennis has worked with a learning consultant and made great strides in his academic abilities – he has been accepted to college. During his high school career Dennis has had extreme difficulty with foreign language; his mother is hoping that if an auditory processing problem can be detected, the college may waive a necessary language requirement.

Audiometric Evaluation

Although Dennis' responses to pure tones are normal and his thresholds are essentially equal in both ears, otoacoustic emissions for the left ear is notably poorer at 2000 Hz than the right ear. Is he receiving his auditory information differently in each ear? Immittance testing shows normal tympanograms, and an ipsilateral acoustic reflex was obtained for each ear.

Dennis' word recognition score for his right ear (92%) is poorer than the norm for his age indicates. When noise was added (s/n +5dB) the scores on that poorer right ear fell just 4% but the score for the left ear dropped 28%! He certainly has a significant inter-aural difference suggesting that he cannot make good use of the binaural advantage to suppress background sound. Does that depressed OAE for the left ear account for this discrepancy?

On the *SSW Test,* Dennis' Total score is 3.5 standard deviations below the mean and reveals Decoding and Tolerance/Fading Memory problems. There were a significant number of delayed responses that support the Decoding diagnosis. Dennis is older and has worked with a learning consultant over the years; that probably explains why he did well on the (*PS) Phonemic Synthesis Test*, getting 24 of the 25 items correct; there were no noted qualifiers on this test.

The protocol of the office desires that tests, in addition to the traditional **Buffalo Battery,** be included. The *Random Gap Detection Test (RGDT)* was administered and Dennis had inconsistencies in his performance. This may be the result of a loss of focus (he has a diagnosis of ADHD) rather than from poor timing abilities. Lastly, the *Time Compressed Sentence Test* (TCST) was administered. In this test sentences are presented monaurally at 40% and 60% faster than what is considered 'normal'. Dennis was able to complete this task successfully for each ear.

Because Dennis did well on PS and TCST one could question if he had Decoding problems. It is vital in this case to report on the significant number of delays that he demonstrated – while it is a soft sign, it can help explain why Dennis did well on those tests but had difficulty learning a foreign language.

Now what?

At the post-testing consultation that included Dennis' mother, I referred them to a Speech-Language Pathologist who specializes in working with people who have auditory processing problems. In my report I recommended Speech-in-Noise desensitization therapy and if she found problems with auditory memory to address that skill as well. Fortunately we live in an age where it is 'cool' to have noise canceling headphones and I recommended that Dennis try this. If it doesn't work for his academics, at least he will be able to fly peacefully. Dennis was counseled about assistive listening devices to help him in large lecture halls. The use of 'stage management techniques' e.g. moving people to a quiet and/or well lit part of a room, were discussed. A provision for untimed tests was also recommended to give Dennis the extra time that I think he needs to process information. As a final suggestion I brought up the idea of Dennis learning American Sign Language as his foreign language because the visual component of the language might make it easier for him to learn.

The biggest 'now what' appears to me to be that as audiologists who specialize in auditory processing, we need to be trained in the therapeutic techniques.

Where Does the Fault Lie?

Jack Katz

Every few weeks I see a child who has been missed, fell through the cracks, and was left behind. The parents did what they knew to do. Presumably, the professional community did what they knew to do (although we do not know if any knew what to do for auditory processing but did not do it). I do know that some schools/school systems tell their staff that they are not to

mention APD for fear that the cost of the services will be the school district's responsibility.

Joseph

A delightful, charming, polite and very smart, athletic 17-year-old young man was seen this month for an APD evaluation. Because of his developmental issues, he was identified and given an IEP by 18 months of age. Between then and now he has had speech therapy for 15 years! At 3 years of age he was seen by an audiologist for a hearing evaluation and found to have normal hearing. The audiologist indicated the likelihood of APD. Because speech-language progress was slow, he was reevaluated for hearing at age 5; when found to be normal, he was given the SCAN. This helped to confirm the AP deficit. Progress was still slow at 7-years-of-age and so he was retested by the audiologist and again found to have APD.

Joseph had immediate problems in school including reading word accuracy, reading comprehension and math, but not in spelling, as he is an excellent visual learner. To help him at school, in addition to speech-language therapy, he has been receiving remedial reading services (including intensive phonics) for the past 5 years as well as services for learning disabilities (LD) for 1 to 1½ hours a day.

The only service directed toward APD was enrollment in a *Fast Forward* research study at a local university, in the hopes it would resolve his problem when he was 8-years-old. In desperation the pediatrician put Joseph on Ritalin even though he did not have ADD or ADHD, but rather in the hope that it would help him with his APD. Joseph took the medication for 9 years, but not surprisingly it did no good (see Tillery et al., 2000, J Sp Hear Lang Research).

Joseph wants to go to college very badly but his grades are so poor that he can only get into a junior college because they have no grade requirements. The parents wanted the APD evaluation to document Joseph's APD and establish a set of accommodations that would help him succeed in the junior college.

The Buffalo Model Questionnaire (BMQ)

On the BMQ the parents indicated 7 out of 8 (7/8) Decoding (DEC) questions (plus 2/4 more from the case history form), 4/14 TFM (plus 4/4), 2/6 INT (i.e., Extreme Handwriting and possible Auditory-Visual Integration), 2/3 ORG (plus 1/1) and 3/5 APD in general (plus 1/1). Thus, the behaviors reported by the family suggested all 4 types of APD.

Audiometric Evaluation

Basic testing showed normal thresholds for pure-tones, word recognition and for immittance. The central test results are shown in the table below.

Joseph's Significant Findings on the Central Test Battery

Test	Measure	APD Category
Staggered Spondaic Word (SSW)	Total (NOE) Score (14, NL=6)	Various
	Right Competing (6, NL=2)	DEC
	Left Competing (6, NL=4)	TFM
	Left Non Competing (2, NL=1)	DEC
	Delays (12, NL=0)	DEC
	Perseveration (4, NL=0)	DEC
	Ear Effect HL (2, NL=6)	TFM
	Order Effect LH (-2, NL=-1)	TFM
	Reversals (2, NL=1)	ORG

Phonemic Synthesis (PS)	Quantitative Score (22, NL=25)	DEC
	Qualitative Score (16, NL=22)	DEC
	Delayed Response (3, NL=1)	DEC
	O for L (1, NL=0)	DEC
	Quick Response (3, NL=1)	TFM
Speech-in-Noise (SN) W-22 words	Right Ear Difference (20, NL=17)	TFM

DEC = Decoding, **TFM** = Tolerance-Fading Memory, **INT** = Integration, **ORG** = Organization
Note: Smaller scores are better for all indicators except SSW: Order Effect; PS: Quant/Qual Scores

A new test, Dichotic Offset Measure **(DOM)** that I am working on to provide additional INT signs and more sensitive reversals, was also administered. Joseph had 8 reversals on DOM supporting the milder sign on the SSW. The parent information differed slightly from the APD test results in that the BMQ also showed a sign of INT difficulty, whereas the SSW test did not. The jury is still out on that question.

The 15 signs of APD on the Buffalo Battery and at least 3 categories of dysfunction surely demonstrate a major APD after 1000s of hours of therapy over the years. With such a bright, hardworking youngster, how could he still have such a significant processing disability?

What Went Wrong and Who's to Blame?
It seems to me that everyone did the best they knew how, including the parents, audiologist, pediatrician, school and Joseph himself. We could say that someone should have known that you can treat APD, but if someone is responsible, I suppose it is me.

I have often pointed out that "You don't know what you don't know until you know it." It is for this reason that those who know how treatable APD is need to spread the word to those who don't. This does not absolve those school administrators who forbid their staffs from pointing out to parents that there might be an APD because the school might have to foot the bill. But if the personnel believe that APD is/may be the problem and the parents trust the school to be honest and to want to help educate the children, then how could those schools' behavior be condoned?

Postscript
Joseph's parents have decided to have him come to APS for auditory training. I am predicting that it will not take more than 10 sessions (roughly 8 hours of therapy) to bring his performance to normal or near normal levels. It looks good but a bit late. * * *

When Peripheral Hearing Isn't Exactly Normal

Susan Brandner

At age 15, Margaret, a lovely young lady, was brought to our office. As a young child, from 6 months of age through 3 years of age, she had a history of recurrent otitis media. She was scheduled to have myringotomies and tube placement, but that had to be can-celled because of another ear infection. After that episode she never had another known infection. At 9-years of age Margaret developed allergies; she developed nasal problems and became a mouth breather. Margaret then developed a tongue thrust that required a second round of orthodontia be completed! She is currently receiving speech therapy for the deviant swallow and is under the care of a physician for the allergies.

Margaret's mother expressed concerns about her hearing. Margaret reportedly listens to the television at a loud level.

Academically, her grades have fallen from As and Bs to a C level. Margaret tends to ask for repetition many times during the school day. This behavior is becoming troublesome at school, as her manner of asking is atypical for a high school student.

Peripheral Hearing: Margaret's responses to pure tones are at a borderline normal range with an upward rise at 3000 Hz and a drop to below normal at 6000 Hz for the right ear, 8000 Hz for the left ear.

Her speech reception thresholds are better than the pure tones would suggest and her word recognition, presented at an elevated level (40dB SL) as compared with average conversational speech, are poorer than *SSW+* (computer program) *norms* suggest for her age. Ipsilateral reflexes at 1000 Hz accompanied normal tympanograms bilaterally.

The Processing Results: Margaret's word recognition in quiet was reduced for her left ear (88%) and within normal limits for her right ear (92%). Her speech- in- noise scores were significant for both ears but her Inter-aural Difference was not significant. Even '*normal'* classroom sounds can interfere with her ability to understand what is being said.

On the SSW, Margaret, showed an Integration Type 3 problem with Decoding soft signs and TFM signs as well. Fortunately she did not show any signs of Organization problems. Her 8 cardinal numbers were:

	RNC	RC	LC	LNC	
Rt.	0	1	3	0	
Lt.	0	1	8	0	
					Total
NOE	0	2	11	0	13
Norms	1	2	4	1	6

In addition, Martha had 5 delayed responses and at her age there are no delays expected. Her 'Total' score is >5standard deviations below the mean!

The need to look at soft signs is reinforced when we look at Martha's performance on the *Phonemic Synthesis Test*. Quantitatively (the actual number of correct responses) Martha's score is age appropriate with 23 of the 25 items correct. When we look at *how* she achieved that score (the Qualitative score), Martha's score falls to 21 items correct with an expected score of 22 correct. Moreover, she had a perseveration and a first phoneme error, both demonstrating the struggle she has getting these items correct.

Did the scores from 'non Buffalo Battery' tests support findings or lend any new information? On the *Random Gap Detection Test,* Martha's scores are within the normal range. On the *Time Compressed Sentences Test,* Martha's scores for her right ear are poorer than expected but left ear scores are within normal limits. The left ear score suggests problems with rapid speech; this can be related to Decoding issues.

What does the testing suggest how do we make meaningful recommendations? My biggest concern is that Martha is doing poorer than she had in the past, both socially and academically. I'm also concerned that she may have a peripheral hearing loss that may be progressive. It is not unusual for someone who has hearing loss to have processing issues and it is not unusual for children to exhibit academic problems as the academic load increases and their compensation skills are inefficient. Because Martha's mother describes her social behaviors as being inappropriate and that Martha demonstrates an Integration type auditory processing problem, I believe other specialists must be involved with Martha's care. Our office will certainly monitor her peripheral hearing and a sensory integration evaluation by a pediatric occupational ther-

apist has been recommended. Do other medical issues need to be investigated as well? We are not physicians and yet there are times we are more sensitive to issues than a primary care physician. Sharing a report with that physician and advising the parent to 'push for answers' may be the best intervention we have for assisting our clients.

The Dear Ackie Column

Dear Ackie,
I work in an urban school system that tells me that I can no longer use the *Buffalo Battery* because I am finding too many children with similar problems. We all know about sensitivity and specificity and how this has been researched. I'm trying to make our administration understand that the children that are referred for CAP workups are suspected of having CAP problems. Also many of our children grew in prenatally hostile environments that predispose them to problems. Needless to say, the postnatal period for these children, often consisting of a significant history of untreated otitis media is another risk factor. How would you help send the message to the administrators?

Thanks,
Ready to scream.

Dear Ready:

It is sad that school systems feel that finding auditory processing problems is a negative instead of a positive and that finding lots of kids is a threat to them when they should be breathing a sigh of relief. The real problem is that children are having speech, language, reading, and spelling problems and that their learning is stunted and they are unable to take notes or learn a foreign language. If the school systems are having great success in remediating these problems (and not leaving children behind) then ignore APD! But if children are missing out 1) academically, 2) communicatively and consequently 3) in self esteem and/or 4) limiting their educational pursuits, then those dedicated school administrators should be pleased and relieved that your tests have uncovered a simple contributor. If ignoring the problem would improve the children's success that would be fine. But, if the level of success is wanting (as it sounds in your situation) then the administration should understand that it does not take a lot of time or money to improve APD. If done properly the resulting improvements are going to look good for the school and in many cases save children. Parents have told me, "You saved my child's life!"

I do not want to give the impression that I am unconcerned about the cost of special help. But many AP solutions are quick and effective ways to improve success in school, and when the cost is averaged over the number of people helped, the cost is quite reasonable. In Canada, Wyoming and in many school districts in the US essentially all of the classrooms are amplified so all of the children benefit, not just those with APD. This might mean that children that are academically marginal might not need an APD evaluation or any remedial services. Auditory processing training can be given in groups of 3 or 4 or more. In schools where there are many underachieving children it might be most cost effective to provide auditory training for whole classes as we do for physical education because so many will benefit.

The Buffalo Battery is powerful and has 3 validity checks to be sure it is correct. The APD categories should coincide with the complaints of the teacher/family, improvement should be demonstrated on the post training re-test and the specific academic-communicative problems should improve as well.

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