**SSW Reports**
**c/o Kim Tillery**
**29 Harwood Drive**
**Snyder, NY 14226**

November 2010

Dear Colleague and Friend,

- It is subscription time again! We provide all of the issues for the 2-year period if you start your subscription mid-cycle. By this method we keep our bookkeeping simple. We would love to have you re-subscribe for the next two years!

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Best wishes,

*Jack*

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# SSW Reports

October 31, 2010

Dear Friends and Colleagues,

It is hard to believe that another year of SSW Reports has come and gone. Although this is still the 31st volume; it is really the beginning of the 32nd year of publication. We have traveled many roads during this period and hopefully have brought some light to APD.

### Getting Involved & Don't Listen to Harmful Drivel

I am so pleased to see how many more people are getting involved with APD and how many of those are open to providing therapy. I heard yesterday that one of our APD leaders said that we should not be doing APD therapy until a child is 7-years-old. I hope that none of you believe that! We have an APD therapy group that would dispute such a baseless idea and some parents who were told that line will scratch out the eyes of anyone who utters such a thought to them again. My feeling is that if those audiologists can't do their therapies before age 7 to send the younger ones to us. Children who are suffering should not have to do without proper services for a problem that is so remediable. And for any of you who are thinking about doing therapy, please join our webgroup. Contact Katie Teague (katie.teague@gmail.com).

### Basic, Advanced SSW and/or Therapy Workshop

We are setting up 2, back-to-back, workshops in Charlotte, SC. We have not decided if it should be a Basic SSW followed by an Advanced or one of those followed by an APD Therapy workshop. You could help us decide. If you are interested in one or two of those workshops please contact Jack King (thedizzydoc@gmail.com).

### Still Waiting for AAA Guidelines

Many of us who learned that we could comment on the proposed Guidelines were given one week to do so. We scrambled to find them, read them and respond. Many of us turned pale when we saw the AAA's Guidelines because much of the junk that was in the ASHA '05 Technical Report (the makeup of both committees were similar) was proposed again. But Guidelines are stronger than Reports and therefore even more important. We hope that the AAA group listened to what we had to say. So now we are waiting to see what they came up with. But whatever it is, if they really wanted a public review they should have provided a decent amount of time for us to carefully read and understand the implications of what they were proposing.

### I'm an Optimist

No matter how the election turns out on Tuesday and no matter what AAA proposes; I know that we will move forward and things will work out in the long run. Of course, we need to be pro-active to encourage a good end. If each of us is doing a good or better job at work and if we speak up for what we believe is right and if we put in some time for the common good the result is more likely to be favorable.

*Jack*

# SSW Reports

**• Effects of Conductive Loss**
**• SSW Perseverations**

**Vol. 31 No. 4** **November 2010**

## The Effects of Conductive Loss on Auditory Functions

Jack Katz

Before APD came on the scene, I realized that conductive loss had an adverse effect on auditory functions; other than the air-conduction threshold. My dissertation in 1961 was with adults who had conductive losses due to otosclerosis (O) or to long-standing conductive losses due to otitis media (OM). We also had a normally hearing (N) control group.

The testing method we used was Temporary Threshold Shift (TTS) in which a puretone (500, 1000 or 4000 Hz) was presented to the ear at 20dB SL for 3-minutes. Immediately following this threshold 'recovery' was monitored for 5-minutes by Bekesy audiometry. The results showed the phenomenon was frequency sensitive; with 4000 Hz (the highest test frequency) having the most extreme results.

First of all, one would think that such a mild amount of stimulation would have a negligible effect on threshold and any effect would be very brief. However, at 4000 Hz there was an initial threshold shift of about 15dB for the Ns, 16dB for the OM group and almost 17dB for the Os. While this shows little initial difference for the groups, it was surprising to us that 20dB for just 3-minutes would produce such a big shift. The recovery pattern for the N group was a 10dB improvement in the first minute of threshold tracing and then about another decibel over the next 4-minutes. At the other extreme was the O group that improved minimally over the first minute and then shifted further to 18dB SL by the 5th minute of threshold tracing. The OM group ended at almost 18dB SL. There was no way to account for the shift by the knowledge we had at that time and it might seem puzzling today, as well, why the conductives did not recover as the N group and in fact showed no recovery at all after 5 minutes. We were of the opinion that a conductive loss was basically a plug in the ear - remove the plug or stimulate above threshold and the system should be normal. On further analysis we found that the threshold shift at 5-minutes was influenced by both the duration of the loss and the extent of the loss. Indeed 6-weeks after surgery for otosclerosis the TTS system was essentially normal!

Based on this information I interpreted the phenomenon as a deprivation effect. It appears that after a period of limited stimulation of the auditory system that perhaps a chemical depletion (or inefficiency) may take place in the synapses of the spiral ganglion and/or above (based on the animal work that I did with a pharmacologist Paul Guth). In addition we found in humans we could show deprivation differences in threshold even over a 4 hour stint in a sound booth.

### Children with OM

So what has this to do with children who have a history of OM? For the approxi-

mate month, two or possibly three that the child has OM during the very early years they not only miss out on some speech, but also have improper resonance of sounds because the middle ear is no longer an empty chamber. Also high frequency sounds are likely not as plentiful. Another factor that may not be widely known or understood is that OM is a noisy condition so there is a speech-in-noise issue and I believe that the noise may be imprinted (as well as the speech) into the child's brain.

### The 'Love Me Tender' Effect and The OM Dialect

I noticed that many of those who had a long history of OM had a particular 'dialect'. Those who were born in Brooklyn have a Brooklyn Dialect, those from the South have a Southern Dialect and those who were exposed to a lot of OM may have the OM Dialect. What I mean by this is that their speech has a noisy sound as if the sound is bouncing off the inside of their cheek. It also tends to be nasal. I have a recording of Elvis Presley singing 'Love Me Tender' that epitomizes this type of speech. When we see one another I will be happy to give you a few bars to demonstrate the OM Dialect.

### Shriberg & Smith (1983)

An important study is Shriberg & Smith (1983) who studied young children in speech clinics who were getting therapy for articulation. They found for those with significant histories of OM that they had two types of difficulties not seen in those children who did not have histories of OM. I realized in recent years how much we see those with histories of OM having behaviors that can be related to Shriberg & Smith's findings.

**Initial Consonant Change:** They found speech differences in their initial consonant errors. The OM group omitted the first sound, substituted an /h/ or glottal stop.

**Nasal Consonant Change**: Those with histories of OM also had substitutions of one nasal for the other or tended to have nasal or de-nasal speech.

I suspect the nasal speech of the OM Dialect is related to the Nasal Consonant Change and that the indistinct speech that I noticed is related to noise associated with the OM fluid that might also account for the /h/. I trust that you have seen on word recognition testing in quiet and noise (on the CTB-CD) that ***owes*** becomes ***hose*** and ***ate*** becomes ***hate***.

### Other Influences of Early OM

When a child's ears are full of fluid it is likely that there is yet another important influence on what is imprinted in the child's Phonemic Zone. If you clamp your palms over your ears and and say "look" you will hear a brief little glottal sound just before you hear the actual /l/. It is as though you hear the 'oo' sound before *look* (i.e., oolook). /w/ may also be affected by the perception of a vowel before it (e.g. /u/). I suspect that the noise of the OM may be somewhat enhanced by the occlusion affect of the fluid.

So early OM appears to imprint/encode noise, nasality, altered resonance and glottal stops in these children. I suspect it is because of a long periods of OM during the first year and a half of life that we encode misinformation that will be rather hard to get rid of later on. My guess is that if I child continues with OM (as we see those with early OM who often become otitis prone). This may persist for many years. If so it will surely be harder to improve these imperceptions.

Another consideration is that OM often starts in one ear and gradually increases over the next few weeks. During the increase in one ear the brain is getting normal stimulation from the other ear. During the first year or two consistency is most important so what is the brain to think of different inputs? I suspect it takes both into consideration. Then the second ear begins to accumulate fluid and it too is changing. Then the first ear begins to recover and there are more changes and finally the second ear returns to normal. But a number of bouts of OM during this critical period can have a deleterious effect on auditory processing.

If a person continues to have bouts of OM this can make therapy more challenging. It is most unusual for a child to lose their improved Decoding skills after completing therapy. However, my first concern when this does happen is whether the child may still be experiencing OM. Typically the children are not aware of bouts of OM as they have had them all of their lives, the fluid comes on gradually, lasts for weeks (sometimes months) and then goes away as gradually as it came. You have probably found in your own work that parents who were not aware of OM in their child will indicate that there was no history of OM, but when you test hearing you identify a hearing loss/flat tymp (likely the problem had been unnoticed for weeks). Those same individuals have signs that Shriberg and Smith and I also have noted for years. They include: hearing something like 'itl' for /l/ or /o/ for /l/ or the /l/ is colored with a vague vowel or glottal stop before the /l/, or it has a /w/ influence. Similar vowel influences on /w/ may be found. Others hear an initial /h/ sound especially prior to a word beginning with a vowel. Also the OM Dialect in which it sounds indistinct as if the person is sending speech against the side of their mouths: with or without nasality.

## Some Closing Thoughts

Needless to say, otitis media may not cause serious health problems in most children. But, in those that we see, the effect on their auditory processing may be very significant and also may be harder to correct.

In addition to the long-term effects of conductive loss due to early fluid and hearing effects, as well as fluctuating sensitivity during critical periods (during bouts of OM) it is very likely that Auditory Deprivation due to the conductive loss alters the functioning of the lower levels of the auditory system. For these reasons I try to alert parents to this problem, even in those who believe their child had no bouts of OM or just had a few. I try to alert the children as well. I mention the presence of noise that accompanies the fluid.

## References

Shriberg, L & Smith, A (1983). Phonological correlates of middle ear involvement in speech delayed children. JSHR; 26, 293-297.

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## SSW Perseverations

Jack Katz

I said "Hi Barbara" to the receptionist as I entered the building. A few moments later as I turned into a corridor I was a bit startled to see Dianna the office manager. Out of my mouth came "Hi Barb…". Although I caught myself, that was surely a perseveration. There was a word or phrase that I just said that was sitting in my memory (immediate or longer term) in a situation akin to the previous situation so reflexively, without thinking, out it came.

On the SSW test a high percentage of the word perseverations come from items that were just a few items before. Sometimes

the perseverated word sounded like the missed word; so that would help to make the link for the brain but other times there was no obvious connection.

Perseverations are made of either words or pseudo words that we had uttered before. So sometimes they could be incorrect utterances originally but then used again. It is clearest when a person says a non-word like, "gerumph" for the same, or likely a different word, later on.

**SSW Perseverations**

I considered 5 possible influences that would encourage a perseveration for someone taking the SSW test.

1. Proximity of the original utterance (OU) to the perseverated utterance (PU or just P).
2. Position of the OU in the item being the same as the P. For example, if both were 3rd words that could cue a person to make the association.
3. If the missed word (MW) and the P sounded alike in some way that might ring a bell and cue a P.
4. I wondered if words that were more common on the test prior to the P would encourage the person to reach out for it.
5. And finally, words that are more commonly heard than the missed word (e.g., night light for *lamp light*) would be chosen. We would presume the more familiar word or spondee would come to us more readily than the less familiar one.

I assumed that each of these could have some pull on the person who was not sure of the word or who had no clue what it was. But, I suspected that the more of these factors in a situation, the more likely the P.

**The Perseveration Data**

I checked 50 folders of children who were recently seen. Initial SSW results were used. As many as 6 P's per person were entered. As it turned out there was only one child who had more than 6; she had 7 (in a later sample 3 children had 14 to 18).

Exactly half of the sample had SSW Ps. So this is clearly a common qualifier. The average for those with Ps was 3.4 per child. Certain Ps were more common than others. For example, *ball* (OU) from item 17 was reused in item 18 to replace *saw* (the MW). This was the most common P, it was noted for 10 of the 25 P-subjects.

Four of the 5 influences were considered. To be more confident that the data were for real perseverations, and not chance errors, I analyzed only Ps of which there were 2 or more (e.g., *ball* for *saw* had 10).

There were 52 Ps for 15 different word items (e.g., *ball* from #17 for *saw* in #18). As noted above 10 children made a particular P. On item #18 ball was said for saw. For ball/saw the OU was in #17, the vowel of the error word in #18 was the same. So there were three potential factors to bring on the P – proximity, one sound alike and more common word. But in this case I would also suspect another contributor that I did not analyze for. Band saw is not a common spondee and so children often say bend. Not being sure of the competing word they matched the word ball from the previous item.

Table 1 (below) shows the number of Ps for the 25 children who had Ps. It shows the P/EW and the item number for each (e.g., 18/17). Then each of the 5 factors is listed so we can see if there were any, or many, influences on this P and which ones were involved.

| # of Ps | P & MW | P-Item/ MW-Item | Item Proximity | # Same(?) Sounds | Same Word Position | Familiar P/ MW (0-2) | More Common |
|---|---|---|---|---|---|---|---|
| 10 | ball/saw | 18/17 | 1 | 1 | | 2/0 | P |
| 6 | night/lamp | 29/24 | 5 | | | 2/0 | P |
| 5 | flash/out | 8/7 | 1 | | #3 | 1/2 | MW |
| 5 | light/side | 8/7 | 1 | 2 | #4 | 2/1 | P |
| 4 | birth/work | 32/28 | 4 | 1 | | 1/1 | = |
| 3 | white/tub | 4/b | 6 | 1 | | 2/1 | P |
| 3 | light/tub | 4/3 | 1 | 1 | #2 | 2/1 | P |
| 2 | bread/bed | 6/5 | 1 | 3 | | 2/2 | = |
| 2 | meal/mail | 10/5 | 5 | 2 | #4 | 1/1 | ? |
| 2 | oat/air | 10/5 | 5 | | | 1/1 | = |
| 2 | play/corn | 27/26 | 1 | | #1 | 2/1 | P |
| 2 | book/work | 34/33 | 1 | 1 | | 2/1 | P |
| 2 | cake/net | 36/22 | 14 | | | 2/0 | P |
| 2 | race/green | 40/39 | 1 | | #1 | 1/2 | MW |
| 2 | horse/house | 40/39 | 1 | 2 | #2 | 2/2 | MW |

Table 1. Number of Ps, the P & the missed word, the item #s of the P/MW, proximity of these items, same sounds in P & MW, same word position in item, familiarity rating of P/MW and comparing the 2 words which is more common one.

In Table 1 we see that 63% of the Ps were from the previous item and 90% were within 5 items. Only 4% were more than 6 items away and even that is within the 20 items that I have suggested are most likely Ps. We can say that the closer the 2 items the greater likelihood of a P.

Same or very similar sounds were found in 63% of the Ps. Eleven of those had 2 sounds in common.. It does look like the similarity of the words P and MW can influence the mistake. *Oat/air* was not counted as a phonemic influence but perhaps both words beginning with vowels etc. may have contributed to the P.

Forty percent of the Ps were in the same position in the item. If it were chance alone we would have expected 25%. So this does seem like another influence on Ps.

Fifty-two percent of the Ps were rated more familiar than the MW, in just 13% were the MWs more familiar and in19% both were rated about equal. This question is similar to the word that was more common when comparing them (not simply rating them). In 63% the P was considered more common to a child than the MW and in 17% it was the reverse.

I did not check to see if the words that were more common on the test (prior to the P) seemed to make a difference. I suspect this is a factor but not a major one.

When we look across the 5 criteria that I used we see 8% had all 5 positive factors; 17% had 4 criteria, 11% had 3 and 17% had 2. No P had fewer than 2 factors that would help to explain why there was a P. However when looking at the 5 most powerful (4-10 Ps) vs. the least (2 Ps) or the middle 5 there was no difference in the number of significant factors.

I think proximity is the most important single factor followed by acoustical similarity of the P and MW. Familiarity and position in the item appear significant but somewhat less important; in general.

Perseverations are important qualifiers that indicate the Decoding category. For various reasons (e.g., proximity or similarity of sounds) they seem to be available when a child is not sure of a word on the SSW test. The parents of these children often report that they also P at home. I often catch some of my own Ps.

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