

SSW Reports

August 8, 2015

Dear Friends and Colleagues,

Hope you are having a good summer.

1. Subscribers from Denmark Merete Wolf and Dorte Bisgaard sent me information about new norms for their new SSW test that I am passing along. I was so pleased that they are evaluating and doing therapy based on the Buffalo Model. They thought of some improvements in developing their SSW that I did not think of and did a great job of developing the norms. I was so pleased that their norms go down to 5 years of age (apropos of the dispute about *under 7 years*). You will see how they eliminated those who are thought to have CAPD. This will make for much more sensitive norms. I was most interested to see that about 30% of the kids performed more poorly. I was not surprised of the increased incidence since we found an incidence of 20% several years ago. However, most of the weaker tests had an incidence of 3 to 5% which is far below what I think is correct.
2. Most will agree that the Buffalo Model tests and therapies are quite good, but we are not sitting on our hands. We keep moving forward and hope you are moving with us! The last issue was very important because it shows how we can improve one strong Integration indicator into 2 strong and 2 supportive indicators. I hope that the next issue will provide another indicator which will help in some cases of "internal dynamics" that can mess up the good stuff. It will come out as a Special Issue in the next month or 2 if I can get it done and if not hopefully it will be done for the November issue.
3. Tom Zalewski will be attaching the newest XL program (though clunky) for quickly calculating SIR and 2B3 Integration indicators. If you are already using the previous version please change over as this is more user friendly version.

All the best,
jack

SSW Reports

- **Danish SSW Test**
- **Update on DOM and 2 recent cases!**

Vol. 37 No. 3

August 2015

The SSW approach has been adapted for many languages and has been used successfully over the years. I was impressed with the care and thoroughness of the work by Danish colleagues who have taken their SSW development a few steps further.

Even the American (EC) SSW and the other Buffalo Model tests continue to develop and improve. Expect a Special Issue in the near future which will detail the new additions and their purposes in improving the power of these tests.

How Denmark Obtained the Danish SSW Norms

Merete Wolf and Dorte Bisgaard

History

Merete Wolf is a Child Neuropsychologist and Dorte Bisgaard is a Speech & Hearing Specialist. We have met because we both worked at the Pedagogical Psychological Advice in Aalborg. Aalborg is the third largest town in Denmark. Merete Wolf worked there in 1986 when the director Per Kjeldsen arranged a Symposium on Dyslexia – psychological and neurological. One of the star speakers was Jack Katz, who spoke about the Central Nervous System, Cerebral Dominance and Dyslexia. Jack wanted to understand some of the Danish talks, and Per Kjeldsen asked Merete Wolf to be a simultaneous interpreter for him. In the same symposium, Inge Lise Rasmussen talked about the SSO test. O is short for 'ord' that is Danish for 'word'. Inge Lise had created a Danish version of the SSW test together with Bo Ege, Carl Anker Christensen and Bent Aage Larsen. An audiologist, Minna Hammershøj, had attended a course in the use of the SSW and took initiative to buy the SSO test for the Pedagogical Psychological Advice. Minna Hammershøj and Merete Wolf discussed many SSO results and believed the SSO scoring program only used a fraction of the test results of the SSW. Merete Wolf mailed Jack with an idea about writing a new manual and scoring program. She learnt that these already existed in English. Jack allowed her to translate the manual, and she created a Danish scoring program with the American norms from October 1998, Danish SSW, with help from Jack and the data engineer Gary Bricault. A case of test results comparing the old SSO and new Danish SSW scoring programs was published in Danish (Wolf, 2005). The case was a girl. The girl's mother saw the article and liked it.

The SSO test was used together with other tests and helped a lot of children who had difficulties in school. One manager of special education, Karen Marie Christensen, tested many children using this test battery. However, she felt insecure in interpreting the results, and therefore arranged many conferences with pupils, parents and Merete Wolf, where the pupils' difficulties were better understood and strategies for teaching were decided.

In August 2010 the 10th Nordic Meeting in Neuropsychology took place in Aalborg. Merete Wolf gave an oral presentation dealing with how significant SSW results can add insight into social dysfunction.

Dorte Bisgaard learned about the SSO test and the Danish SSW scoring program during her work in Pedagogical Psychological Advice. She sensed the value of the information and started to use it herself. Apart from testing, she also provided intervention as a Danish Speech & Hearing Specialist which was inspired by the work 'Therapy for auditory processing disorders' (Katz, 2009) and Kjeld Johansen, a Dane who creates individually adapted synthesized music to stimulate auditive functioning.

The new version of the Danish SSW test and new norms

Dorte Bisgaard felt the need for a new version of the test. Merete Wolf asked Jack Katz, and he allowed Dorte Bisgaard to make it. She found Danish words with two stressed syllables. Each syllable gave meaning in itself. Two of these combined words were an item. The words were supposed to be known to children, and with as many names of animals as possible. No syllable appeared more than once. The same consonant was approximately used equally often in both ears. There are six demonstration and practice items in the Danish SSW. The last two items are most difficult to pronounce and grasp. The demo items disclose severe difficulties in short term memory.

A Danish private school for normal children wanted a screening of motor function, vision and hearing for the youngest 4 grades (which meant 8 classes). The school wanted to obtain an early indicator of difficulties to enhance the chances of helping the pupils with their difficulties. Dorte Bisgaard provided the audiology. So she evaluated 200 pupils with the new Danish SSW test. Then 62 pupils were chosen for closer inspection. Merete Wolf received the remaining 138 score sheets of children considered to perform within normal limits. That provided the data to calculate the normative values for 5, 6, 7, 8 and 9 years of ages. Only 3 persons were 10 years old, so no calculations were made on that age group. See the gender and handedness of the 135 pupils in Table 1.

Table1. Gender and handedness of 135 pupils

age	total	boys	girls	left-handed	right-handed	ambidexterity
5 years	13	3	10	1	12	
6 years	32	12	20	3	29	
7 years	27	16	11	2	25	
8 years	36	19	17	4	30	2
9 years	27	18	9	1	24	2
5-9 years	135	68	67	11	120	4

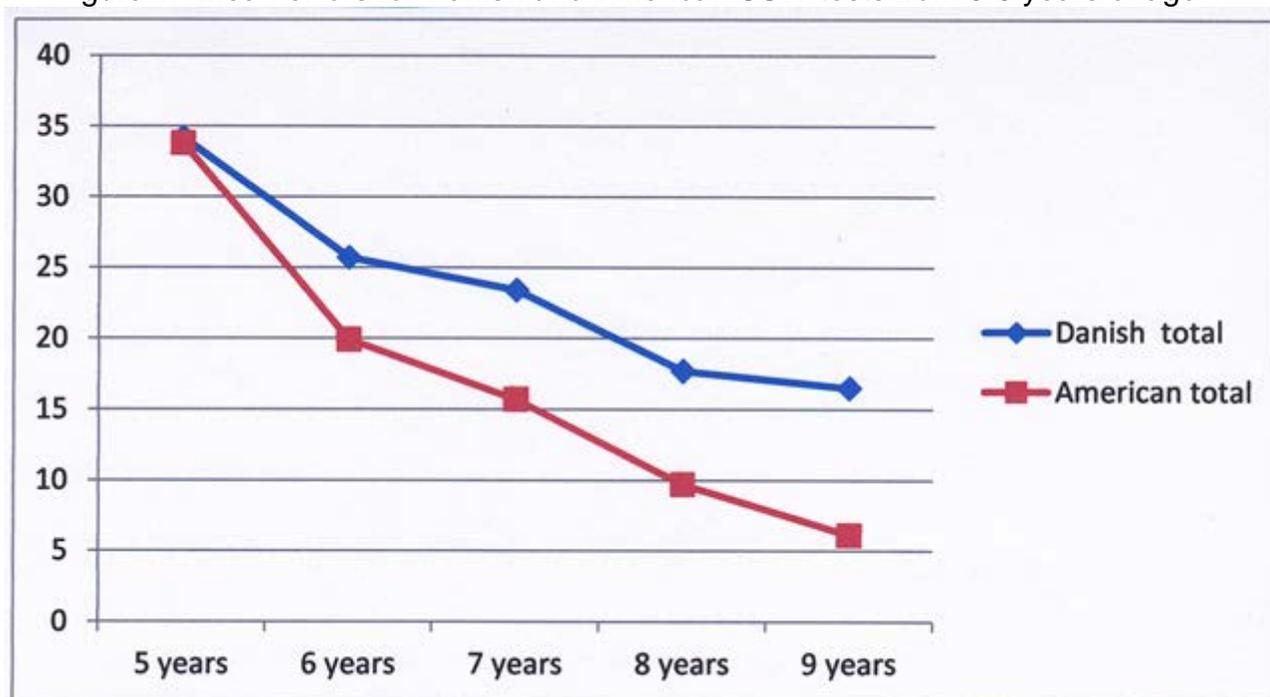
Table 2 shows the new norms. The 5* indicates that 5 years old pupils had only the first 20 items of the Danish SSW test administered. Readers who know the American SSW test will know that the NOE analysis is appropriate for CAP evaluations of normal hearing individuals (otherwise the Traditional Analysis should be used). Means (M), standard deviations (SD), 1 SD (1-NL) and 2 SD (2-NL) cutoff scores are shown (the preferred NL is **highlighted**). For Ear/Order Effects, both negative and positive cutoffs are shown. For Type-A only the absolute difference between Col-F (or B) and the highest of the other CNs (X) is used. In all cases the NORMAL limit is shown. More extreme values are significant.

Table 2. Number of Errors (NOE) Analysis Norms (Danish October 2013)

Age Group		RNC	RC	LC	LNC	NOE total	Rever -sal	EAR diff		ORDER diff		Type A
								L/H	H/L	L/H	H/L	
5*	M	2,1	4,6	6,8	3,6	17,1	1,7	-1,1		0,7		0,2
	SD	1,3	2,1	1,8	1,6	4,7	1,5	2,9		3,0		1
	1-NL	3,5	6,7	8,6	5,2	21,9	3,2	-4,0	1,8	-2,3	3,7	
	2-NL	4,8	8,8	10,5	6,8	26,6	6,3	-6,9	4,7	-5,3	6,7	2,2
6	M	2,2	5,7	11,4	6,3	25,7	3,5	-4,2		3,1		1,7
	SD	1,1	2,4	3,8	2,9	7,1	3,7	4,2		3,5		2,1
	1-NL	3,3	8,2	15,2	9,2	32,8	7,2	-8,4	0	-0,4	6,5	
	2-NL	4,4	13,9	19,0	12,1	40	10,9	-12,6	4,1	-3,9	10,0	5,9
7	M	2,2	4,4	11,4	5,3	23,4	3,0	-4,0		4,0		2,5
	SD	1,8	2,9	3,8	2,2	6,8	4,0	6,0		4,8		2,7
	1-NL	4,0	7,3	15,2	7,5	30,3	7,1	-10,0	2,0	-0,8	8,8	5,2
	2-NL	5,8	10,1	20,0	9,8	37,1	11,1	-16,0	8,1	-5,6	13,6	8,0
8	M	1,5	3,0	8,9	4,3	17,7	4,4	-2,9		4,8		1,7
	SD	1,4	2,1	3,9	2,4	6,7	4,4	4,4		5,0		2,4
	1-NL	2,9	5,0	12,7	6,7	24,1	8,7	-7,3	1,5	-0,2	9,8	4,1
	2-NL	4,3	7,1	16,6	9,1	31,1	13,1	-11,7	5,9	-5,2	14,7	6,4
9	M	1,4	2,7	8,5	3,8	16,5	2,5	-4,0		4,5		2,3
	SD	1,3	2,3	3,4	2,1	4,4	3,4	5,0		4,9		3,4
	1-NL	2,7	5,0	11,9	5,9	21,0	5,7	-9,0	0,9	-0,4	9,4	5,7
	2-NL	4,0	7,3	15,2	8,0	25,4	9,2	-14,0	6,0	-5,2	14,2	9,1

Figure 1 compares the Danish Total Number of Errors and the American norms. As only 20 items were used for the 5 years old, the means of the 5 year Totals were doubled to make it comparable to the norms of the other ages. When the means of the Danish Total Number of Errors were compared to the means of the American Total Number from October 1998, it appears that the Danish version of the test is most stable over the ages 5 to 9. One may conclude that it is best to calculate norms for a test version in another language, even if it has worked reasonably well using the American norms in Denmark.

Figure 1. Mean errors for Danish and American SSW tests from 5-9 years of age



Unfortunately, we do not have the norms for 10 to 69 years of age. However, we are working on developing this material. That does not change the fact that we have felt the SSW test and the Buffalo Model with American norms were very useful for Danish children. Thanks a lot for that.

Literature:

Bisgaard, D. Dikotisk lytning belyst ved Dansk SSW. In Dansk Audiologopædi nr. 4. 46 årgang, December 2010. (Dichotic listening viewed through Danish SSW Test. In DanishLogopedics vol. 4. # 46, December 2010.)

Bisgaard, D. & Mogensen, H.O. Når hjernen ikke lytter. Om høreforstyrrelsen APD - Auditory Processing Disorder. Dansk psykologisk forlag. Specialtrykkeriet Viborg A/S. 2015 (When the brain does not listen. About the hearing disturbance APD. DPF, Viborg, 2015)

Katz, J. Therapy for Auditory Processing Disorders. Simple Effective Procedures. Educational Audiology Association 2009 www.edaud.org.

Wolf, M. Dikotisk Lytning & Dysleksi. In Specialpædagogik 2005, årgang 25 nr. 4. (Dichotic listening and Dyslexia. www.tidsskriftetspecialpaedagogik.dk)

Kjeld Johansen's homepage www.dyslexia-lab.dk
and also www.johansenias.com

DOM, DOT & SSW: 2 Cases

Jack Katz

I have a few pages to fill and thought of 2 or 3 different topics that might interest you. I just happened to finish up with 2 longtime kiddos in therapy and think you will find this informative and interesting. In a previous issue, I mentioned that I wanted to finish streamlining the Dichotic Offset Measure (DOM) and now can report that this is on its way.

I'm sure that I mentioned the first young man previously. He was 15 years old when I started working with him; he has dyslexia and was not getting help at school. In fact, this great kid was a handful in school (out of frustration and his response to the manner in which he was treated). He was very fragile and eventually stopped coming to me for services. Last year he called me and said that he would like to come back. His reading was still at a very basic level but he was determined to go on to junior college, and he needed to improve his reading. I reminded him that I was not a reading professional; however, since he could afford my services, I would help as much as I could. Let's take a look at his scores.

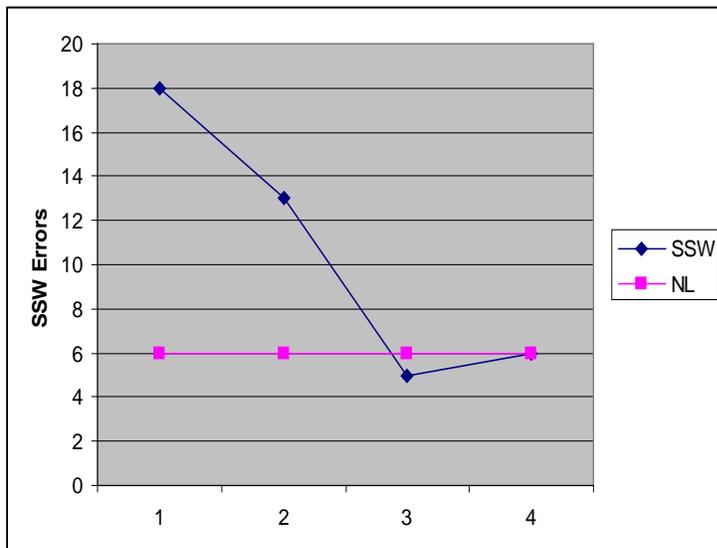


Fig. 1 You will see that his initial score on the SSW was 18 (8 SD poorer than the mean). We had to start very slowly but he seemed to be a bright youngster and caught on quickly. Therapy focused on decoding, speech-in-noise and memory. He did much better on test-2, but after that, his mother said that she could not get him to return and he said that he wanted to die. When he came back 5 years later we worked some more on the basics and then began Dichotic Offset Training (DOT). He started with a separation of 'dichotic' letters of 400 ms. Test-3 was after 8 sessions of DOT in which he worked his way all the way down to 0 ms. Wow, within NL! When he ended the next round of therapy concentrating on his reading issues he was recheck (test-4) and DOM remained normal.

'Sam' made great improvement and brought his SSW score down to normal limits. I never would have guessed that he could do so well. He also did very well on the Phonemic Synthesis test (*Quant=10, Qual=6* to *Quant=20, Qual=20*) and the Speech in Noise test (*RE=80, LE=76* to *RE=96, LE=84*). The left ear score was not at normal limits but still showed good progress.

Figure 2 shows Sam's performance on the dichotic therapy materials. DOT provides 4 letters of the alphabet, 2 to each ear and the most difficult offsets resembles the SSW paradigm. By the time Sam started DOT he was doing fairly well so we began the training program at 400 ms of separation between competing letters. For each offset the person is trained with 10 items REF and then 10 LEF. The typical level that I use is

60dB to minimize the influence of Decoding. Most training programs start at 500 ms and then work their way down to more challenging dichotic tasks. When there is a clear increase in the number of errors we could repeat that level next time or go back to an easier one and come forward again. In this case, his progress was so smooth that it was not necessary to repeat an offset until the 6th DOT session.

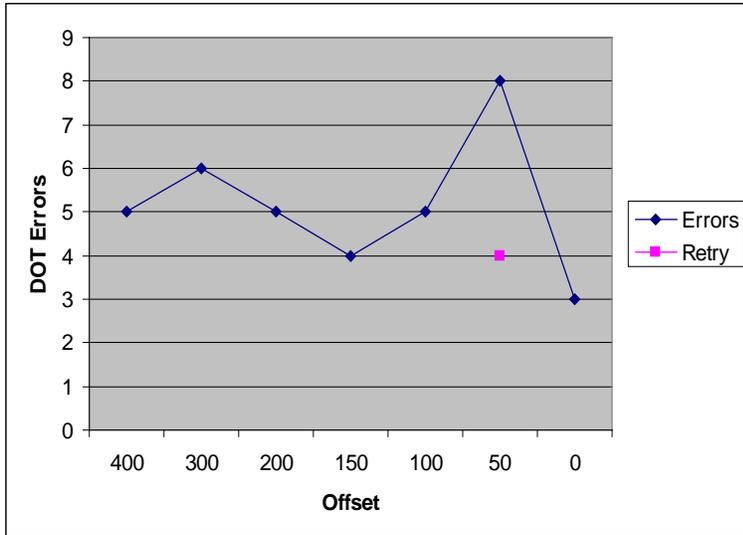


Fig. 2 You will see there were only 8 lessons and the only one to be repeated was 50 ms. On the other hand, 0 ms had the best score! That was counter intuitive unless you have been doing DOT and DOM for a while and have learned that in many cases with Type-A SSW patterns that 50 ms is often poorer than 0 ms and also the most challenging condition. So you can see the first 2 offsets seem to have given him enough training to do better on the next 3. But when it came to 50 ms the prior training was not sufficient for him to do well. It was impressive and not expected that with only one retry he would do so well. Finally, 0 ms was great.

Sam's brief training program also resulted in very good improvement on the SSW (Fig. 1). Below, Figure 3 shows his performance on DOM. DOM is made up of items from 0 to 400 ms offsets which alternate from REF to LEF and the offsets vary as well to minimize any learning effect. We are now working on reducing the number of items from 50 to 40 to speed up the test while maintaining all of the most challenging items.

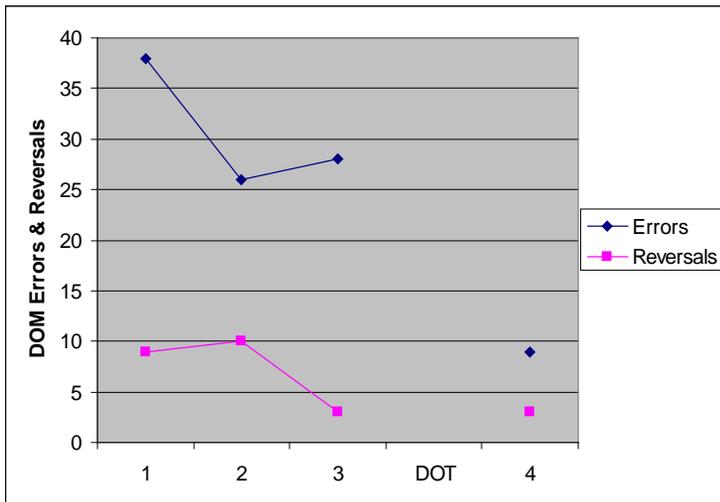


Fig. 3 shows the first 3 DOM results prior DOT and one time after the 8 therapy sessions (a total of about 1½ hours of therapy). The number of reversals is also shown. The improvement in errors from test-1 to test-2 appears to be primarily from better DEC and Sam maintained his progress on test-3. However, following the 8 dichotic listening therapy sessions, he made dramatic improvement on DOM. This type of improvement pattern was noted by Katz, Chertoff & Sawusch (1984) on earlier version of DOT and an earlier version of DOM and the current version of the SSW.

It should be noted that Sam did not demonstrate a Type-A pattern on the SSW test. As in some left-handers, his errors were rather divided between his RC and LC conditions. He is thought to have an INT disorder because of his profound reading problem and dyslexia. In this case, left-handedness might have aided him in improving his dichotic listening ability so quickly because of flexible brain development (I believe one benefit of left-handers).

The second case, 'Larry', was 11 when he was first evaluated and demonstrated the Type-A on the SSW. He too had a severe reading disorder and like Sam had meager-to-no services at school. Larry is right-handed and did not have therapy until he was 14 years old. When he returned he was completely retested to see where he was starting.

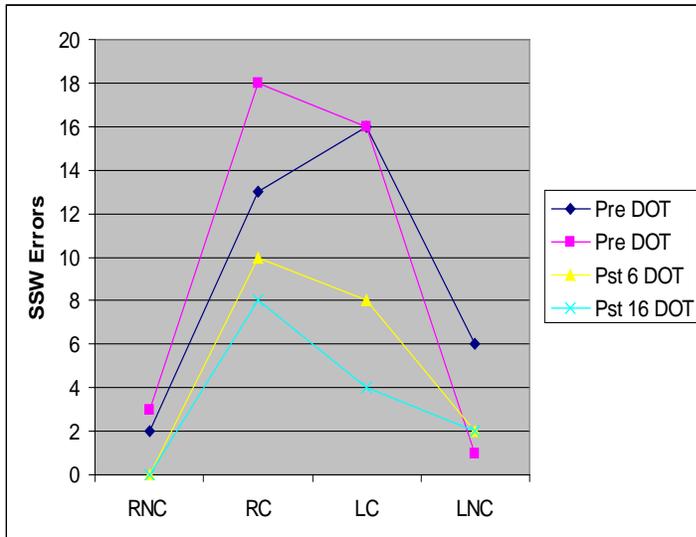


Fig. 4 shows the SSW results. The first 2 tests we administered before any therapy was given. There was no difference over the 3 years on this test and while the error scores were the same (38, 37), the pattern was somewhat different. It was interesting that one DEC condition got worse (RC) and the other got better (LNC). This may actually make sense since without any therapy/help he figured out how to catch the RC word but spent more time so he did not have enough DEC speed/ability to get the LNC as well. There was no improvement in the LC and RNC conditions. When the DEC, TFM & DOT therapy began, all areas improved except LNC, and most of all in the LC even with just 6 sessions of DOT. After 10 more sessions LC improved in test-4.

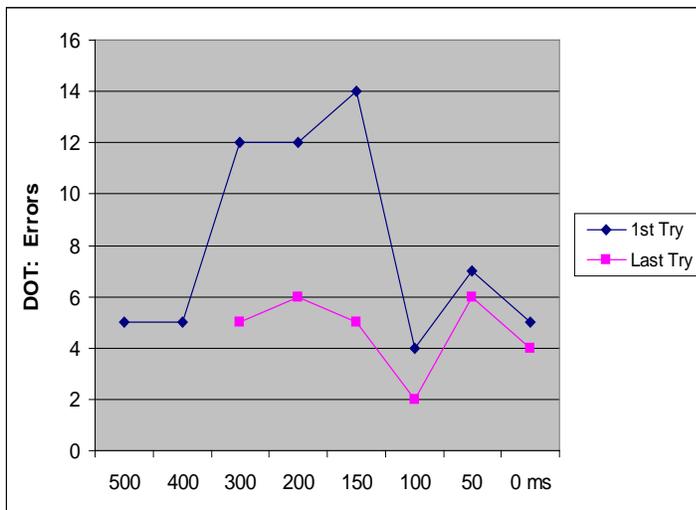


Fig. 5 shows Larry's DOT results. This time therapy started at 500 ms because of his greater difficulty with dichotic challenges. As you can see, the first 2 offsets were not very difficult for him, but that training did not prepare him sufficiently for 300 ms, so it was repeated a few times (not all of them immediately) until gradually he performed as well as he did on the easier levels. The same thing happened at 200 and 150 ms. All of the training seemed to pay off because at 100 ms Larry had his best score! Just 4 errors. At 50 ms his score was 7 and then 5 at 0 ms. Slightly better scores were obtained when he repeated 100-0 ms items several times. All together he had 22 sessions, 11 of them at 50 & 0 ms.

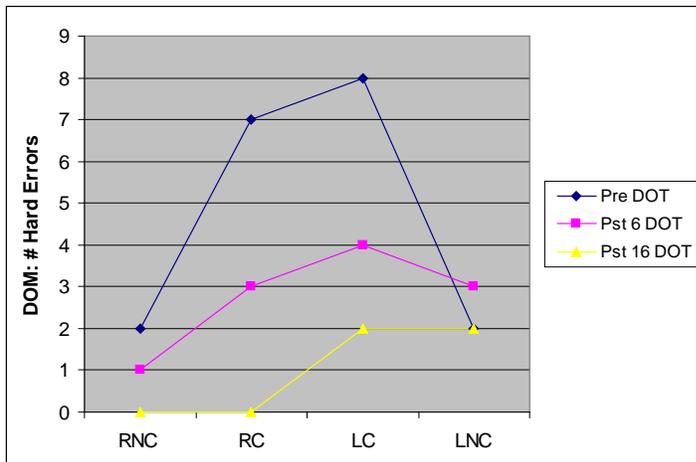


Fig. 6 shows 3 DOM results for Larry for the 0 & 50 ms items. Test-1 was given just before DOT was begun. This shows his challenge for competing letters. After just 6 sessions of DOT Larry made huge improvement on RC & LC letters. Test-3 shows further gains after 16 sessions of DOT. After that, Larry switched schools and came in tired for therapy at 4 p.m. The last 3 tests were poorer. His final scores for the 4 conditions were 0, 2, 4, 2 which is not bad at all. They are not shown because it confuses the figure. This reminds us that so many kids with CAP issues show even more reduced performance at the end of the day.

Reference: Katz, J., Chertoff, M., Sawusch, J., (1984) Dichotic Training, *J. Auditory Research*, 24, 231-264.