

SSW

NEWSLETTER

VOL.1 NO.3

MAY 1979

TOO YOUNG - TOO OLD

SSW norms are quite well established for individuals 11-60 years of age. In this "normal adult" age range the total C-SSW score cannot exceed +5 nor go below -4.

Brunt(1972) points out a high level of consistency on the SSW in the normal adult population up to and including S's in their 50's. Above this level Balas(1962) and others have noted poorer scores and wider s.d.'s. Below the 11-12 year range Myrick (1965) and Turner(1966) found performance to be poorer than for normal adults and also a wider range of performance. While many individuals who are less than 11 and over 59 perform within the normal adult range for TEC we cannot expect them to do so.

For many years our knowledge of the SSW in children has depended on the early work by Myrick for the C-SSW score. Recently, White (1977) has provided important information about response bias in children. We now lack the results of an extensive data pool to cross validate these studies. A National Sample has been under-

taken to give us confidence in relating any child's performance to strong national norms for age groups 5 to 12 years. The norms will be based on children across the country. By sampling normal children from many locales, using various audiometers and tape recorders and administered by many audiologists we should have a strong statistical and practical indication of how a child should perform. We want to maintain consistency in the test tape(EC), test administration and scoring(standard as presented at the workshops).

For the purposes of this sample, normal is defined as no otological or neurological disorders, no recent URI or allergy normal or better performance in school and without a specific learning disability.

The response has been most enthusiastic but many more samples will be needed. Please send your data in as soon as possible. If you have not gotten the specifics of the study please let me know immediately so we can publish the preliminary data in an upcoming issue.

References

Balas, R., Results of the SSW test with an old

age population. MA thesis, No. Ill, U.,1962

Brunt, M., The SSW test. In Katz(ed.) Handbook of Clinical Audiology, 1972.

Myrick, D., A normative study to assess performance...of children, 7-11 years on the SSW test M.A. thesis, Tulane U., 1965.

White, E., Children's performance on the SSW test and Willeford Battery. In Keith (Ed.) Central Auditory Dysfunction, 1977.

LETTER TO THE EDITOR

Dear Editor:

I was not sure that the Newsletter was for me until I read of the fellow who threw his P.J.'s into the toilet. Now I'm convinced that it has real academic value.

Best wishes,
R.P.

3 WEEKS OF SSW ??

Sounds G R E A T, huh? 3 credit course, June 4-22 @ St. U. of NY-Buffalo. A Basic & Advanced course in one. Includes testing, scoring, evaluating & report writing for real patients. Dissection of human brain and brainstem to correlate SSW with anatomic sites. Write to J. Katz.

The first 2 columns dealing with the use and misuse of the SSW focused on AR vs NAR and C-SSW vs R-SSW. The present column deals with what to consider when testing an adult (under 60 years of age) who gets a S or Mo SSW score.

Positive SSW scores indicate that the ~~point~~ ^{pt.} had relatively better performance on WDS than R-SSW. This implies that there is central distortion. When this occurs, the three major considerations are: auditory reception (AR) involvement in the opposite hemisphere; a transhemispheric (commissural) pathway problem, or a high brainstem disorder ipsilaterally. Let's consider these one at a time.

AR - a significant dysfunction in Heschl's gyrus will produce extinction of many of the competing words presented to the opposite ear (Katz, 1968). Typically, the peak of errors is shown in one ear only. There may be a bilateral peak, especially in left hemisphere lesion cases. WDS is usually depressed in the contralateral ear or both ears. For AR patients; presumably acoustic reflexes are normal, no excessive reflex or tonal decay and SISI and high level SISI should be normal. We do not know what BSER results look like in these cases but we can assume that waves I thru V would be normal. It would be logical that filtered speech, Rush Hughes results, SSI-CCM as well as competing CV's will

be depressed in the contralateral ear (Keith, 1977). CES should also be depressed in the ear contralateral to the lesion. Specifics about the use of CES will appear in a later issue.

Transhemispheric pathway - auditory information is communicated from one hemisphere to the other by way of the corpus callosum and anterior commissure. It is the posterior portion of the corpus callosum (splenium) and the posterior portion of the anterior commissure that are thought to handle auditory information. Thus, when lesioned, either of these two auditory portions can induce a disconnection between the 2 hemispheres. This will selectively interfere with the ear sending information to the non-dominant hemisphere for language (the left ear for right-handed people and not very clear for left-handers). Regardless of the side of the lesion, whether right, left or midline, the competing speech message will be primarily affected in the left ear (in a right-handed individual). WDS should not be markedly affected in "pure" cases. Acoustic reflex, tone decay etc. should be normal. One of the best ways to differentiate commissural disconnection is by use of CES. We expect that CES will peak in the RE and SSW in the LE (for a right handed person) if the auditory part of the corpus callosum or anterior commissure is damaged.

High Brainstem - the upper brainstem is part of the retrocochlear system (certainly up to and including the inferior colliculus). In my experience, there can be hearing loss usually flat or depressed in the lows and also in the highs. WDS is usually depressed but not as much as we would expect from an VIIIth N. or low brainstem disorder. When the upper brainstem is involved, there will be a tendency toward retrocochlear signs like tone decay (slightly greater on the affected side) and high level SISI at a relatively normal frequency (will be less than noted in the normal side with a similar threshold). BSER results will show abnormal waves or an increased latency between them.

This column concentrated on the 3 most likely interpretations of a severe or moderate score. When hearing is relatively normal, the task is simpler as it tends to exclude the high brainstem as a logical site (especially in the absence of retrocochlear signs). If the peak is in the RE in a right-handed person, this tends to rule out the corpus callosum/ anterior commissure. CES is a major help in differentiating AR from a disconnection problem.

REFERENCES

- Katz, J. SSW test: Interim report. JSHD, 1968
- Keith, R. Central Auditory Dysfunction: Ch. 3,4,&6.

S-M-U-S-H

A number of months ago I received a call from an audiologist (near Boston, I think) who put a label on a phenomenon that many people have noticed. A 'smush' is an error that incorporates elements of the 2 competing words such as: item #2 "sin" for side & in; #5 "boat" for bread & oat and #17 "fight" for white & foot.

It is hard to know the best way to score a smush. Fortunately, it is not too frequent an error. If neither of the words is correct we must mark both wrong (e.g., #36 "sket" for net & sky or #38 "skill" for skin & bull). Now, "boat" for bread & oat is a more difficult decision but I would handle it in the same way. Bread is obviously wrong but, reasonable arguments can be made for scoring oat as correct or incorrect. It is my feeling that it should be counted wrong. It is best to maintain the rule that if the word was said it was correct and if not it was wrong. He said neither bread nor oat & therefore both are wrong.

Dempsey(1977) mentioned finding the same kind of "bending" error on the Willeford battery. She noted this type of binaural smushing(if I can use such a phrase in polite company) on both the SSW & Competing Sentence Test in the same individuals.

One might speculate about the basis of the smush phenemonon. Any

thoughts, ideas or(even more importantly) data would be welcomed. Next time you do an SSW why not check and see if there are(any/how many) smushes. If you have some SSW's lying around it would be interesting to see how often they occur, in what types of patients, and in which items.

You could mark smushes by putting sm in the numbered box (where Repeat and Quick responses are shown). In case you were curious about the origin of the term 'smush' one of my students has no doubt hit on it. For #6 she got the response 'smush' for spread & mush. For historical purposes would the coiner of 'smush' please stand up.

Dempsey, C., Some thoughts concerning alternate explanations of central auditory tes results. In R. Keith (Ed.) Central Auditory Dysfunction, 1977.

(ERATTA)²

Auditec of St. Louis was kind enough to send out an Eratta for the CES Manual but unfortunately it was not entirely correct. Please correct the correction. There are 3 comparisons that should be equal or less than (\leq) that were shown as equal or greater that. The correct equations are:
 #3 $\Delta_R - \Delta_L \leq -10$
 #5 $(A+B) - (C+D) \leq -10$
 #7 $(A+B) - (C+D) \leq -25$
 Please make the same corrections on each page.

OBSERVATION 13 YRS LATE

I first noticed the Type A pattern in 2 teenagers with "dyslexia." The 8 CN's for Patsy = 0 0 0 0 0 14 0 0 & for Linda 0 7 0 0 0 0 0 0. The possible influence of cerebral dominance did not occur to me at the time but Patsy is R-handed with a LC peak & Linda L-handed with a RC peak. In each case the peak of errors "faced" the presumed non-dominant hemisphere for language-speech. Was this a coincidence or was it associated with commissural transmission (e.g., corpus callosum involvement)? Dominance effects might explain why Type A-LC is the most common A pattern

Next time your patient gives a Type A or B response; 1. add the suffix LC or RC to designate the peak, 2. find out the pt's handedness & 3. if at all possible give the CES (to see if it will peak on the opposite side, like a corpus callosum lesion).

The ramifications are fascinating. If you send in your findings we can print them in the Newsletter. As for the 13 years that the information was sitting in my files...well better late than never.

* * * *

Corpus callosum & Type A-LC patterns will tend to have positive scores for comparisons 1 & 3 of the SSW/CES equations, regardless of the side of lesion.

CASE: MENIERE'S DISEASE

Submitted by Mike Shirinian

This interesting case was diagnosed as Meniere's LE. Of particular interest is both the variation and consistency of results as well as the verification by BSER audiometry. The value of the C-SSW and A-SSW scores can be seen. This supports the results of Cafarelli, Nodar, et al., (1977) with Meniere's cases.

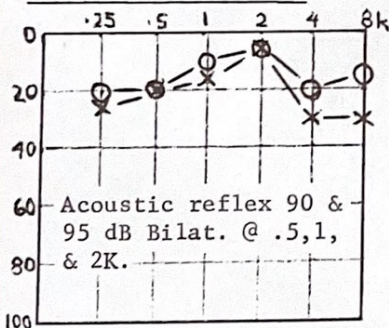
Hx & CC: This 57 year old woman had:

- 10 year history of fluctuating hearing loss in LE. (Sp. Avg. 14-60 dB and WDS 52-96%) as well as nausea and vertigo.
- X-ray studies normal.
- Calorics symmetrical and fairly brisk.
- Carhart T.D., negative.
- Positive SISI scores.
- Acoustic reflexes at normal, SL's showing recruitment.
- No reflex decay.
- Brainstem evoked response audiometry consistent with cochlear pathology.

Medical Treatment:

- Antihistamine.

AUDIOMETRIC RESULTS:



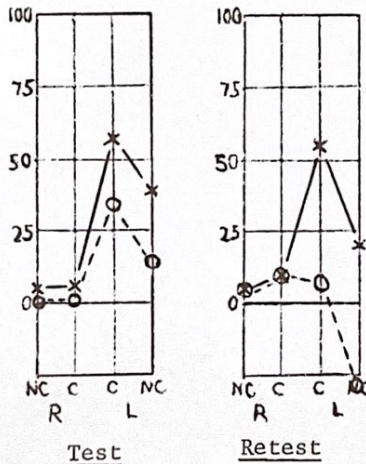
WDS RE=96%; LE=76%

SSW Results: The SSW was given @ 50 dB re p.t. sp. avg. The 8 cardinal numbers (8 CN's) were (REF): 2 2 9 6, 9 14 0 0 yielding a combined total of RNC 5,

RC 5, LC 58, LNC 38. After correcting the WDS the TEC = 12 Mi, 24 Mo, 34 Mo = Mo. You can see that there was a sig. Order Effect 27/15 and 4 reversals. The adjusted errors 0 0 9 6. This gave an A-SSW TEC = 5N, 14 Mi, 21 Mi = Mi.

Interpretation: Presumably a peripheral (cochlear) problem. Although some central effects could not be ruled out the Mi score, the Order Effect and the reversals can all be attributed to the unilateral cochlear disorder.

Reevaluation: The results of the test, 3 weeks later are shown below.



The SSW combined totals were almost identical to the previous results. There was a reversal but no other response bias. It should be noted that although the patient's symptoms subsided, WDS was poorer. The C-SSW TEC = -1N, -10 0 -28 0 = 0. The overcorrected score on retest with essentially no response bias further supports the peripheral nature of the disorder. The BSER results were normal bilaterally.

SUMMER WORKSHOPS

Phoenix: July 26 - 28, 1979
 Contact: Sandy Hirshburg,
 Barrow Neurological Institute
 350 West Thomas Road, Phoenix,
 Arizona 85013, (602) 277-
 6611, ext. 3665.

San Francisco: July 31--
 August 2, 1979.
 Contact: John Miles, 110 Tapia
 Drive, San Francisco, Calif.
 94132, (415) 334-3098.

Also: San Antonio, Texas
 September 27 - 29, 1979

TYPE A vs E/O EFFECTS

Type A patterns have been noted in patients with verified lesions of the frontal & temporo-occipital regions. Since identical 8 CN's can be found with either site of lesion, the Ear/Order Effects that often occur with Type A can be misleading. E.g., 0 2 3 1 4 9 2 1, yields a Type A -LC (left competing peak) & E 6/16, O 15/7. If the lesion is frontal the E & O would appear to be accurate indicators. But if is due to a posterior disorder the E & O would be misleading. Therefore in the presence of Type A or B interpret E & O with extreme caution.

For fun, calculate & locate the E & O (if sig.) for these: Type A-RC: 1 8 1 1 1 2 3 0 = E / , O / ; Type B-LC: 0 0 5 0 0 1 1 1 = E / , O / ; Type B-RC: 3 4 4 3 2 5 10 1 = E / , O / .

Can E & O Effects also produce a Type A (or B)?

ABSTRACT: SSW TEST RESULTS ON PATIENTS WITH MENIERE'S DISEASE

Denise Cafarelli, M.S.,
Richard H. Nodar, Ph.D.,
Mary Collard, M.A., and
Deborah A. Larkins, M.A.
ASHA Convention, 1978.

This study followed an observation that a patient with a medical diagnosis of Meniere's disease had moderate SSW scores, suggesting central lesion. The purpose was to answer the following:

1. Does this Meniere's patient have a concomitant central disorder?
2. Are the SSW test results confounded by the unilaterality and/or severely reduced speech discrimination associated with Meniere's?
3. Are these SSW patterns common among patients with Meniere's?

Twelve subjects ranged in age from 23 to 57 years; each presented a case history of fluctuating hearing loss, tinnitus, and rotary vertigo; none reported significant history of noise exposure, viral infection or foreign language background. All had been prediagnosed by a physician as having Meniere's disease. A control group of 10 subjects, 25-56 years with a medical diagnosis of unilateral cochlear pathology (not Meniere's) was also tested.

Each S was tested audiolgically: tympanometry, pure tone thresholds, SRT, WDS, threshold tone decay, ENG, & SSW. Patients with

abnormal tympanograms or positive tone decay test results were excluded.

Two Meniere's subjects had Mo TEC scores suggesting CANS (brainstem) pathology. Both S's were retested in the remissive stage & had good to excellent speech discrimination scores. But the SSW results remained Mo. The other subjects' (Meniere's & non-Meniere's) TEC results fell within the range predicted by Katz. Ear & Order Effects, reversals, & Type A patterns were also seen.

Summary and Conclusions: 1) 2 of 12 (16%) Meniere's S's and none of the other unilateral cochlear cases had Mo scores. Therefore, a central component could not be ruled out in Meniere's cases; 2) in both cases with Mo scores the improved thresholds and discrimination did not resolve the central SSW signs. This work supports the use of the C-SSW score & the notion that Meniere's patients are more likely to have central signs than other unilateral cases.

****ABSTRACT****

Maxwell, Nancy J. An Analysis of SSW Test Performance of Dyslexic Children and Their Parents. M.S. Thesis Portland State Univ., 1978.

The purpose of this study was to investigate the possibility of familial lineage in dyslexia by analyzing auditory processing in dyslexic children & their parents. The SSW test was administered to 21 children from the Portland Public School System. All S's demonstrated at least a 2-yr. delay in reading and evidenced no obvious concomitant problems. In addition, their natural parents and normal-reading siblings were tested. All dyslexic S's demonstrated normal hearing and speech discrimination in quiet. The S's were divided into 4 groups: dyslexic children, normal-reading siblings, parents with normal test scores & parents with degraded test scores. 42% of the parent population obtained a degraded test score in one or more listening conditions, with the competing conditions showing the greatest abnormality. The data were tabulated & analyzed according to listening condition for the 4 groups. A statistical analysis of the data revealed significantly poorer SSW test performance for the dyslexic children & their affected parents, in both the RC & LC conditions, when compared to test performances of their normal-reading siblings and non-affected parents. The SSW test performances of both the dyslexic children & the affected parents were similar to the performance of neurologically immature children. These test results appear to support a genetic precursor theory for dyslexia.

This issue was cut, spliced and typed by members of SASH, SUNY at Buffalo.

Lise Benziger

Deborah Ungerleider

Michele Panem

Christine Viskocil

Pam Ruchalski

The Banner was made by Miriam Katz.

SSW Newsletter

Jack Katz, Editor

State University of New York at Buffalo

Communicative Disorders and Sciences

4226 Ridge Lea Road

Buffalo, New York 14226

716-831-1605