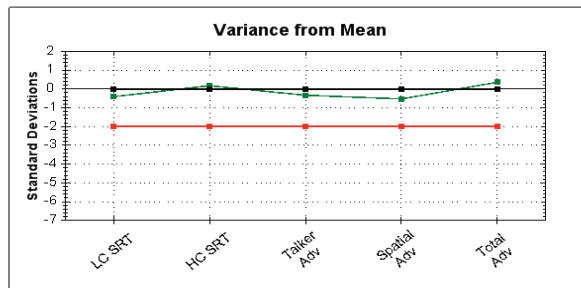


Interpreting LiSN-S Results & Recommendations for Management



Normal:



1. Above is an example of results from a male, 11 years, 10 months, referred by an educational psychologist for LiSN-S assessment. His WISC-IV results showed a non-verbal learning disorder and he was also assessed as having Attention Deficit Disorder.
2. All LiSN-S SRT and advantage measures are within normal limits.
3. Advise parents that:
 - a) The LiSN-S results suggest your child does not have a problem listening in noise. Problems listening in noise is the major behavioural factor associated with CAPD.

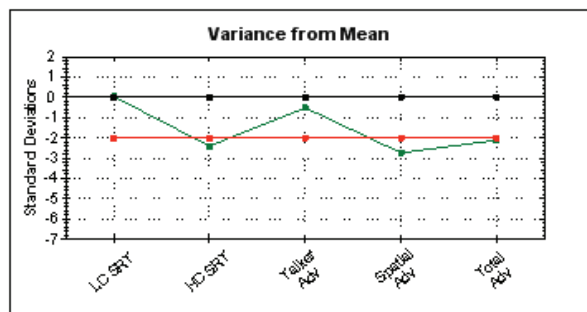
4. Supplementary advice to parents:

- a) There are many tests available world-wide to assess for CAPD. Many of these do not have documented sensitivity as a diagnostic test for CAPD or do not have known links to real-world listening problems.
- b) Research has shown that performance outside normal limits on the conditions of the LiSN-S where the distracter stories are spatially separated from the target sentences – a condition known as a spatial processing deficit – is a major cause of CAPD.

5. Recommendation would be:

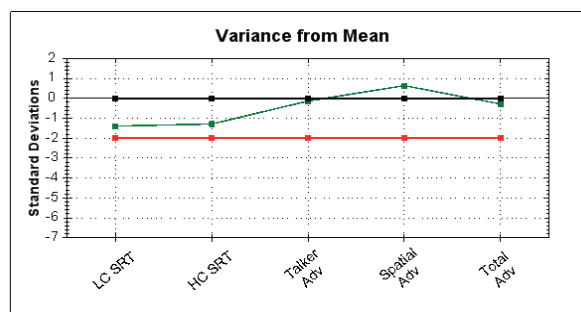
- a) If the child has not had speech pathology or psychology testing, suggest this as a next option.
- b) If the child has had speech pathology and/or psychology testing, advise parent to follow the recommendations indicated by the professional.

Spatial Processing Deficit:



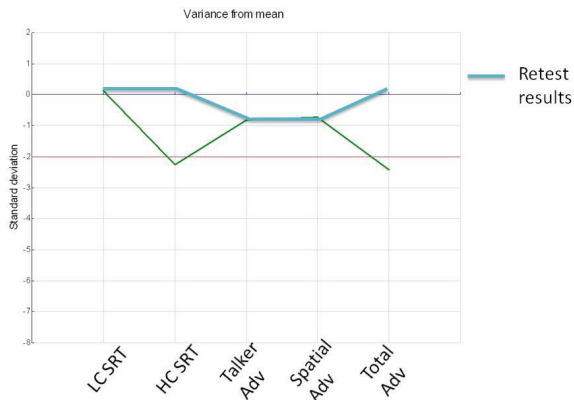
1. Above example is from a male, 7 years, 5 months, referred for assessment on the recommendation of his class teacher to rule out a central auditory processing disorder as contributing to learning and language processing deficits.
2. The Kaufman Brief Intelligent Test – Second Edition (KBIT-2) reported Verbal IQ in the low-average range (13th percentile) and performance IQ in the average range (30th percentile). The Children's Auditory Performance Scale (CHAPS) completed by his teacher rated listening in noise as -12 (fail) compared to -6 (pass) for listening in quiet.
3. As the LiSN-S low cue SRT and talker advantage scores are within normal limits it is clear that the child can perform the LiSN-S testing without difficulty. However, high cue SRT, spatial and total advantage – the conditions of the LiSN-S where the distracter stories are spatially separated from the target sentences – are all outside normal limits. This would suggest the child has a spatial processing deficit which is contributing to his difficulties hearing in the classroom.
4. Recommendation would be to
 - a) suggest an FM system to address issues hearing in noise.
 - b) If the child has not had speech pathology or psychology testing, suggest this as next option to rule out any other factors contributing to problems understanding speech in noise.

Memory Deficit (Recalling Sentences):



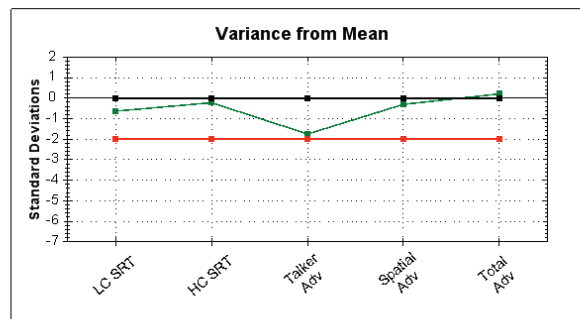
1. The above example is from a male, 8 years, 3 months. WISC-V scores were average across subtests. The Clinical Evaluation of Language Fundamentals – Fourth Edition (CELF-4) subtests were all in the average range except for the Recalling Sentences subtest, which was in the 5th percentile or borderline range.
2. Performance on the LiSN-S low cue SRT and high cue SRT measures is poor. However performance on the advantage measures are well within the normal range. It is therefore suggested that the child's memory deficit is affecting his ability to hear in noise. Limited cognitive resources are available for auditory processing. The child's ability to process speech in noise is adversely affected as he has to channel considerable extra effort into remembering the sentences presented. The LiSN-S advantage measure results show, however, that the child's ability to perceive pitch and spatial cues is within the normal range.
3. Recommendation would be to
 - a) Advise parents that although LiSN-S advantage measures are well within the normal range, SRT scores are borderline, suggesting possible difficulties hearing in noisy situations due to a global processing problem (in this case auditory memory). As such, an FM system could be offered to address issues understanding speech in noise.
 - b) If the child has not had speech pathology or psychology testing, suggest this as a next option.
 - c) If the child has had speech pathology and/or psychology testing, advise parent to follow the recommendations indicated by the professional.

Memory Deficit (Recalling Sentences):



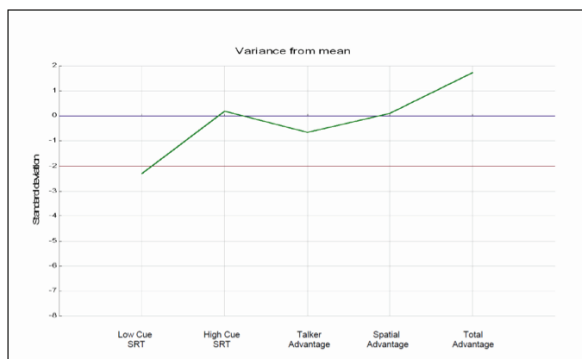
1. The above example is from a female, 8 years 6 months, identified as being below average in sentence recall on the TAPS-3. Her teacher reports that she struggles with following multiple instructions.
2. Poor results on Different Voices 90° (DV90) is reflected in a drop in her LiSN-S high cue SRT and, consequently, her total advantage score. The child was within normal limits on the low cue SRT, spatial advantage and talker advantage measures, so her poor result on the DV90 condition was not due to issues processing pitch or talker cues, or listening in noise.
3. As the DV90 condition of the LiSN-S is presented first, it appears that the child improved on the LiSN-S conditions over time. Thus, it was thought that her poor results on the DV90 condition were caused by difficulties initially grasping the task and remembering the test instructions.
4. After analysing the initial LiSN-S results (see green line on the graph) it was decided to give the child a short break and retest her on the DV90 condition. Results were then within the normal range (see blue line on the graph).
5. This result demonstrates the importance of giving LiSN-S instructions very clearly and checking for understanding!
6. Recommendation would be:
 - a) If the child has not had speech pathology or psychology testing, suggest this as a next option.
 - b) If the child has had speech pathology and/or psychology testing, advise parent to follow the recommendations indicated by the professional.

Suspected Attention Deficit:



1. The above example is from a female, 7 years, 10 months. She presented with difficulty in reading and mathematics. She had average score across WISC-IV subtests. Her school counsellor's report noted a history of being easily distracted.
2. During LiSN-S testing there was a very large variation in her performance during presentation of the Different Voices 0 (DVO) condition. This was due to intermittent lack of concentration.
3. The examiner stopped the DVO condition twice and retested, but in the end continued the third presentation for 30 sentences.
4. DVO was the only LiSN-S condition where the child did not concentrate. She concentrated well again on the SV0 condition, thus the low cue SRT score is within normal limits. However, her relatively poorer performance on the DVO condition resulted in her talker advantage score being nearly outside normal limits.
5. This result demonstrates the importance of ensuring that concentration is constant between and within LiSN-S conditions, otherwise even advantage scores can be affected.
7. The recommendation would be:
 - a) If the child has not had speech pathology or psychology testing, suggest this as a next option.
 - b) If the child has had speech pathology and/or psychology testing, advise parent to follow the recommendations indicated by the professional.

Suspected Auditory Fatigue or Declining Attention:



1. The above example is from a male, 8 years, 10 months. He presented with below average scores on the working memory subtests of the TAPS-R. His teacher has concerns regarding his literacy, reading and recall skills.
2. His LiSN-S results become poorer as testing progresses through the various conditions.
3. In respect to the baseline scores, high cue SRT (i.e. DV90) results are well within normal limits. Note that the DV90 condition is presented first. However, his low cue SRT (i.e. SVO) performance is below normal limits. The SVO condition is presented last.
4. It should be noted that performance on the SVO condition will have a considerable bearing on the calculation of the LiSN-S advantage measures. The advantage measures are calculated as the difference in dB between the SVO condition and the DV90, SV90 and DVO conditions.
5. If SVO (i.e. low cue SRT) appears to be abnormal it is important to bear this in mind when interpreting the pattern of LiSN-S results.
6. Research has shown that it is very unusual for low cue SRT (i.e. SVO) to be outside normal limits. However, the SVO condition is the hardest of all LiSN-S conditions, as there are no spatial or pitch cues available to the listener to help to differentiate the target sentences from the distracters.
7. Therefore, before presenting the SVO condition the clinician should emphasise to the child to "listen hard for the beep". This is the best way to ensure that the child can identify the target in the presence of the background noise. The clinician can prompt the child to listen for the beep throughout the SVO condition.
8. Prompting the child to "listen for the beep" (or "listen in front" in the case of the DV90 and SV90 conditions) is a good way to get a child back on track if his or her attention to the task is wavering.
9. Recommendation would be
 - a) If the abnormal SVO results were not noticed in time to draw the child's attention back to the task, provide a short break and retest this condition only.
 - b) If results do not improve, the child's parent should be advised that the pattern of results are unusual, but given that the child's high cue SRT results are within the normal range the child should not experience a difficulty listening in background noise.
 - c) If the child has not had speech pathology or psychology testing, suggest this as a next option.
 - d) If the child has had speech pathology and/or psychology testing, advise parent to follow the recommendations indicated by the professional.