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"A good book cannot lengthen your arm
but it can lengthen your reach by hoisting you
on the shoulders of great thinkers"
(Marican, 2000:22)

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UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

University of Pretoria

Department of Communication Pathology
Speech, Voice and Hearing Clinic
Tel : +27 12 420 2357
Fax : +27 12 420 3517
Email : shugo@postino.up.ac.za

APPENDIX I: Letter to parents requesting permission to include their child in the study and checklist of behavior completed by the parents

Dear Parents

I am a speech therapist and audiologist working in the Department of Communication Pathology at the University of Pretoria. We have recently purchased a number of new test materials that are being recommended in the USA for assessing children with Attention Deficit Hyperactivity Disorder.

These tests include:

- **The Integrated Visual and Auditory Continuous Performance Test:**

"NEW! Now introducing IVA Version 4.2 for Windows 98, 2000 or ME. Updated norms. IVA, the Integrated Visual & Auditory Continuous Performance Test, is a comprehensive, computerized test combining auditory and visual stimuli to measure objectively the triad of symptoms — inattention, impulsivity and hyperactivity — associated with ADHD. Written by Joseph A. Sandford, Ph.D., and Ann Turner, M.D., IVA provides clinicians with the "state-of-the-art" in computerized attention and response control testing." (from the BrainTrain website)

The preliminary results in the literature show that the IVA CPT may be a valuable tool in assessing children with ADHD and determining the effects of medication.

- **The auditory processing assessment battery (CD purchased form the Department of Veterans Affairs):**

The test material is played through an audiometer (machine used to assess hearing). This battery of tests provides valuable information about a child's auditory processing abilities with suggestions for therapy should any difficulties be identified.

I am interested in determining the value of the above tests in assessing children with ADHD when on and off medication. Your principal has kindly agreed to allow the testing to take place at your school and I have arranged to have all the equipment installed at the school so that the testing can take place there with no inconvenience to you as the parents. There is also no cost involved in the testing.

The testing will take approximately 1 hour and will be presented in a fun way to children participating in the project. The tests are of such a nature that they are more like games on the computer and audiometer than a formal assessment situation. I would like to assess each child under 2 conditions: firstly while on medication and secondly while not on medication. For the second condition, we will ask that the medication be given at school after the assessment (which will take place first thing in the morning). In cases where children are using medication with a longer "half-life" (Ritalin SR) I would like to see these children on a Monday morning after at least a full day of not taking the medication.

The results of the testing will be presented to the school in the form of a report for each child and it is hoped that the results will provide valuable information that can be used for each child.

You are most welcome to contact me should you require any further information. My contact details are as follows:

Work: 420 3684
Home: 361 2383
Cell: 082 9256461

Please complete the form and checklist below if you agree to your child taking part in the above testing.

Yours sincerely

Mrs. Nicci Campbell / Speech Therapist and Audiologist
Department of Communication Pathology
University of Pretoria

I/ We, ..., parent(s)/ guardian(s) of ..... agree to my/our child taking part in the above tests.

Signed: .....
Date: .....

Appendix I continued

Checklist (Given to the parents to complete)

Name of your child: .....

1.) Is your child currently taking any medication for ADHD?

.....

2.) Who has prescribed the medication? (Name of professional and field of training, e.g.: *Dr Smith –Pediatrician*)

.....

3.) What medication is your child taking for ADHD?

.....

4.) What dosage of medication is your child taking for ADHD?

- Strength of medication: .....
- How often is your child taking the medication?

  .....
- Does your child take medication over weekends?

  .....

5.) Please "tick" (✔) the behaviors which describe your child when he/she is **not taking any medication for his/her AD(H)D. There is no limit to the number of behaviors that can be "ticked"**

Behavior	Present when not on medication (Mark with a ✔)
Poor attention to details or careless mistakes	
Interrupts or intrudes on others	
Difficulty sustaining attention in tasks	
Fidgets or squirms	
Difficulty in engaging in quiet activity	
Leaves seat in classroom or at table	
Does not seem to listen when spoken to	
Runs or climbs excessively	
Talks excessively	
Does not follow through on instructions and tasks	
Blurts out answers	
Difficulty organizing tasks	
Difficulty waiting turn	
Difficulty with sustained mental effort	
Loses things necessary for tasks	
Often distracted by extraneous stimuli	
Often forgetful in daily activities	
"On the go" or acts as if "driven by a motor"	

Thank you for your time and assistance

in completing this checklist!

APPENDIX II: Checklist given to teachers to complete

Dear Teachers

Please complete the checklist below for the following child:

.....

1.) Is the child currently taking any medication for AD(H)D?

.....

2.) What medication is the child taking for AD(H)D? .....

3.) What dosage of medication is the child taking for AD(H)D?

- Strength of medication:

  .....
- How often is the child taking the medication?

  .....
- Does the child take medication over weekends?

  .....

4.) Please "tick" (✔) the behaviors which describe the child when he/she is <u>not taking any medication</u> for his/her AD(H)D. There is no limit to the number of behaviors that can be "ticked"

Behavior	Present when not on medication (Mark with a ✔)
Poor attention to details or careless mistakes	
Interrupts or intrudes on others	
Difficulty sustaining attention in tasks	
Fidgets or squirms	
Difficulty in engaging in quiet activity	
Leaves seat in classroom	
Does not seem to listen when spoken to	
Runs or climbs excessively	
Talks excessively	
Does not follow through on instructions and tasks	
Blurts out answers	
Difficulty organizing tasks	
Difficulty waiting turn	
Difficulty with sustained mental effort	
Loses things necessary for tasks	
Often distracted by extraneous stimuli	
Often forgetful in daily activities	
"On the go" or acts as if "driven by a motor"	

Thank you for your time and assistance in completing this checklist!

APPENDIX III: Audiogram

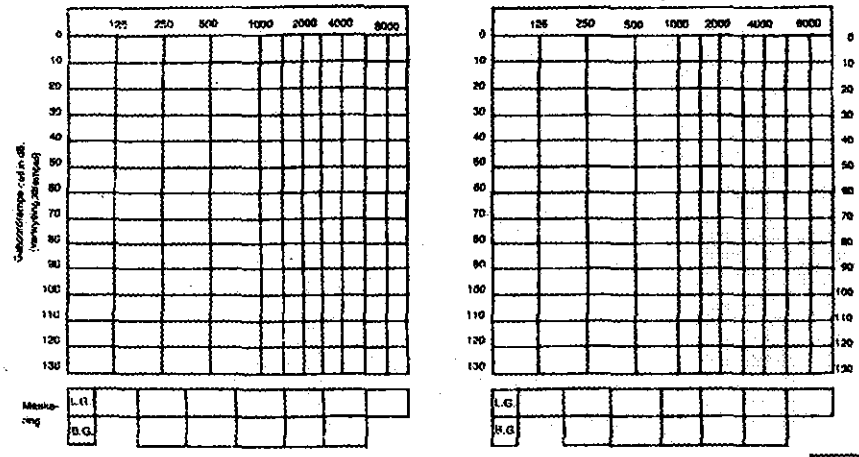
Departement Spraakheelkunde en Oudiologie, Universiteit van Pretoria. Tel: 420-2357

Voorname en van: _____ Datum: _____

Geboortedatum: _____ Oudioloog: _____

Verwys deur: _____ Student: _____

SUIWERTOONOUDIOGRAM



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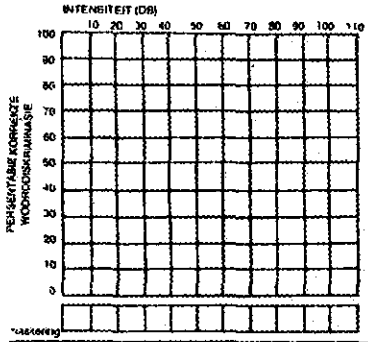

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APPENDIX IV: The scoring sheet used for the Dichotic digits test

Name of participant:_____

Medicated or non-medicated state:_____

Test item	Left channel	Right channel
1.	4___ 3___ Practice item	1___ 6___ Practice item
2.	3___ 1___ Practice item	9___ 10___ Practice item
3.	9___ 6___ Practice item	1___ 5___ Practice item
4.	2___ 10___ Practice item	4___ 8___ Practice item
5.	4___ 8___ Practice item	6___ 9___ Practice item
6.	9___ 1___	10___ 2___
7.	2___ 4___	9___ 10___
8.	1___ 9___	8___ 6___
9.	2___ 4___	3___ 9___
10.	1___ 4___	10___ 5___
11.	2___ 5___	1___ 3___
12.	4___ 5___	2___ 6___
13.	3___ 10___	5___ 6___
14.	4___ 1___	9___ 5___
15.	4___ 5___	3___ 8___
16.	9___ 5___	4___ 1___
17.	4___ 5___	10___ 2___
18.	9___ 8___	3___ 4___
19.	9___ 10___	8___ 5___
20.	8___ 6___	4___ 1___
21.	6___ 8___	10___ 2___
22.	9___ 1___	2___ 8___
23.	6___ 9___	3___ 1___
24.	1___ 2___	3___ 9___
25.	5___ 3___	2___ 1___
Total:	___/20 _____%	___/20 _____%

APPENDIX V: The scoring sheet used for the Frequency pattern test (labeling condition)

Name of participant :_____

Medicated or non-medicated state:_____

Test item	Left ear	Right ear
1.	LLH (Low Low High) Practice item	LLH (Low Low High) Practice item
2.	LHH Practice item	LHH Practice item
3.	HLL Practice item	HLL Practice item
4.	HHL Practice item	HHL Practice item
5.	HLH Practice item	HLH Practice item
6.	LHL	LHL
7.	LHH	LHH
8.	LLH	LLH
9.	HHL	HHL
10.	HLH	HLH
11.	LHL	LHL
12.	HLL	HLL
13.	HHL	HHL
14.	LHL	LHL
15.	HLH	HLH
16.	LHH	LHH
17.	HLL	HLL
18.	LLH	LLH
19.	HHL	HHL
20.	LLH	LLH
21.	LHL	LHL
22.	HLH	HLH
23.	LHH	LHH
24.	HLL	HLL
25.	LLH	LLH
26.	HLL	HLL
27.	LHL	LHL
28.	LHH	LHH
29.	HHL	HHL
30.	HLH	HLH
Total:	___/25 _____%	___/25 _____%

APPENDIX VI: The scoring sheet used for the Frequency pattern test (humming condition)

Name of participant :_____

Medicated or non-medicated state:_____

Test item	Left ear	Right ear
1.	LLH (Low Low High) Practice item	LLH (Low Low High) Practice item
2.	LHH Practice item	LHH Practice item
3.	HLL Practice item	HLL Practice item
4.	HHL Practice item	HHL Practice item
5.	HLH Practice item	HLH Practice item
6.	LHL	LHL
7.	LHH	LHH
8.	LLH	LLH
9.	HHL	HHL
10.	HLH	HLH
11.	LHL	LHL
12.	HLL	HLL
13.	HHL	HHL
14.	LHL	LHL
15.	HLH	HLH
16.	LHH	LHH
17.	HLL	HLL
18.	LLH	LLH
19.	HHL	HHL
20.	LLH	LLH
21.	LHL	LHL
22.	HLH	HLH
23.	LHH	LHH
24.	HLL	HLL
25.	LLH	LLH
26.	HLL	HLL
27.	LHL	LHL
28.	LHH	LHH
29.	HHL	HHL
30.	HLH	HLH
Total:	___/25 _____%	___/25 _____%

APPENDIX VII: The scoring sheet used for the Low pass filtered speech test

Name of participant :_____

Medicated or non-medicated state:_____

Test item	Left ear	Test item	Right ear
1.	Youth Practice item	26.	Wine Practice item
2.	Mouse Practice item	27.	Cool Practice item
3.	Lid Practice item	28.	Ditch Practice item
4.	Pole Practice item	29.	Bar Practice item
5.	Beg Practice item	30.	Mess Practice item
6.	Hire	31.	Dodge
7.	Pearl	32.	Cheek
8.	When	33.	Five
9.	Soup	34.	Team
10.	Pain	35.	Search
11.	Shell	36.	Seize
12.	Cab	37.	Gun
13.	Tell	38.	Cause
14.	Note	39.	Good
15.	Germ	40.	Void
16.	Base	41.	Phone
17.	Talk	42.	Half
18.	Walk	43.	Date
19.	Luck	44.	Mop
20.	Road	45.	Jug
21.	Name	46.	Late
22.	Sheep	47.	Ring
23.	Rush	48.	Life
24.	Chat	49.	Rat
25.	Thin	50.	Hit
Total:	___/20 _____%		___/20 _____%

APPENDIX VIII: The scoring sheet used for the Speech masking level difference test

Name of participant :_____

Medicated or non-medicated state:_____

0dB S/N Ratio	**-8dB S/N Ratio**	**-16dB S/N Ratio**	**-24dB S/N Ratio**
1. Horseshoe	17. Headlight	33. Armchair	49. Horseshoe
2. Mushroom	18. Sidewalk	34. Toothbrush	50. Hotdog
3. Northwest	19. Hotdog	35. Mushroom	51. Oatmeal
4. Toothbrush	20. Inkwell	36. Hotdog	52. Armchair
-2dB S/N Ratio	**-10dB S/N Ratio**	**-18dB S/N Ratio**	**-26dB S/N Ratio**
5. Sidewalk	21. Sidewalk	37. Sidewalk	53. Mushroom
6. Inkwell	22. Hotdog	38. Inkwell	54. Horseshoe
7. Oatmeal	23. Mushroom	39. Headlight	55. Hotdog
8. Hotdog	24. Oatmeal	40. Northwest	56. Toothbrush
-4dB S/N Ratio	**-12dB S/N Ratio**	**-20dB S/N Ratio**	**-28dB S/N Ratio**
9. Headlight	25. Armchair	41. Headlight	57. Sidewalk
10. Armchair	26. Northwest	42. Mushroom	58. Headlight
11. Oatmeal	27. Inkwell	43. Sidewalk	59. Inkwell
12. Toothbrush	28. Horseshoe	44. Inkwell	60. Northwest
-6dB S/N Ratio	**-14dB S/N Ratio**	**-22dB S/N Ratio**	**-30dB S/N Ratio**
13. Horseshoe	29. Headlight	45. Toothbrush	61. Oatmeal
14. Armchair	30. Toothbrush	46. Armchair	62. Armchair
15. Mushroom	31. Oatmeal	47. Oatmeal	63. Sidewalk
16. Northwest	32. Horseshoe	48. Northwest	64. Mushroom

The thresholds in both conditions and final MLD are computed as follows:

S_0N_0 Threshold = **(dBHL of audiometer) + 1 – (total number of words repeated correctly/2)**

_____**dB**

$S_\pi N_0$ Threshold = **(dBHL of audiometer) + 1 – (total number of words repeated correctly/2)**

_____**dB**

The final MLD Threshold **is calculated as follows:**

Final MLD threshold = S_0N_0 Threshold - $S_\pi N_0$ Threshold

_____dB

APPENDIX IX: The IVA CPT scoring sheet

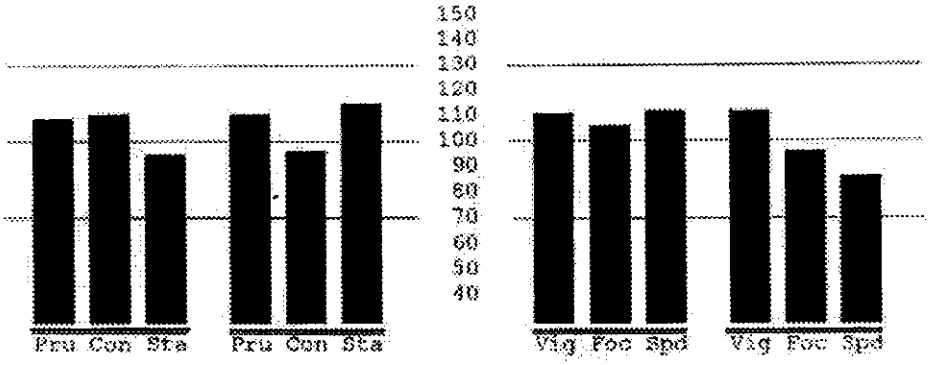
IVA Continuous Performance Test Report

Full Scale
Response Control Quotient = 109

Auditory RCQ = 107 | Visual RCQ = 110

Full Scale
Attention Quotient = 106

Auditory AQ = 114 | Visual AQ = 97



Standard Scores for Factors of
Prudence, Consistency & Stamina + Vigilance, Focus & Speed

Hyperactivity
None Mild Mod Sev Sat

PERSONAL INFORMATION

Last Name First Name

Social Security # Educational Level

Date of Birth (MM-DD-YYYY) 11/02/1990 Age 11 years

Sex (M/F) F On medication (Y/N) Y

Diagnosis 1 (ICD code) Medication A
Diagnosis 2 (ICD code) Medication B
Diagnosis 3 (ICD code) Medication C

Test Version 4.2 TEST INFORMATION Analysis Version 4.3

Group Code ID Code Examiner Code

Date Note

Comment

Appendix IX continued

Auditory RESPONSE CONTROL Visual

Raw	Quotient	Scales	Quotient	Raw
93%	109	Prudence	111	97%
76%	111	Consistency	96	70%
92%	95	Stamina	115	106%
Hyperactivity: 2 events		Fine Motor Reg. Quot: 113		

Auditory ATTENTION Visual

Raw	Quotient	Scales	Quotient	Raw
100%	111	Vigilance	112	100%
74%	106	Focus	96	69%
645ms	112	Speed	86	585ms

Attribute		Raw	Q	<----+----+----o----+----+---->
Balance		91%	134	Vis Dom — No Bias — Aud Dom
Readiness	A	106%	123	A
	V	102%	122	V
				Freq — No Bias — Rare

Validity Check		Raw	Q	OK ? ?? ???
Comprehension	A	99%	109	A
	V	98%	104	V
Persistence	A	109%	112	A
	V	109%	114	V
Sensory/Motor	A	226ms	117	A
	V	267ms	81	V

Norms: IVA v4.x with USB mouse 03-14-2001 for F age 11 - 11

APPENDIX X: The IVA STAR scoring sheet

IVA CPT Special Report

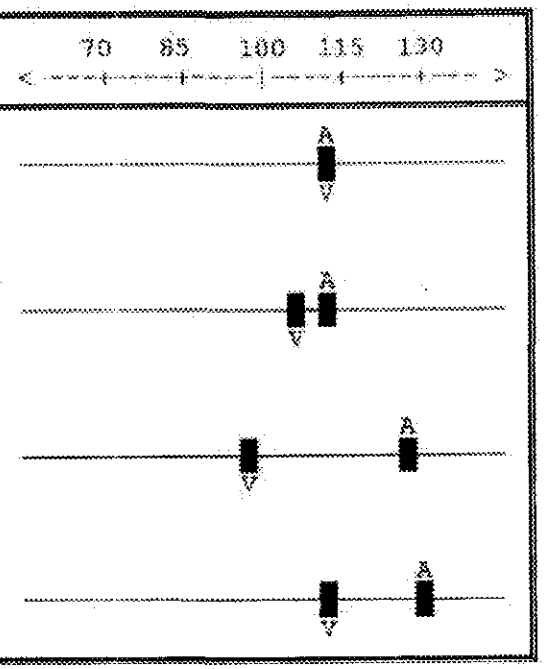
IVA-STAR: Comparison of Attention Modalities

Name: Date of Test:
Date of Birth: Age: 11 Sex: F
Comment:
End Note:

Graphical Tables of Test Results

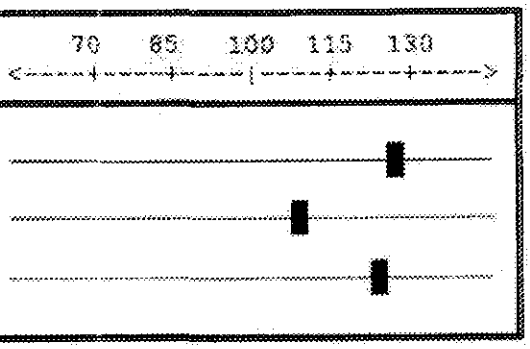
Primary Scales

Factor A=Aud V=Vis		Raw Score	Q Score
Alertness	A	100%	111
	V	100%	112
Steadiness	A	100%	112
	V	97%	107
Promptness	A	614ms	126
	V	575ms	98
Constancy	A	61ms	131
	V	96ms	112



Combined Scales

Attention Modality	Q Score
Auditory Specific	126
Visual Specific	108
Global (Aud & Vis)	123



APPENDIX XI: CAPD Normative data (means and standard deviations)

	CAPD Tests								
Age	**Dichotic digits test – right ear**	**Dichotic digits test – left ear**	**Frequency pattern test: labeling condition – right ear**	**Frequency pattern test: labeling condition – left ear**	**Frequency pattern test: humming condition – right ear**	**Frequency pattern test: humming condition – left ear**	**Low pass filtered speech – right ear**	**Low pass filtered speech – left ear**	**Speech masking level difference test**
8 years (n=10)	Mean: 87,00 SD: 7,53 M-1 SD: 79,47 M-2 SD: 71,94	Mean: 77,25 SD: 8,78 M-1 SD: 68,47 M-2 SD: 59,70	Mean: 49,40 SD: 14,49 M-1 SD: 34,91 M-2 SD: 20,42	Mean: 50,20 SD: 12,87 M-1 SD: 37,33 M-2 SD: 24,45	Mean: 56,80 SD: 8,80 M-1 SD: 48,00 M-2 SD: 39,19	Mean: 56,40 SD: 9,70 M-1 SD: 46,70 M-2 SD: 37,00	Mean: 43,50 SD: 13,13 M-1 SD: 30,37 M-2 SD: 17,23	Mean: 37,50 SD: 15,50 M-1 SD: 22,00 M-2 SD: 6,50	Mean: 5,15 SD: 1,13 M-1 SD: 4,02 M-2 SD: 2,89
9 years (n=10)	Mean: 88,00 SD: 7,43 M-1 SD: 80,57 M-2 SD: 73,13	Mean: 82,00 SD: 7,89 M-1 SD: 74,11 M-2 SD: 66,23	Mean: 64,00 SD: 9,57 M-1 SD: 54,43 M-2 SD: 44,86	Mean: 64,00 SD: 7,65 M-1 SD: 56,75 M-2 SD: 49,10	Mean: 67,20 SD: 6,20 M-1 SD: 61,00 M-2 SD: 54,81	Mean: 68,20 SD: 6,29 M-1 SD: 61.91 M-2 SD: 55,63	Mean: 49,50 SD: 9,26 M-1 SD: 40,24 M-2 SD: 30,97	Mean: 50,50 SD: 12,57 M-1 SD: 37,93 M-2 SD: 25,36	Mean: 5,75 SD: 0,82 M-1 SD: 4,93 M-2 SD: 4,10
10 years (n=10)	Mean: 93,25 SD: 3,55 M-1 SD: 89,70 M-2 SD: 86,16	Mean: 90,00 SD: 8,16 M-1 SD: 81,84 M-2 SD: 73,67	Mean: 73,60 SD: 8,47 M-1 SD: 65,13 M-2 SD: 56,65	Mean: 72,60 SD: 5,97 M-1 SD: 66,63 M-2 SD: 60,67	Mean: 77,00 SD: 4,26 M-1 SD: 73,54 M-2 SD: 69,27	Mean: 75,80 SD: 5,20 M-1 SD: 70,60 M-2 SD: 65,39	Mean: 52,50 SD: 11,61 M-1 SD: 40,89 M-2 SD: 29,29	Mean: 54,00 SD: 8,76 M-1 SD: 45,24 M-2 SD: 36,49	Mean: 5,40 SD: 0,88 M-1 SD: 4,52 M-2 SD: 3,65
11 years (n=10)	Mean: 94,25 SD: 6,13 M-1 SD: 88,12 M-2 SD: 81,99	Mean: 92,00 SD: 5,11 M-1 SD: 86,90 M-2 SD: 82,00	Mean: 80,00 SD: 4,62 M-1 SD: 75,38 M-2 SD: 81,78	Mean: 81,20 SD: 5,67 M-1 SD: 75,53 M-2 SD: 70,76	Mean: 82,40 SD: 5,72 M-1 SD: 76,68 M-2 SD: 69,85	Mean: 82,80 SD: 4,64 M-1 SD: 78,16 M-2 SD: 70,96	Mean: 57,00 SD: 9,49 M-1 SD: 47,51 M-2 SD: 38,02	Mean: 55,00 SD: 8,16 M-1 SD: 46,84 M-2 SD: 38,03	Mean: 5,80 SD: 1,72 M-1 SD: 4,08 M-2 SD: 2,36
12 years (n=10)	Mean: 93,50 SD: 4,59 M-1 SD: 88,91 M-2 SD: 84,31	Mean: 92,75 SD: 5,06 M-1 SD: 87,69 M-2 SD: 82,63	Mean: 82,40 SD: 10,70 M-1 SD: 71,70 M-2 SD: 61,00	Mean: 79,60 SD: 11,38 M-1 SD: 68,22 M-2 SD: 56,83	Mean: 84,80 SD: 9,20 M-1 SD: 75,60 M-2 SD: 66,40	Mean: 82,40 SD: 8,26 M-1 SD: 74,14 M-2 SD: 65,88	Mean: 69,00 SD: 7,75 M-1 SD: 61,25 M-2 SD: 53,51	Mean: 67,90 SD: 7,05 M-1 SD: 60,85 M-2 SD: 53,81	Mean: 6,20 SD: 1,23 M-1 SD: 4,97 M-2 SD: 3,74
Average	Mean: 91,20 SD: 6,57 M-1 SD: 84,63 M-2 SD: 78,06	Mean: 86,80 SD: 9,24 M-1 SD: 77,56 M-2 SD: 68,31	Mean: 69,88 SD: 15,55 M-1 SD: 54,33 M-2 SD: 38,78	Mean: 69,60 SD: 14,47 M-1 SD: 55,13 M-2 SD: 40,65	Mean: 73,80 SD: 12,53 M-1 SD: 61,27 M-2 SD: 48,73	Mean: 73,12 SD: 12,09 M-1 SD: 61,03 M-2 SD: 48,94	Mean: 54,30 SD: 13,21 M-1 SD: 41,09 M-2 SD: 27,88	Mean: 52,98 SD: 14,32 M-1 SD: 38,65 M-2 SD: 24,33	Mean: 5,66 SD: 1,21 M-1 SD: 4,45 M-2 SD: 3,25

KEY:		SD	Standard deviation
M-1 SD	Mean – 1 standard deviation	**M-2 SD**	Mean – 2 standard deviations

APPENDIX XII: The IVA CPT Procedural Guidelines for diagnosing the type of ADHD (Sandford and Turner, 2001: 6-7)

"After taking into account clinically the use of a differential diagnosis, the IVA test analysis cab best be diagnostically interpreted by carefully following the step by step procedural guidelines outlined below:

1. If the IVA CPT is determined to be valid for one or both sensory modalities (see page 4-1, Validity Checks) then proceed to step 2, else go to step 20.

2. If the IVA CPT is determined to be valid for both sensory modalities, then proceed with step 3 below, else skip to step 7.

3. If either the Full Scale Response Control Quotient (FSRCQ) or the Full Scale Quotient (FSAQ) is less than 80, then the test results support the diagnosis of ADHD. Go to step 12.

4. If either the Full Scale Response Control Quotient (FSRCQ) or the Full Scale Attention Quotient (FSAQ) is less than 85 and the Fine Motor Regulation Quotient is less than 85 or either Comprehension scale is less than 85, then the test results support the diagnosis of ADHD. Go to step 12.

5. If any response control or attention primary scale quotient scores are less than 75, then further clinical data are needed to make a diagnosis of ADHD, Not otherwise Specified. The individuals who present with a history of ADHD symptoms may have learned to compensate or have possibly matured cognitively in some ways. Otherwise, one or two quotient scores less than 75 suggest significantly impaired functioning which may be due to other psychiatric disorders. Go to step 18.

6. If this step is reached, then the IVA test results can generally be interpreted as not supporting the diagnosis of ADHD. Go to step 20.

7. If only the auditory or visual sensory modality is determined to be valid based on the Comprehension scale, then the interpretation can proceed only for that modality. The procedure is to follow the similar rules and cut-off scores of steps 3 through 6, using only the valid scores. Proceed to step 8.

8. If either the specific valid sensory modality's Response Control Quotient (ARCQ or VRCQ) or its Attention Quotient (AAQ or VAQ) is less than 80, then the test results support the diagnosis of ADHD. Go to step 15.

9. If either the specific valid sensory modality's Response Control Quotient (ARCQ or VRCQ) or its Attention Quotient (AAQ or VAQ) is less than 85 and the Fine Motor Regulation Quotient scale score is less than 85 or the same modality Comprehension scale is less than 85, then the test results support the diagnosis of ADHD. Go to step 15.

10. If any of the specific valid sensory modality's response control or attention primary scale quotient scores are less than 75, then further clinical data are needed to make a diagnosis of DAHD, Not otherwise Specified. The individuals who present with a history of ADHD symptoms may have learned to compensate or have possibly matured cognitively in some ways. Otherwise, one or two quotient

Appendix XII continued

scores less than 75 suggest significantly impaired functioning which may be due to other psychiatric disorders. Go to step 18.

11. If this step is reached, then the IVA test results can generally be interpreted as not supporting a diagnosis of ADHD. Go to step 20.

12. If the FSRCQ is less than 85 and the FSAQ is greater than 85, then the IVA test results support a diagnosis of ADHD, Predominantly Hyperactive-Impulsive type. Go to step 19.

13. If the FSRCQ is greater than 85 and the FSAQ is less than 85, then the IVA test results support a diagnosis of ADHD, Predominantly In attentive type. Go to step 19.

14. If the FSRCQ is less than 85 and the FSAQ is less than 85, the IVA test results support a diagnosis of ADHD, Combined type. Go to step 19.

15. If the specific valid sensory modality's Response Control Quotient (ARCQ or VRCQ) is less than 85 and its Attention Quotient (AAQ or VAQ) is greater then 85, then the IVA test results support a diagnosis of ADHD, Predominantly Hyperactive-Impulsive type. Go to step 19.

16. If the specific valid sensory modality's Response Control Quotient (ARCQ or VRCQ) is greater than 85 and its Attention Quotient (AAQ and VAQ) is less than 85, then the IVA test results support a diagnosis of ADHD, Predominantly Inattentive type. Go to step 19.

17. If the specific valid sensory modality's Response Control Quotient (ARCQ or VRCQ) is less than 85 and its Attention Quotient (AAQ or VAQ) is less than 85, then the IVA test results support a diagnosis of ADHD, Combined type. Go to step 19.

18. If this step is reached, the most likely interpretive conclusions are that the IVA supports response control and/or attentional problems congruent with other psychiatric disorders (see section below on differential diagnosis) or that IVA scores indicate less sever, residual ADHD symptoms which do not fully meet ADHD diagnostic criterion. Go to step 21.

19. If this step is reached, then the most likely clinical conclusion is that the IVA results do support a diagnosis of ADHD. This conclusion does not rule out a secondary diagnosis, especially in the case of an adult. Go to step 21.

20. If this step is reached, this IVA interpretive procedural analysis strongly indicates that any behavioural response control or attentional problems observed or reported are not likely to be attributable to an ADHD disorder. In other words, reaching this step lends support to the conclusion that the person does not have ADHD. Proceed to step 21.

21. After a clinical diagnostic decision has been made, then it can be clinically useful to interpret the various IVA scales in terms of strengths, weaknesses, and styles of performance. Based on this clinical analysis, recommendations for different medication, psychological or behavioral treatments may be made".

APPENDIX XIII: The probability factor values of the CAPD tests for the variables "age" and "order of test condition"

	Age	Order of test condition
	Probability factor values	Probability factor values (p)
Dichotic digit test – right ear	<0,0001*	0,1601
Dichotic digit test – left ear	<0,0001*	0,7513
Frequency pattern test: labeling – right ear	<0,0001*	0,7676
Frequency pattern test: labeling – left ear	<0,0001*	0,8907
Frequency pattern test: humming – right ear	<0,0001*	0,4138
Frequency pattern test: humming – left ear	<0,0001*	0,4973
Low pass filtered speech test: right ear	<0,0001*	1,0000
Low pass filtered speech test: left ear	<0,0001*	0,3357
Speech masking level difference test	<0,0001*	0,3624

KEY:	
*	Significant difference at the 5% level of significance (Probability factor values (p)<0,05 = significant difference)

APPENDIX XIV: The probability factor values of the IVA CPT scores for the variables "age" and "order of test condition"

	Age	Order of test condition
	Probability factor values	**Probability factor values (p)**
Full Scale Control Quotient	0,2810	0,9410
Auditory Response Control Quotient	0,1752	0,5561
Visual Response Control Quotient	0,6003	0,6194
Full Scale Attention Quotient	0,4688	0,4583
Auditory Attention Control Quotient	0,5070	0,4466
Visual Attention Control Quotient	0,0582	0,0573
Fine Motor Regulation / Hyperactivity	0,0577	0,1207
Response Control		
Auditory prudence	0,5322	0,0367*
Visual prudence	0,4025	0,2167
Auditory consistency	0,2636	0,6016
Visual consistency	0,4548	0,4395
Auditory stamina	0,2011	0,4598
Visual stamina	0,0749	0,8602
Attention		
Auditory vigilance	0,0947	0,5416
Visual vigilance	0,1525	0,5544
Auditory focus	0,2323	0,5774
Visual focus	0,6294	0,4761
Auditory speed	0,0546	0,0557
Visual speed	0,0635	0,7657
Attribute		
Balance	0,3083	0,0176*
Auditory readiness	0,0540	0,1921
Visual readiness	0,5853	0,4214
Validity		
Auditory comprehension	0,6342	0,6169
Visual comprehension	0,1246	0,4672
Auditory persistence	0,4739	0,5259
Visual persistence	0,7802	0,3199
Auditory sensory motor	0,0540	0,6489
Visual sensory motor	0,0573	0,9389

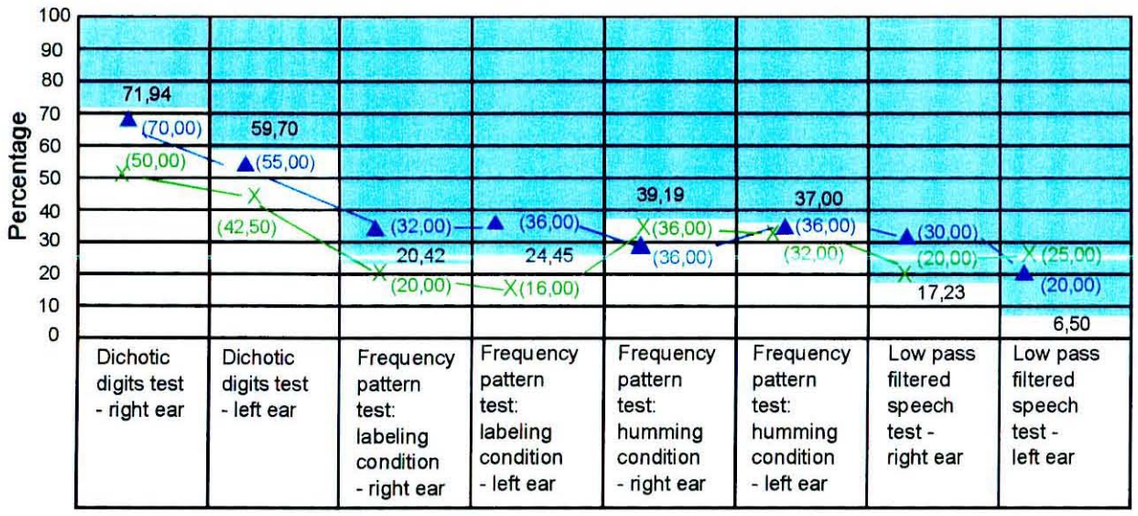
KEY:	
*	Significant difference at the 5% level of significance (Probability factor values (p)<0,05 = significant difference)

APPENDIX XV: The probability factor values of the IVA STAR scores for the variables "age" and "order of test condition"

	Age	Order of test condition
	Probability factor values	Probability factor values (p)
Primary Scales		
Auditory alertness	0,1001	0,5776
Visual alertness	0,1712	0,9650
Auditory steadiness	0,9850	0,4251
Visual steadiness	0,1705	0,0855
Auditory promptness	0,3966	0,0519
Visual promptness	0,1485	0,3119
Auditory constancy	0,6111	0,9092
Visual constancy	0,4902	0,7077
Combined Scales		
Auditory specific	0,4339	0,2942
Visual specific	0,2045	0,2926
Global (Auditory and Visual)	0,7459	0,4852

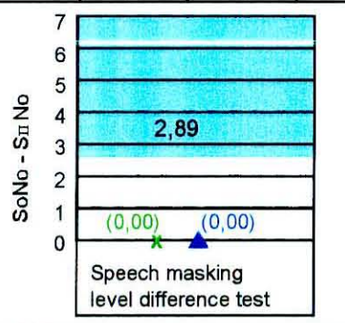
KEY:	
*	Significant difference at the 5% level of significance (Probability factor values <0,05 = significant difference)

Appendix XVI: The CAPD test results of the two 8 year old participants in research group 1



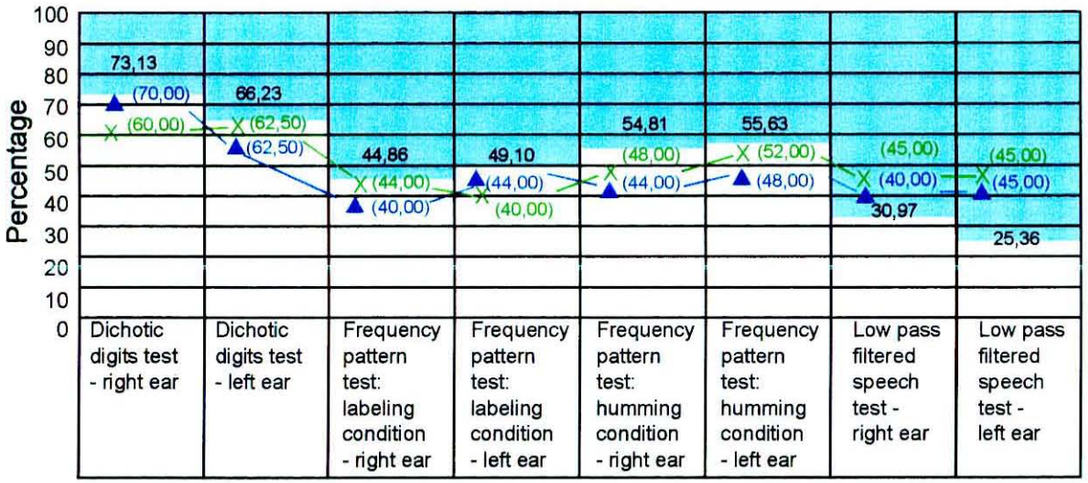
Stapedial acoustic reflexes

Participant	Right ear		Left ear	
	Ipsi-lateral reflexes	Contra-lateral reflexes	Ipsi-lateral reflexes	Contra-lateral reflexes
1	A/E	A/E	N	A/E
6	N	N	N	N



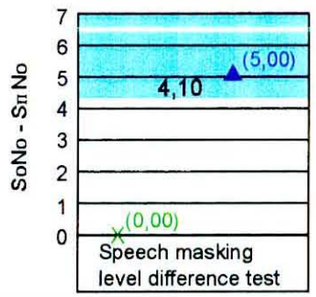
Key :	
X	Participant 1
▲	Participant 6
	Normal range
N	Two or more of the three acoustic reflexes at 500, 1000 and 2000Hz were within the normal range (70-90dBSL)
A/E	Two or more of the three acoustic reflexes at 500, 1000 and 2000Hz were elevated or absent at maximum intensity settings
SoNo - SπNo	Signal in phase and Noise in phase - Signal out of phase and Noise in phase

Appendix XVII: The CAPD test results of the two 9 year old participants in research group 1



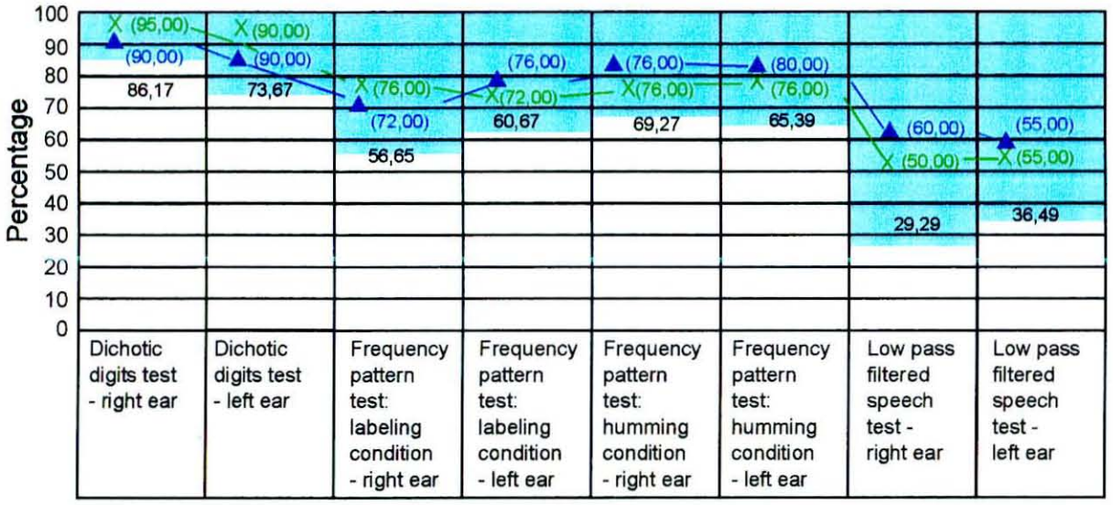
Stapedial acoustic reflexes

Participant	Right ear		Left ear	
	Ipsi-lateral reflexes	Contra-lateral reflexes	Ipsi-lateral reflexes	Contra-lateral reflexes
2	A/E	A/E	A/E	A/E
7	A/E	A/E	A/E	A/E



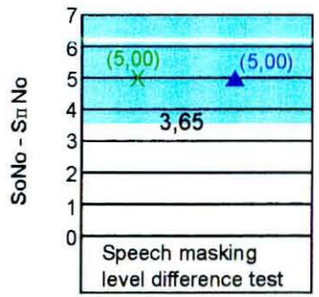
Key :	
X	Participant 2
▲	Participant 7
	Normal range
N	Two or more of the three acoustic reflexes at 500, 1000 and 2000Hz were within the normal range (70-90dBSL)
A/E	Two or more of the three acoustic reflexes at 500, 1000 and 2000Hz were elevated or absent at maximum intensity settings
SoNo - SπNo	Signal in phase and Noise in phase - Signal out of phase and Noise in phase

Appendix XVIII: The CAPD test results of the two 10 year old participants in research group 1



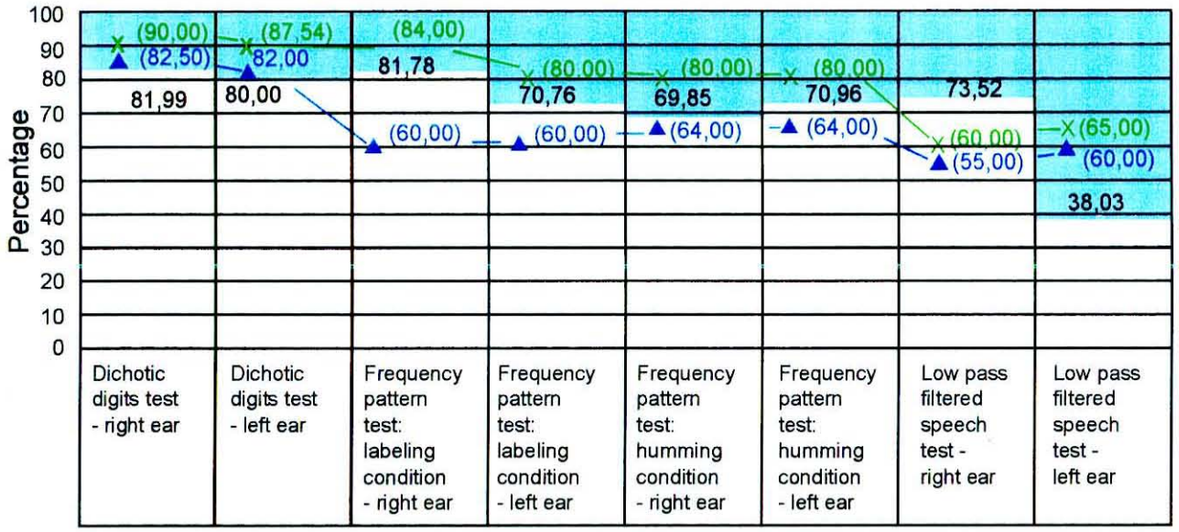
Stapedial acoustic reflexes

Participant	Right ear		Left ear	
	Ipsi-lateral reflexes	Contra-lateral reflexes	Ipsi-lateral reflexes	Contra-lateral reflexes
3	N	N	N	N
8	N	A/E	N	N



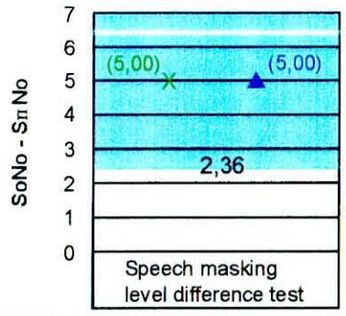
Key :	
X	Participant 3
▲	Participant 8
	Normal range
N	Two or more of the three acoustic reflexes at 500, 1000 and 2000Hz were within the normal range (70-90dBSL)
A/E	Two or more of the three acoustic reflexes at 500, 1000 and 2000Hz were elevated or absent at maximum intensity settings
SoNo - SπNo	Signal in phase and Noise in phase - Signal out of phase and Noise in phase

Appendix XIX: The CAPD test results of the two 11 year old participants in research group 1



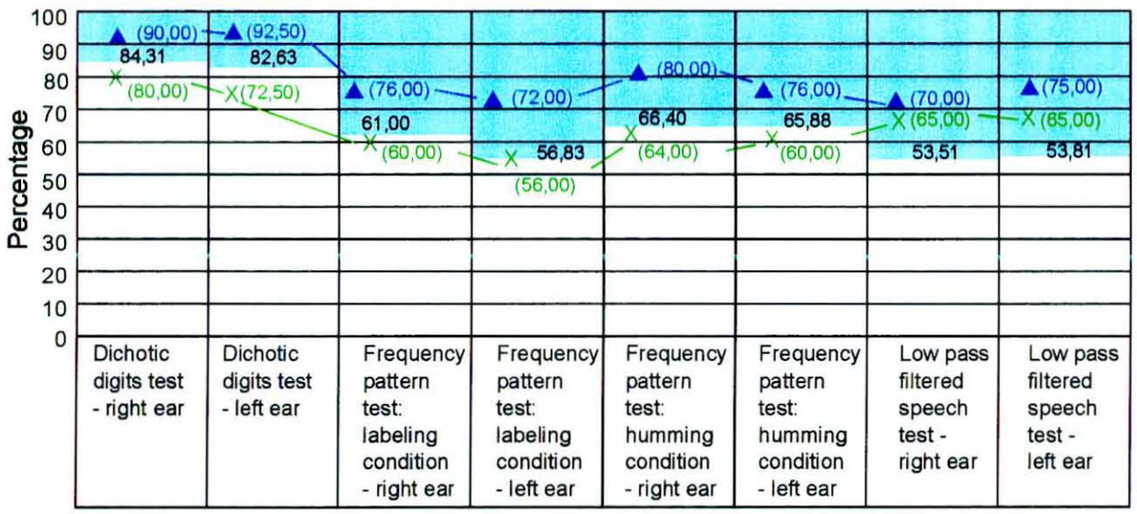
Stapedial acoustic reflexes

Participant	Right ear		Left ear	
	Ipsi-lateral reflexes	Contra-lateral reflexes	Ipsi-lateral reflexes	Contra-lateral reflexes
4	N	N	N	N
9	N	N	N	N



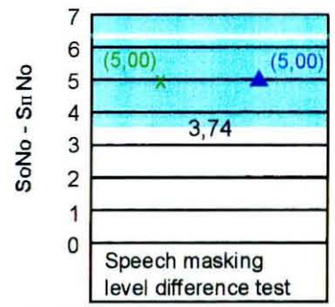
Key :	
X	Participant 4
▲	Participant 9
	Normal range
N	Two or more of the three acoustic reflexes at 500, 1000 and 2000Hz were within the normal range (70-90dBSL)
A/E	Two or more of the three acoustic reflexes at 500, 1000 and 2000Hz were elevated or absent at maximum intensity settings
SoNo - SπNo	Signal in phase and Noise in phase - Signal out and Noise in phase

Appendix XX: The CAPD test results of the two 12 year old participants in research group 1



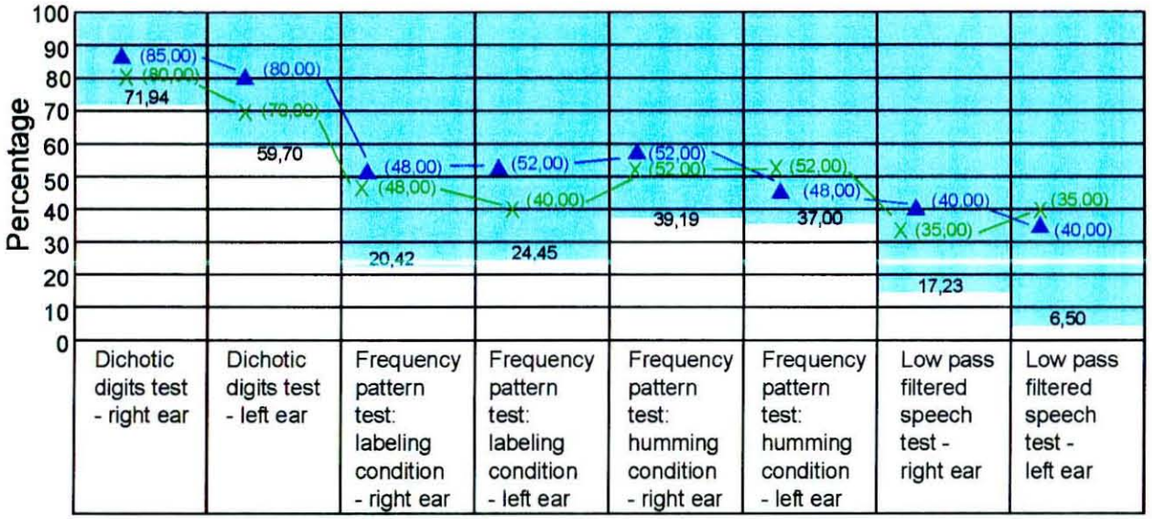
Stapedial acoustic reflexes

Participant	Right ear		Left ear	
	Ipsi-lateral reflexes	Contra-lateral reflexes	Ipsi-lateral reflexes	Contra-lateral reflexes
5	N	A/E	A/E	A/E
10	N	N	N	N



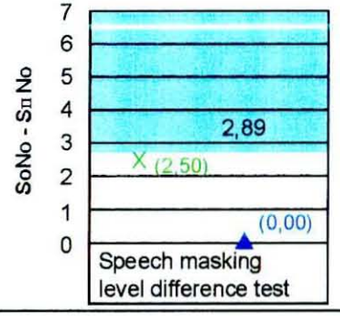
Key :	
X	Participant 5
▲	Participant 10
	Normal range
N	Two or more of the three acoustic reflexes at 500, 1000 and 2000Hz were within the normal range (70-90dBSL)
A/E	Two or more of the three acoustic reflexes at 500, 1000 and 2000Hz were elevated or absent at maximum intensity settings
SoNo - SπNo	Signal in phase and Noise in phase - Signal out and Noise in phase

Appendix XXI: The CAPD test results of the two 8 year old participants in research group 2



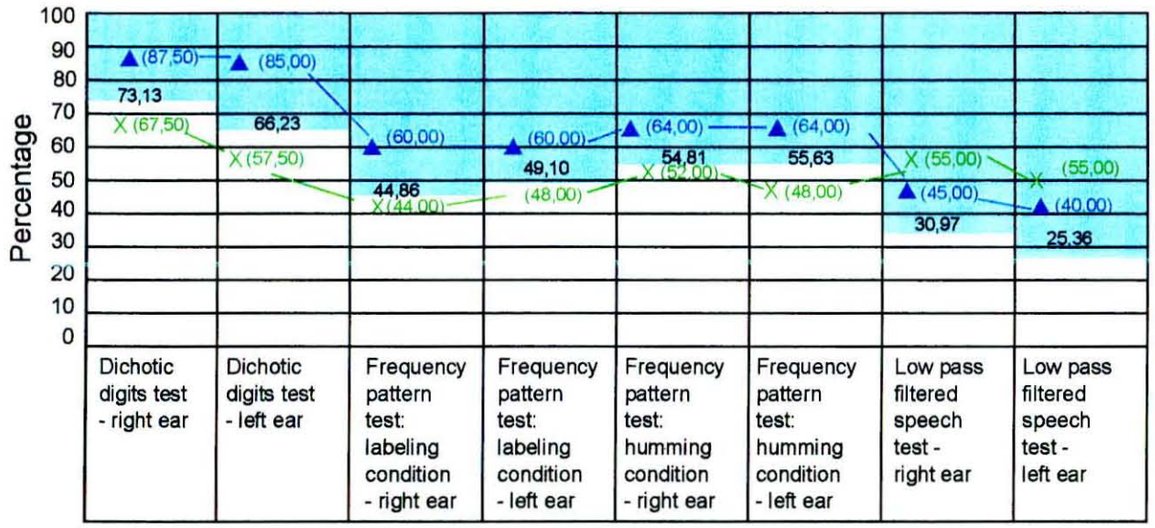
Stapedial acoustic reflexes

Participant	Right ear		Left ear	
	Ipsi-lateral reflexes	Contra-lateral reflexes	Ipsi-lateral reflexes	Contra-lateral reflexes
11	N	N	N	N
16	N	N	A/E	N



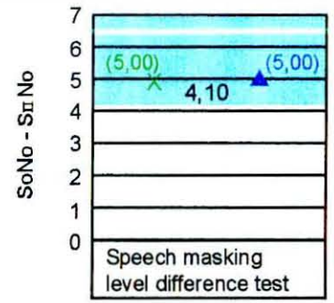
Key:	
X	Participant 11
▲	Participant 16
	Normal range
N	Two or more of the three acoustic reflexes at 500, 1000 and 2000Hz were within the normal range (70-90dBSL)
A/E	Two or more of the three acoustic reflexes at 500, 1000 and 2000Hz were elevated or absent at maximum intensity settings
SoNo - SπNo	Signal in phase and Noise in phase - Signal out and Noise in phase

Appendix XXII: The CAPD test results of the two 9 year old participants in research group 2



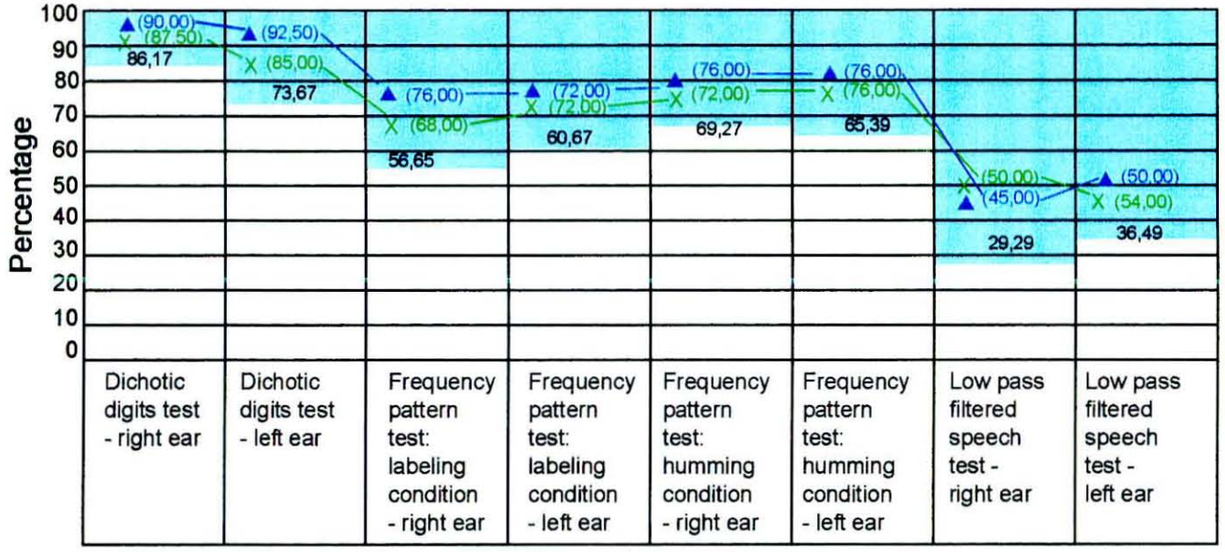
Stapedial acoustic reflexes

Participant	Right ear		Left ear	
	Ipsi-lateral reflexes	Contra-lateral reflexes	Ipsi-lateral reflexes	Contra-lateral reflexes
12	A/E	A/E	N	A/E
17	N	N	N	N



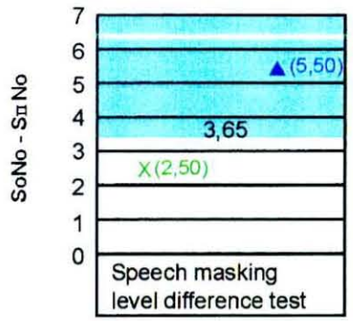
Key :	
X	Participant 12
▲	Participant 17
	Normal range
N	Two or more of the three acoustic reflexes at 500, 1000 and 2000Hz were within the normal range (70-90dBSL)
A/E	Two or more of the three acoustic reflexes at 500, 1000 and 2000Hz were elevated or absent at maximum intensity settings
SoNo - SπNo	Signel in phase and Noise in phase - Signal out and Noise in phase

Appendix XXIII: The CAPD test results of the two 10 year old participants in research group 2



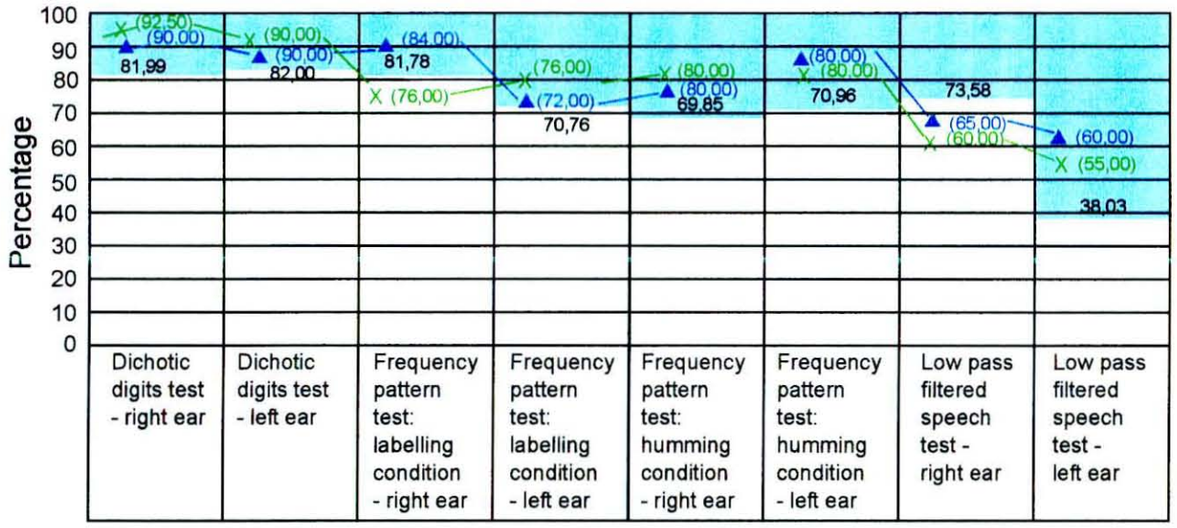
Stapedial acoustic reflexes

Participant	Right ear		Left ear	
	Ipsi-lateral reflexes	Contra-lateral reflexes	Ipsi-lateral reflexes	Contra-lateral reflexes
13	N	N	N	N
18	N	N	N	N



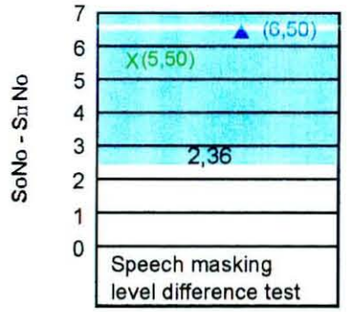
Key :	
X	Participant 13
▲	Participant 18
	Normal range
N	Two or more of the three acoustic reflexes at 500, 1000 and 2000Hz were within the normal range (70-90dBSL)
A/E	Two or more of the three acoustic reflexes at 500, 1000 and 2000Hz were elevated or absent at maximum intensity settings
SoNo - SπNo	Signal in phase and Noise in phase - Signal out andNoise in phase

Appendix XXIV: The CAPD test results of the two 11 year old participants in research group 2



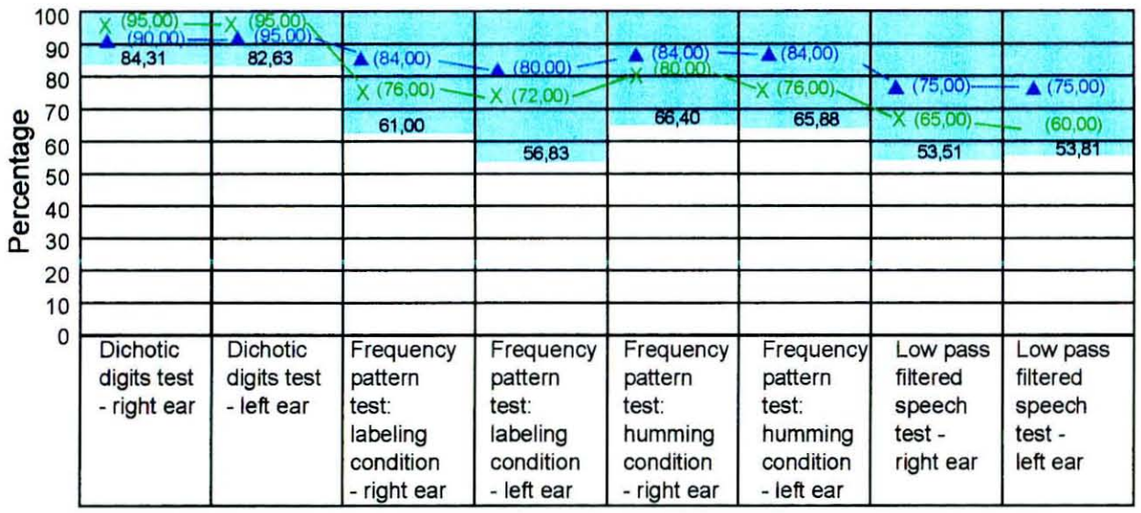
Stapedial acoustic reflexes

Participant	Right ear		Left ear	
	Ipsi-lateral reflexes	Contra-lateral reflexes	Ipsi-lateral reflexes	Contra-lateral reflexes
14	N	A/E	N	A/E
19	N	N	N	N



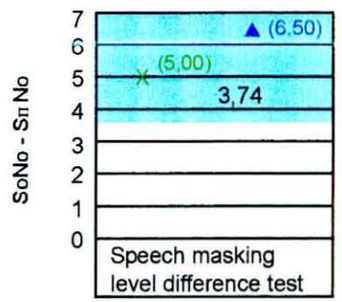
Key :	
X	Participant 14
▲	Participant 19
	Normal range
N	Two or more of the three acoustic reflexes at 500, 1000 and 2000Hz were within the normal range (70-90dBSL)
A/E	Two or more of the three acoustic reflexes at 500, 1000 and 2000Hz were elevated or absent at maximum intensity settings
SoNo - SπNo	Signal in phase and Noise in phase - Signal out and Noise in phase

Appendix XXV: The CAPD test results of the to 12 year old participants in research group 2



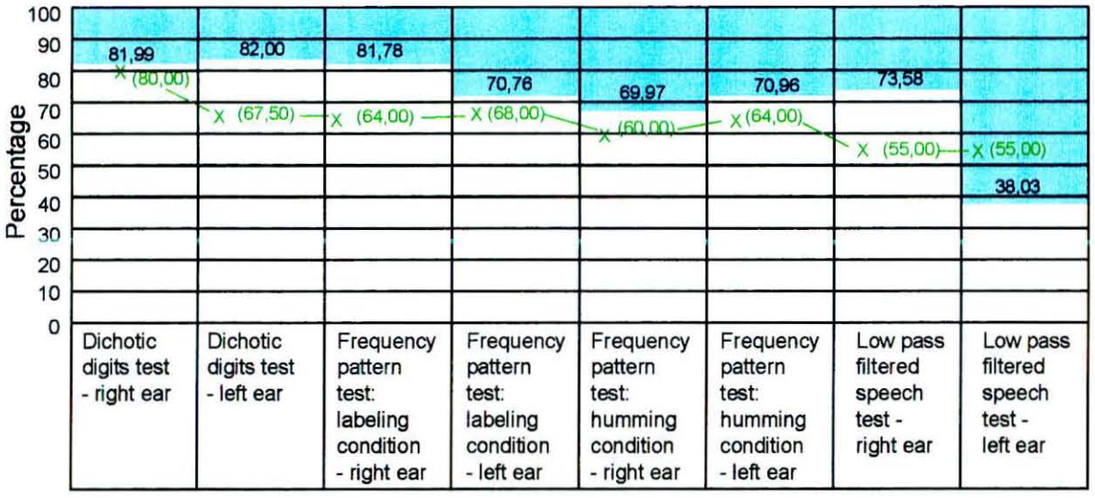
Stapedial acoustic reflexes

Participant	Right ear		Left ear	
	Ipsi-lateral reflexes	Contra-lateral reflexes	Ipsi-lateral reflexes	Contra-lateral reflexes
15	N	N	N	N
20	N	N	N	N



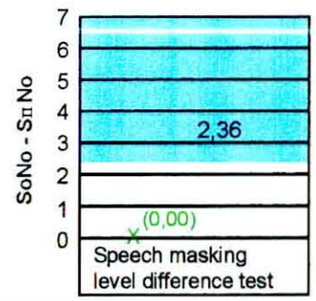
Key:	
X	Participant 15
▲	Participant 20
	Normal range
N	Two or more of the three acoustic reflexes at 500, 1000 and 2000Hz were within the normal range (70-90dBSL)
A/E	Two or more of the three acoustic reflexes at 500, 1000 and 2000Hz were elevated or absent at maximum intensity settings
SoNo - SπNo	Signal in phase and Noise in phase - Signal out and Noise in phase

Appendix XXVI: The CAPD test results of the one 11 year old participant in research group 3



Stapedial acoustic reflexes

Participant	Right ear		Left ear	
	Ipsi-lateral reflexes	Contra-lateral reflexes	Ipsi-lateral reflexes	Contra-lateral reflexes
21	N	A/E	N	A/E



Key :	
X	Participant 21
	Normal range
N	Two or more of the three acoustic reflexes at 500, 1000 and 2000Hz were within the normal range (70-90dBSL)
A/E	Two or more of the three acoustic reflexes at 500, 1000 and 2000Hz were elevated or absent at maximum intensity settings
SoNo - SπNo	Signal in phase and Noise in phase - Signal out and Noise in phase

Appendix XXVII: The CAPD subprofiles of research group 1 (combined type of ADHD), research group 2 (inattentive type of ADHD) and research group 3 (hyperactive-impulsive type of ADHD) in the medicated state.

	Research groups			
	Research group 1 (Combined group of ADHD) **n = 10**	**Research group 2 (Inattentive group of ADHD)** **n = 10**	**Research group 3 (Hyperactive-impulsive group of ADHD)** **n = 1**	**Total**
Auditory decoding deficit	0	0	0	**0**
Prosodic deficit	0	0	0	**0**
Integration deficit	0	0	0	**0**
Auditory associative deficit	0	0	0	**0**
Output/organization deficit	4 (Participants 1, 2, 5, 7)	1 (Participant 12)	1 (Participant 21)	**6**
Failure on one / more CAPD tests but no clear test pattern suggesting a CAPD subprofile	4 (Participants 4, 6, 8 and 9)	5 (Participants 11, 13, 14, 16, 19)	0	**7**
CAPD results within the normal range	2 (Participants 3 and 10)	4 (Participants 15, 17, 18, 20)	0	**8**
	10	**10**	**1**	**21**

Appendix XXVIII: The results of the individual participants using the IVA CPT procedural guidelines for assisting in the diagnosis of the different types of ADHD.

	Research groups		
ADHD type according to the IVA CPT procedural guidelines	**Research group 1 (Combined group of ADHD)** **n = 10**	**Research group 2 (Inattentive group of ADHD)** **n = 10**	**Research group 3 (Hyperactive-impulsive group of ADHD)** **n = 1**
Combined type of ADHD	**5** (Subjects 2, 5, 6, 7 and 8) Subject 8 - Only auditory modality valid	**1** (Subject 12 – only auditory modality valid)	**1** (Subject 21)
Inattentive type of ADHD	**2** (Subjects 4 and 9)	**3** (Subjects 15,18, and 19)	**0**
Hyperactive-impulsive type of ADHD	**0**	**0**	**0**
No ADHD	**0**	**6** (Subject 20) (Subject 11 – only auditory modality valid) (Subjects 13,14, and 16 – FSRQC and FSAQ differ with more than 15) (Subject 17 – only auditory modality valid, difference between ARCQ and AAQ greater than 15)	**0**
Other	**3** (Subjects 1, 3 and 10 – validity of test results low and a low fine motor regulation score)	**0**	**0**
KEY:			
AAQ	Auditory Attention Quotient		
ARCQ	Auditory Response Control Quotient		
FSAQ	Full Scale Attention Quotient		
FSRQC	Full Scale Response Control Quotient		