

FLEXYX™ Neurotherapy

- An advanced form of EEG biofeedback.
- It is non-invasive and painless, and requires only sitting in a comfortable chair and wearing dark glasses that generate feedback via transducers.
- This is not a conscious learning task and attentional capabilities are not necessary.
- Reduces the electrical "noise" in the brain (EEG slowing). These changes are the equivalent of greater neurological and behavioural "flexibility".
- *When EEG slowing is reduced, symptoms can decrease and even disappear.*



Neurofeedback.....

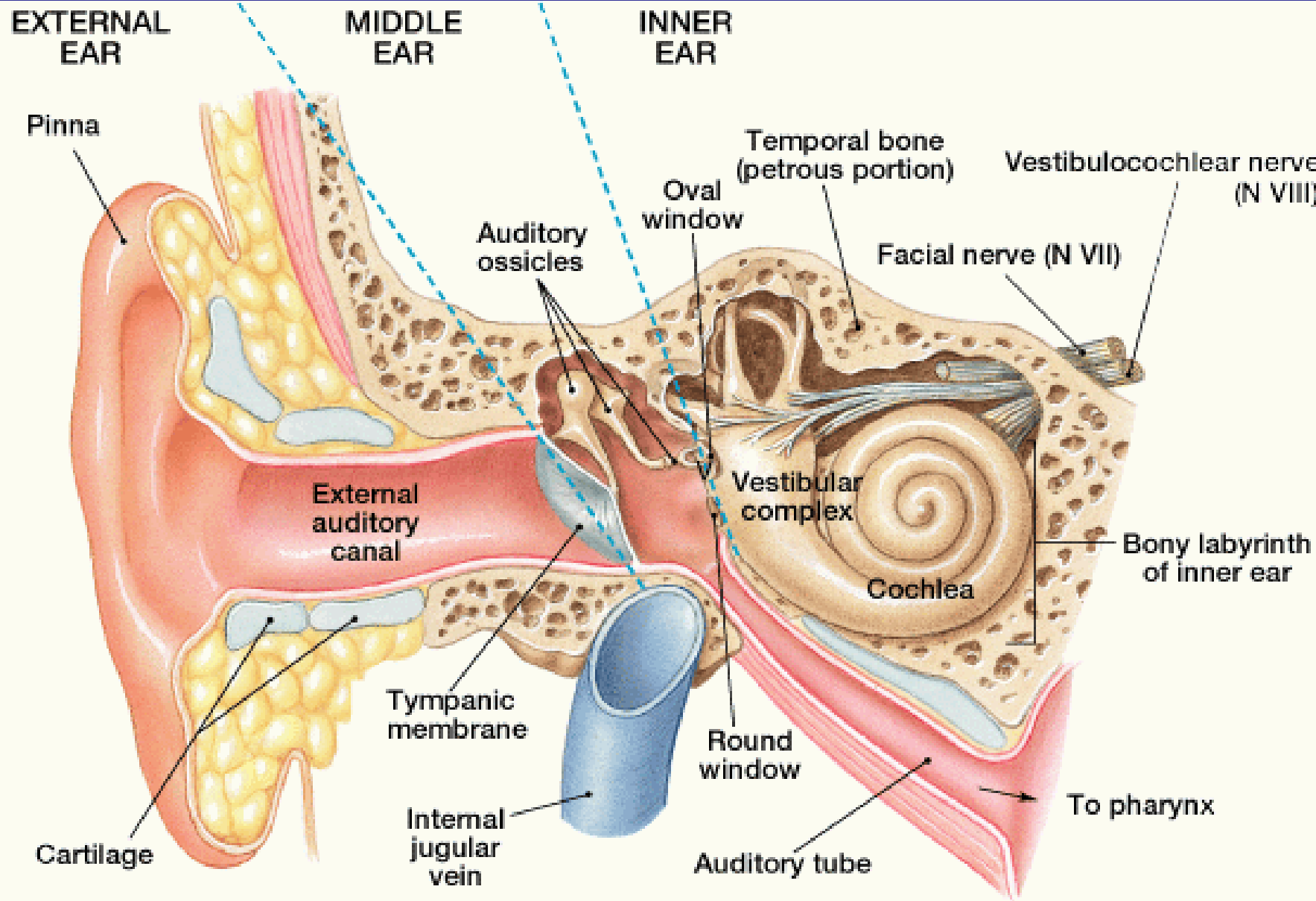
- Is a learning strategy that works to improve the brain's ability to produce certain brainwaves. It can be considered "aerobics for the brain".
- Sensors are placed on the scalp and ears and brainwave activity is amplified and monitored by a computer. The computer feeds back the signal in the form of a game.
- When information about a person's own brainwave characteristics is made available to him/her, they can learn to change them.
- Specific protocols are designed according to QEEG analysis.
- 100-200 sessions (approximately 30 minutes a session) of neurofeedback are required for the autistic child.

Functional Improvements observed with Neurofeedback.....

- Medications often reduced.
- Previous "memorised" speech replaced by some original thought; expression of own ideas and questioning.
- Speech and language begin to develop/improve.
- Attention improves.
- Initiates touch; less sensitive to light, sound, and textures.
- Interacts more and able to do some group work at school.
- Responds more appropriately to parental directions.
- Improved balance and gross motor control.
- Decrease in hyperactivity and impulsivity.
- More aware of feelings, emotions, and humour.
- Less resistant to change.
- Less mood swings/depression/anxiety



The sense of hearing.....



Hearing - external canal, drum (Tympanogram), otic bones and cochlear, the auditory nerve and the auditory cortex.

-No timing, sequencing or Central Auditory Processing (CAP) involved.

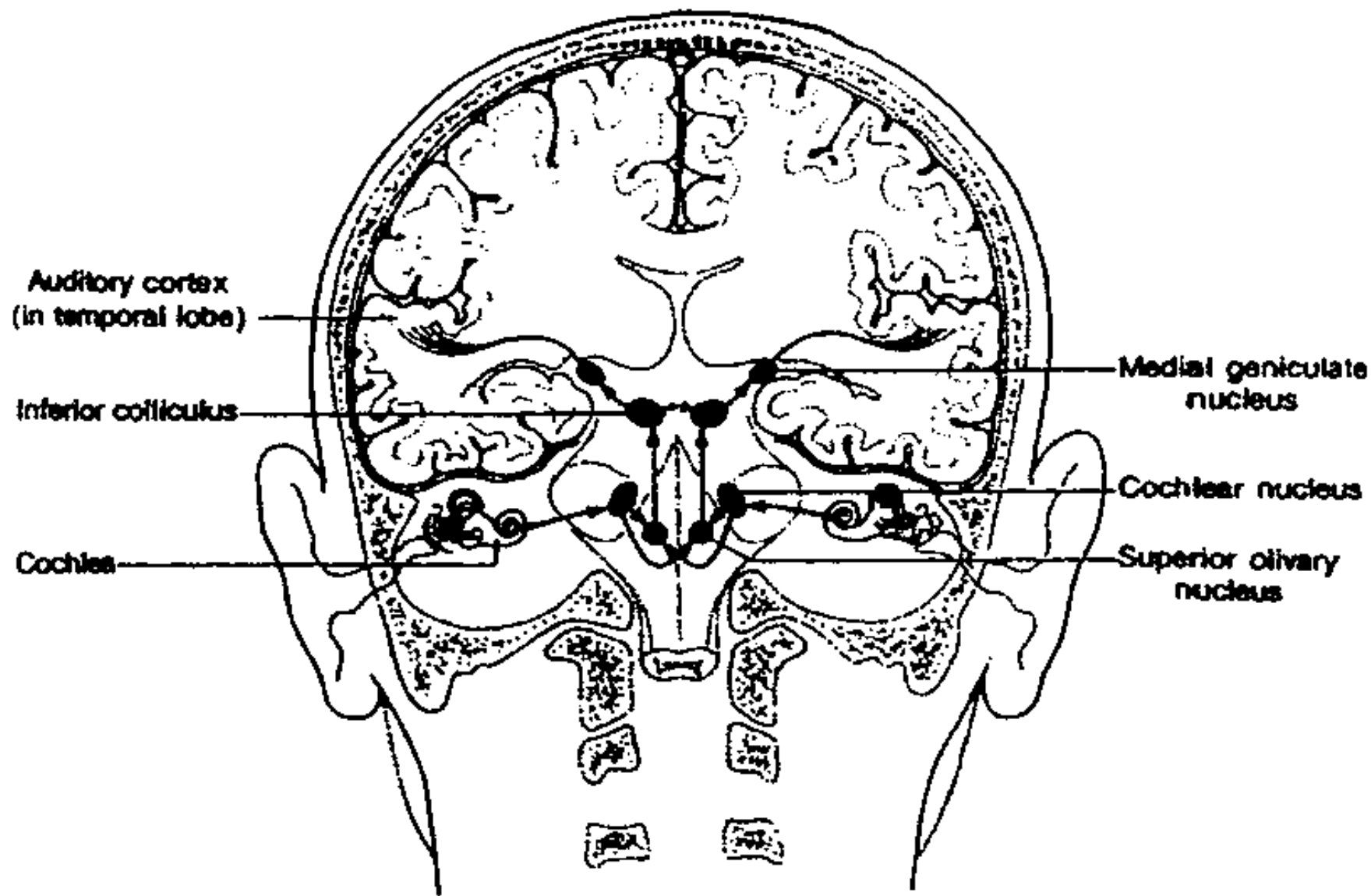
-It is the volume needed to hear each frequency (audiogram)

**Listening - requires good hearing plus the ability to efficiently sequence and process the sounds (40-60 msec)
Sounds are processed and linked to auditory memory for meaning ie central auditory processing.**

When listening ability is reduced resultant problems with decoding, blending, reading, spelling, auditory memory, visual input, visual memory and compliance occur.

Reading - normal reading requires a complex mixture of processes to occur.

The Auditory Pathway



Simplified diagram of the auditory pathways. (Adapted from Wever, 1949.)

“Poor auditory processing abilities were recorded in poor readers; particular difficulties were posed by tasks requiring spectral distinctions, the simplest form of which was pure tone frequency discrimination.

In absolute terms, the greatest deficits were recorded in tasks in which stimuli were presented in brief forms and in rapid succession.....

Psychoacoustic difficulties are largely retained throughout adulthood and may be the source of retained reading difficulties”.

(Ahassar et. al. -2000 Proc. Natl.Acad.Sci. USA.)

This means

The ability to understand verbally presented language requires fast processing of the sequence of sounds (vowels and consonants) and accurate identification of those individual sounds.

If accurate identification is due to the ability to detect small differences in frequency (spectral differences), then the ability to sequence these sounds is due to the ability to detect the time gap between the spectral peaks (temporal processing).

Sound Therapy.....

- **SAMONAS® SOUND THERAPY**
- **THE LISTENING PROGRAM®**
- **AUDITORY INTEGRATION TRAINING®**
 - **TOMATIS®**

How SAMONAS® Sound Therapy Works....

The understanding of how SST works has two main bases.

1. The Brain itself

- i. Inherent neuroplasticity (King et. al. -2000)
- ii. The effect of music on the auditory cortex (Horowitz et.al. -1998)
- iii. The anatomical connections between auditory and other neurological systems.

2. SST

- i. Types of music selected (Full spectrum of the audible range)
- ii. The combinations of specific technical changes made to the music.
 - A) Spectral activation - increase in multiple frequencies of the same pitch
 - B) Temporal variation of the music
 - C) Spatial localisation of the musical instruments
 - D) Emphasis on the dominant ear
 - E) CDs take advantage of the right & left side input crossover in brain
 - F) Enhances the receptive mood of the listener
 - G) Bone conduction applied to the mastoid bone changes sound to vibration directly affecting the vestibular system.

Benefits of SST

- The auditory & visual sequence threshold decreases
- Speech and language improves
- Visual function problems improve
- Motor balance and gross and fine coordination problems improve
- Behaviour & sleep problems improve
- General learning ability & classroom performance improve
- Hypersensitivity to sound decreases
- Reduced levels of anxiety



Sensory Motor Integration.....

... the motor act is the cradle of the mind. - C.S. Sherrington.....

Problems with sensory integration in autism present as:-

- **Tactile sensitivity**
- **Proprioception**
- **Vestibular perception**
- **Gross & Fine Motor difficulties**
- **Visual motor difficulties**
- **CAPD (central auditory processing disorders)**

Interventions that address these difficulties include sensory-motor integration, primitive reflexes, auditory training/sound therapy, neurofeedback, facilitated communication, speech and occupational therapy.

Primitive reflexes....

- Are survival reflexes occurring sequentially in the first few weeks of foetal development
- automatic, stereotyped movements, directed by a very primitive part of the brain (brain stem).
- executed without involvement of higher levels of the brain (the cortex).
- ideally short lived and as each fulfils its function is replaced by more sophisticated structures (Postural Reflexes) which are controlled by the cortex
- retained if they do not fulfil their function
- considered aberrant and evidence of an immaturity within the CNS if present beyond their time.

- A Reflex inhibition program:
- is based on the theory of replication ie. it is possible to replicate specific stages of development through the repetition of movement patterns based upon early development
- gives the brain a "second chance" to pass through the stages which were omitted or incomplete in the first year of life

- establishes neural connections and sets the "neural clock" to the "correct time".
- consists of specific physical, stereotyped movements practiced for approximately 5 to 10 minutes per day over a period of nine to twelve months.
- once begun should not be abandoned mid stream
- should only be given under careful and qualified supervision.

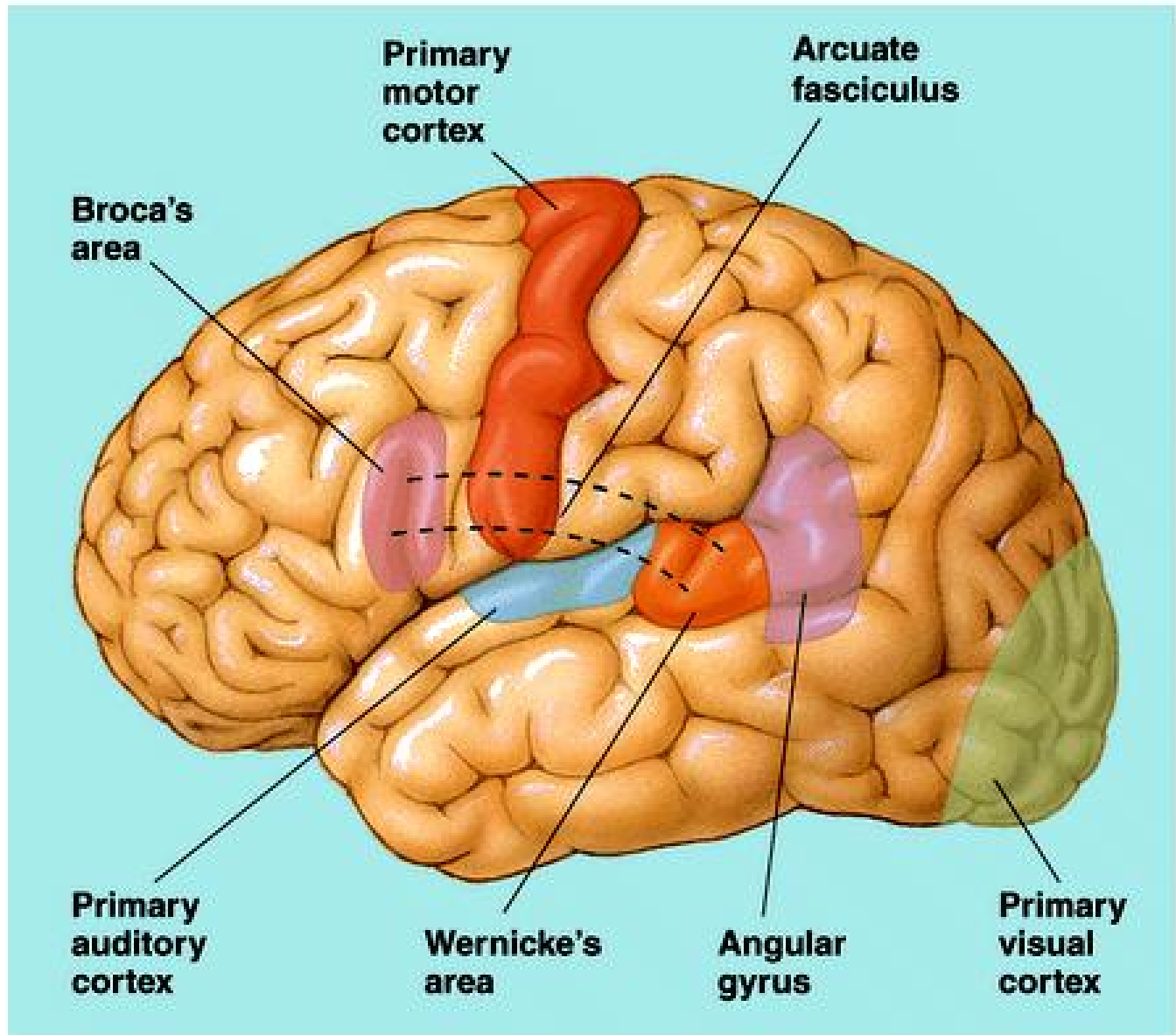
- Detection of primitive reflexes can help isolate the causes of a child's problem so that remedial training can be targeted more effectively. Craniosacral correction may also be necessary to re-establish central nervous system functioning.
- Aberrant reflex activity needs to be addressed in order to facilitate normal development and eliminate many of the physical, academic and emotional problems their presence caused.



Developmental Vision & Speech Therapy.....

- 70% of information the brain receives for processing is through the eyes.
- Distortions, stress related to lights, colours, patterns, high contrast or movement will affect the other senses and a child's ability to interact with the environment.
- Essential fatty acids, behavioural optometry and The Irlen Method® can help address peripheral vision issues and scotopic sensitivity in many instances.

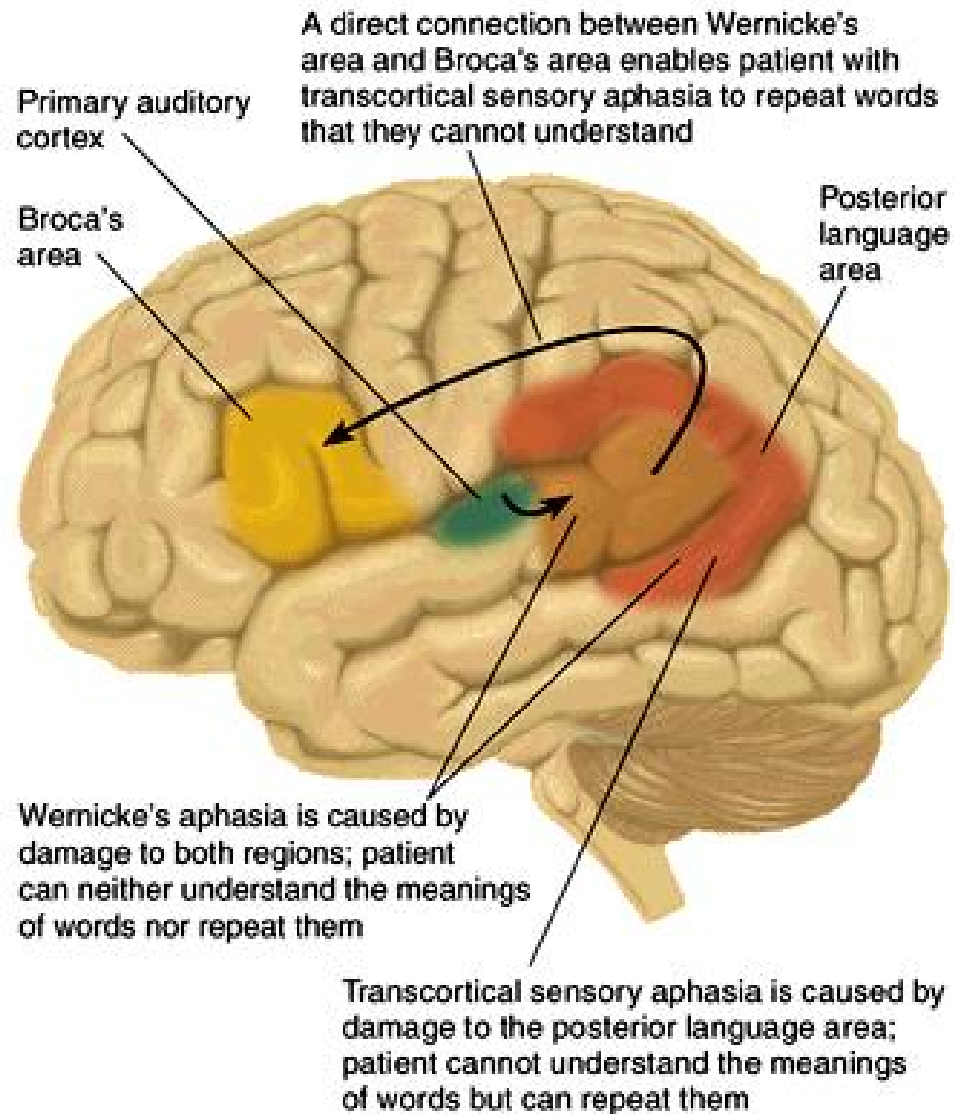
► Seven Components of the Wernicke-Geschwind Model



Vision & speech therapy continued.....

- Lindamood-Bell® , Spalding® etc.
- Speech therapy is most beneficial after CAP issues have been addressed and...
- when applied intensively and consistently in all settings throughout the course of the child's day. A 20 minute session of speech therapy 3 times per week is simply not enough.

► Location and Interconnections of the Posterior Language Area



Pre-academic Programmes.....

- ABA
- TEACCH
- PECS
- DIR/"Floor Time"
- INCLUSION
- SOCIAL STORIES
- The Miller Method



Teaching.....

- The acquisition of literacy and numeracy skills can only begin once the areas of affect, attention and sensory motor issues have addressed.
- Remedial interventions which target the appropriate developmental level will be necessary for continued learning & development. (eg. IEP, teacher's aides, inclusion strategies etc.).



Psychology & Personal Development.....

- Encouragement toward self esteem
- Functional independence
- Goals and goal setting



Coaching
(parents, teachers, peers etc.)



Mentoring
(workplace)



In Summary.....

“ A healthy brain is fundamentally based on a healthy biochemical/nutritional, ecologic and biomagnetic environment within each and every cell of the human body”.

(Brain Allergies - Philpott & Kalita - 2000).

The consensus of opinion indicates that Autistic Spectrum Disorders result from neurological problems occurring during prenatal development and/or within the first years of life whilst neural connections are still being made.

- **Early intensive, multimodal interventions that target the fundamental deficits offer the best hope of 'recovery' from autism.**
- **Following the model presented, a systematic multidisciplinary approach allows clinicians the opportunity to dynamically evaluate, apply and modify a course of action according to best practice and to accommodate specific needs.**



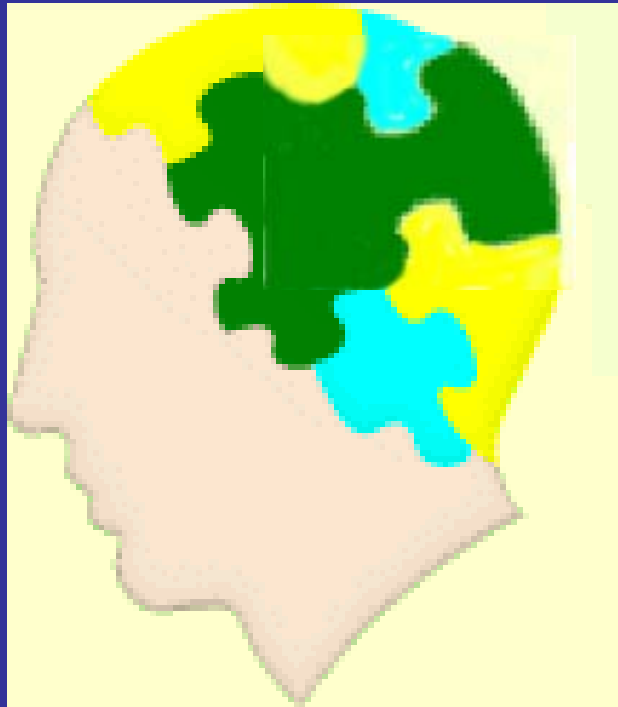
Robert.....



- Robert is 11 years old and could quite easily be fitted to any of the PDD criteria/checklists including autism.....

Mary.....





Perhaps in the future, with continued global interdisciplinary research, collaboration and sharing, the puzzle of autism can be solved so that individuals with ASD can function and live to their full potential.

Laboratory Resources

(as listed by Kirkman Laboratories)

- **AAL Reference Laboratories, Inc. Tel (800) 522-2611
(714) 972-9979
Fax (714) 543-2034**
**1715 E. Wilshire #715
Santa Ana, CA 92705
www.aalrl.com**
- **Doctor's Data, Inc. Tel (800) 323-2784 (630) 377-8139
Fax (630) 587-7860**
**P.O. Box 111
West Chicago, IL 60186
www.doctorsdata.com**
- **Great Plains Laboratory Tel (913) 341-8949
Fax (913) 341-6207**
**11813 West 77th
Lenexa, KS 66214
www.greatplainslaboratory.com**

- **Great Smokies Diagnostic Laboratory Tel (800) 522-4762
(828) 253-0621**

**63 Zillicoa Street
Asheville, NC 28801 Fax (828) 252-9303
www.gsdl.com**

- **Immuno Laboratories Tel (800) 231-9197
(954) 486-4500
Fax (954) 739-6563**

**1620 West Oakland Park Boulevard
Fort Lauderdale, FL 33311
www.immunolabs.com**

- **Immunosciences Lab, Inc. Tel (800) 950-4686
(310) 657-1077
Fax (310) 657-1053**

**8693 Wilshire Boulevard
Beverly Hills, CA 90211
www.immuno-sci-lab.com**

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Fax (+61 3 9589 5158)
President of The Australian Complementary Health Care Council &
Director of The Australian College Of Environmental And Nutritional
Medicine.
13 Hilton St
Beaumaris, Victoria 3193, Australia
www.acnem.org email: mail@acnem.org
- **MetaMetrix Clinical Laboratory Tel (800) 221-4640**
(770) 446-5483
Fax (770) 441-2237
4855 Peachtree Industrial Boulevard
Norcross, GA 30092
www.metametrix.com

- **Karl Reichelt, MD, PhD Tel 011-47-23-07-29-85**
Director, Clinical Chemistry
Department of Pediatric Research
Rikshospitalet – The National Hospital
N 0027 Oslo, Norway
- **Smith Kline Beecham Laboratories Tel (888) 825-5249**
(919) 483-2100
P.O. Box 13398
Research Triangle Park, NC 27709
www.us.gsk.com
- **US BioTek Laboratories Tel (206) 365-1256**
Fax (206) 363-8790
13758 Lake City Way NE
Seattle, WA 98125
www.usbiotek.com

For neurofeedback

- www.snr-jnt.org
- www.flexyx.com
- www.eegspectrum.com

For Samonas Sound Therapy

- www.samonas.com

For Craniosacral Therapy

- www.upledger.com
- www.milneinstitute.com

For Bowen Therapy

- www.bowtech.com

