Interventions and Clinical Education

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Literacy Care and The Child Development Network

What is Dyslexia

Any ideas ?

Formal Definition

Dyslexia is a specific learning disability that is neurological in origin. It is characterized by difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities. These difficulties typically result from a deficit in the phonological component of language that is often unexpected in relation to other cognitive abilities and the provision of effective classroom instruction. Secondary consequences may include problems in reading comprehension and reduced reading experience that can impede the growth of vocabulary and background knowledge

(International Dyslexia Association 2011)

Terminology

Learning Difficulty
Specific Learning Disability
Specific Reading Disorder
Literacy Disability
Reading and Spelling Disability

Terminology (Cont')

Delay

Implies a mild problem from which in time the child will recover without organized intervention. Often suggests a differential of about 12 months

CA = 800 RA = 700

NB: 12 month delay at 7 yrs may be more serious than a 12 month delay at 12 yrs

Terminology (Cont')

Difficulty

Implies a moderate problem that may or may not be caused by non constitutional factors and from which the child will recover if tutored or simply applying greater effort or spending more time. May be 18 months behind.

Terminology (Cont')

Disability

Implies a severe, specific neuro-developmental problem that is constitutional to the child, separate from other difficulties and that will not recover unless treated with a designed and systematic intervention. May be over 24 months behind

Terminology (Cont')

Other Dys's

- Dysgraphia (Cognitive Dysgraphia)
- Dyscalculia (Maths)
- Dyspraxia (Motor)

Dyslexia is a separate pathology from other learning disabilities including SLI and ADHD

Just a Few Facts

- Dyslexia is not a language based learning disability. It is specifically a phonological processing based learning disability. (Visual Factors?)
- It is the most common form of learning disability.
- Approximately 15-20% of the population has a learning problem to some degree
- The National Institutes of Health (US) report that 60% to 80% of those with learning disabilities have problems with reading and spelling skills.
- Individuals with dyslexia may have difficulty with either receptive or expressive oral language skills, reading, spelling, or written expression.

Some More Facts...

- Dyslexia occurs in people of all backgrounds and intellectual levels. People who are very bright can be dyslexic. They are often capable or even gifted in areas that do not require strong language skills, such as art, computer science, design, drama, electronics, math, mechanics, music, physics, sales, and sports.

- Dyslexia runs in families; dyslexic parents are very likely to have children who are dyslexic.

Some More Facts…

- There are at least 6 Chromosomes identified as causal to Dyslexia
- Dyslexia has a neurological signature
- Some people are identified as dyslexic early in their lives, but for others, their dyslexia goes unidentified until they get older.

Some Statistics…

Year 3	Percentage meeting the Standard	Percentage not meeting the Standard
Main Sample	76	27
Males Females	66 77	34 23
Language Background other than English English Language Background	62 73	38 27
High Socio-economic Status Medium Socio-economic Status Low Socio-economic Status	88 72 62	12 28 38
Special Indigenous Sample	19	81

Recognizing The Signs

- The problems displayed by individuals with dyslexia involve difficulties in acquiring and using written language
- It is a myth that dyslexic individuals “read backwards,” although spelling can look quite jumbled at times because students have trouble remembering letter symbols for sounds and forming memories for words.

Recognizing The Signs

Other problems experienced by dyslexics include the following:
(Don't Jump to Conclusions – Be Alert Not Alarmed)

- Learning to speak
- Learning letters and their sounds
- Organizing written and spoken language
- Memorizing number facts
- Reading quickly enough to comprehend
- Persisting with and comprehending longer reading assignments
- Spelling
- Learning a foreign language
- Correctly doing math operations

Diagnosis

Who?

How?

Who Can Diagnose

Informal

Based on ‘Concern’ and ‘Suspicion’

- Teachers Communicate Concerns Early

  Make Recommendations/Refer

Who Can Diagnose

Informal

Based on ‘Concern’ and ‘Suspicion’

- Parents

  Confirm Concerns with Teacher and a Secondary Professional Source

  Become and Educated Person

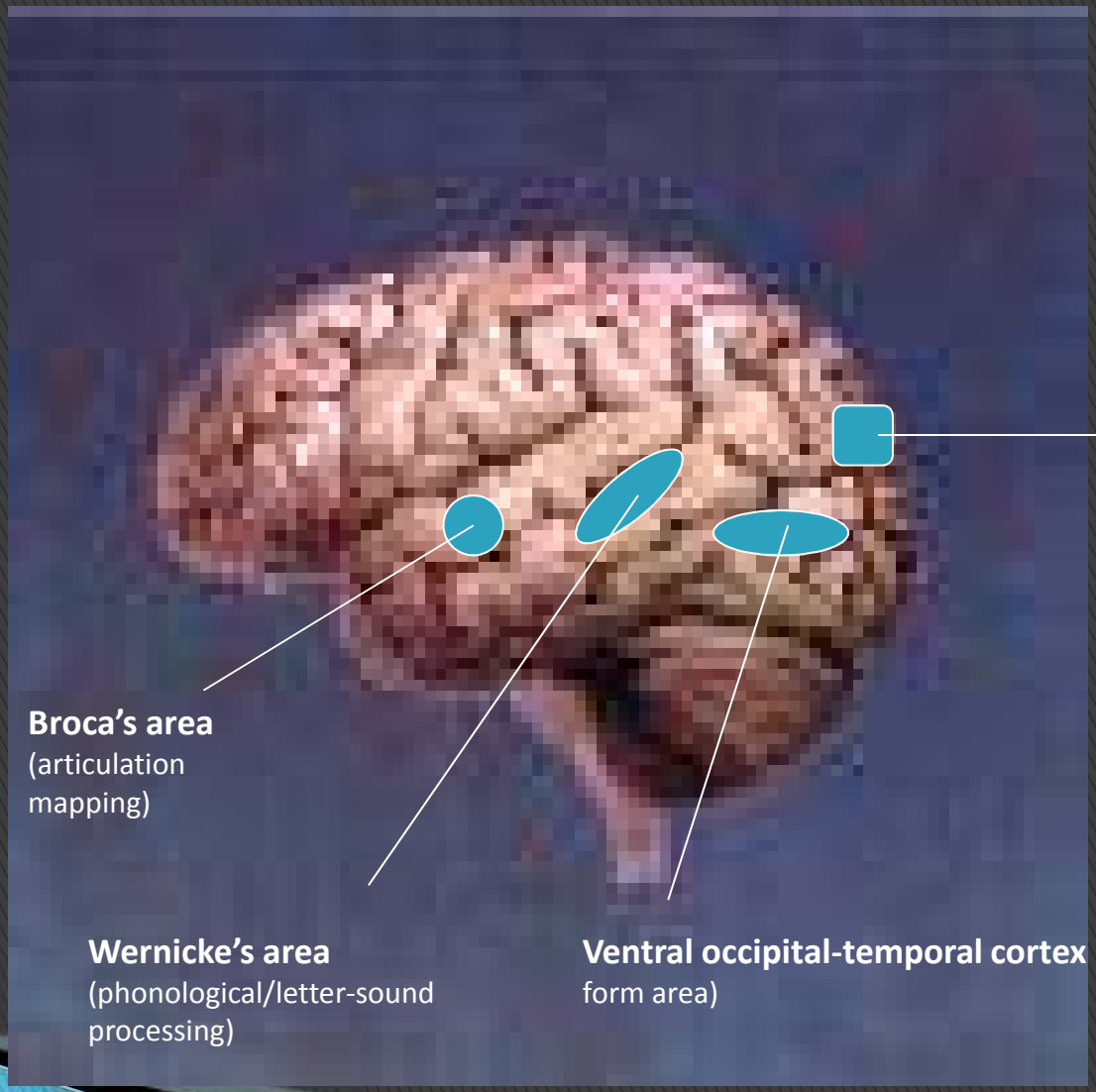
Who Can Diagnose

Formal

Based on 'Evidence, Enquiry and Clinical Judgement'

- Brain Imagery Neurological Signature
  (f)MRI
  Only Used for Research
  Not in Australia

Neurobiological factors [30, 31, 59]



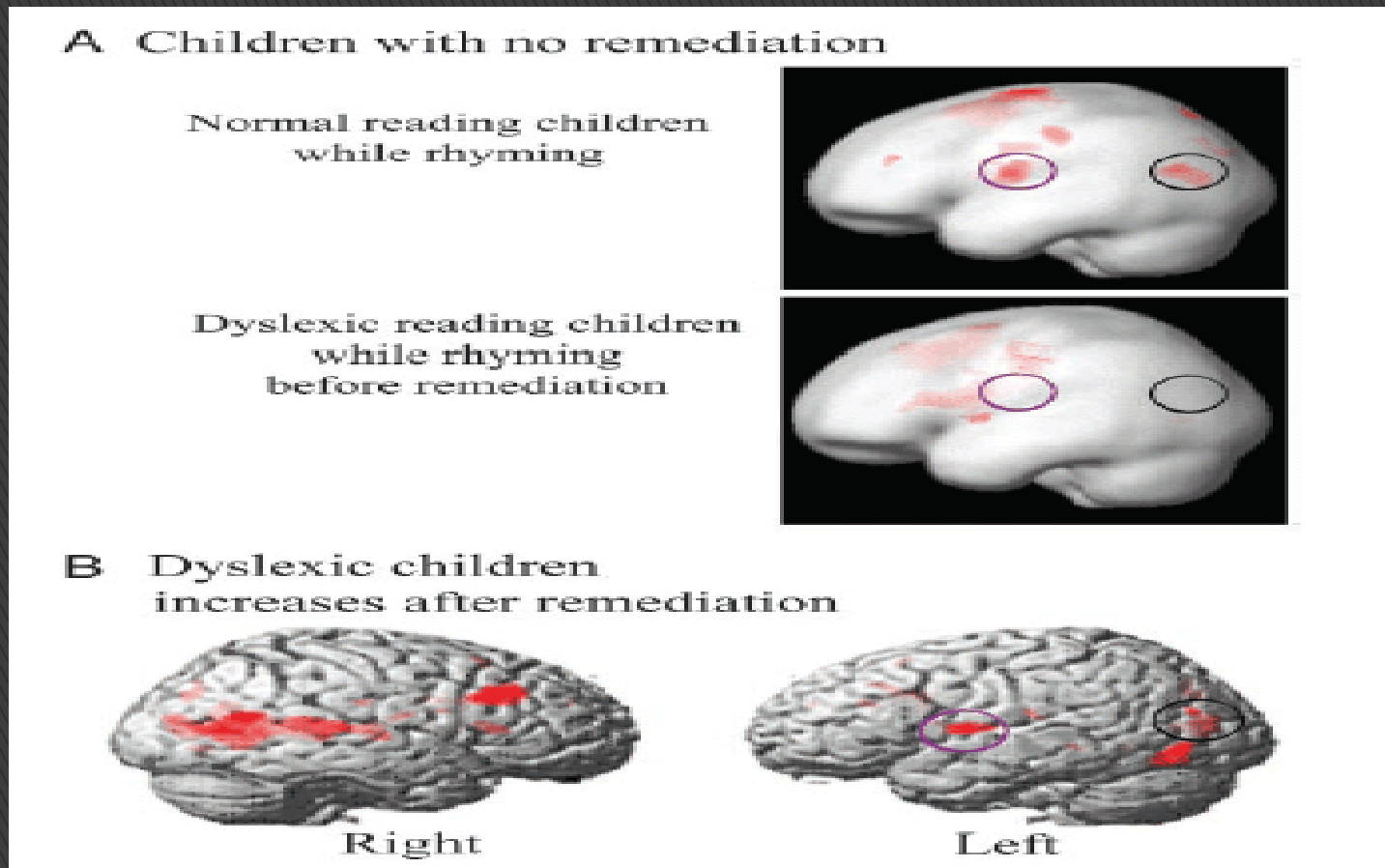


Fig. 1. Neural effects of remediation in children with developmental dyslexia. (*A*) Left hemisphere activations of control children and children with dyslexia are shown during rhyming (as compared with matching) letters ($P < 0.025$, 20-voxel threshold; ref. 12). (*B*) Brain areas that showed increased activity during phonological processing in the dyslexic group after remediation. Shown at $P < 0.01$, 20-voxel threshold. Black circles highlight left temporo-parietal region, which is disrupted in children with dyslexia and affected by remediation. Purple circles highlight the left frontal region that is active in control children and is affected by remediation in children with dyslexia.

Who Can Diagnose

Formal

Based on 'Evidence, Enquiry and Clinical Judgement'

- Paediatrician Uses IQ/Performance Model
  Clinical skills
  Legal Diagnosis

Who Can Diagnose

Formal

Based on 'Evidence, Enquiry and Clinical Judgement'

- Ed. Psyche/Special Education

Cognitive Test
Academic and Scholastic Tests
Processing Tests
Clinical Skills

Who Can Diagnose

- In Australia ‘Legally’ only a medical specialist can Diagnose Learning Disability – For the Courts
- Current Industry Practice Prefers Clinical Educational Psychologists
- Educational Specialists diagnose for the purpose of informing instruction

Diagnosis

Who?

How?

How to Diagnose

Diagnostic Models

1. IQ : Performance Discrepancy Model
2. Phonological Processing and Orthographic Processing Deficit Model
3. “Sea of Strengths” Model
4. Reading Language Spectrum Model

How to Diagnose

IQ : Performance Discrepancy Model

Simply states that there is either a statistically or clinically significant disparity between the child's IQ (overall cognitive ability) and their scholastic performance

How to Diagnose

Phonological Processing and Orthographic Processing Deficit Model

Phonological Processing

- Refers to the use of phonological information, especially the sound structure of one's own oral language, in processing written language (i.e., reading, writing,) and oral language (listening, speaking) (Wagner and Torgesen 1987)

How to Diagnose

Phonological Processing

Three Composite Areas

- Phonological Awareness
- Phonological Memory
- Automatic Rapid Naming

How to Diagnose

Phonological Processing

Phonological Awareness

An Intuitive Yet Conscious Awareness of the Smallest Units of Sounds (Phonemes) that Make Up Spoken Words and the Subsequent Ability to Manipulate these Sounds

(McGowan 2003)

How to Diagnose

Phonological Processing

Phonological Memory

Refers to the coding of phonological information for temporary storage in working or short term memory

How to Diagnose

Phonological Processing

Automatic Rapid Naming

Refers to the rapid and efficient retrieval of phonological code. When reading we retrieve:

1. Phonemes Associated with Letters or Letter Pairs
2. Pronunciations of Common Word Segments
3. Pronunciation of Whole Words

How to Diagnose

Orthographic Processing

This refers to the visual processing aspect of reading. It does not refer to the eyes or the ocular system. Nor does it refer to Irlen Syndrome (Scotopic Sensitivity Syndrome)

How to Diagnose

Orthographic Processing

Orthographic Errors Fall into Three Categories:

How to Diagnose

(1) Orthographic Choice

This can be thought of in at least three ways.

1. An incorrect choice between vowel-consonant /e/ pattern and vowel-vowel pattern when both are phonologically acceptable. E.g.; ‘bote’ or ‘boat’.
2. A problem choosing between letter order. E.g.; ‘brithg’ or ‘brihgt’ or ‘brigth’ or even BRIGHT
3. Correctly spelling homonyms, homophones and homographs relative to their meaning

How to Diagnose

(2) *Semantic (and sometimes asemantic) Whole Word Substitutions*

- This means that the child reads a word that is visually similar with or without the same meaning, e.g.; ‘taking’ for ‘talking’ or a word that is visually dissimilar but may have a similar meaning such as ‘eight’ for ‘nine’.

How to Diagnose

(3) Perceptual Analysis

- Perceptual Analysis refers to single letter or whole word reversals.

p/b/d/q/
w/m
u/n

A competent 4 ½ yr old who does not yet know the letter /u/ may describe it as an 'upside down' /n/

However, a child with orthographic difficulties will maintain confusion around these symbols

How to Diagnose

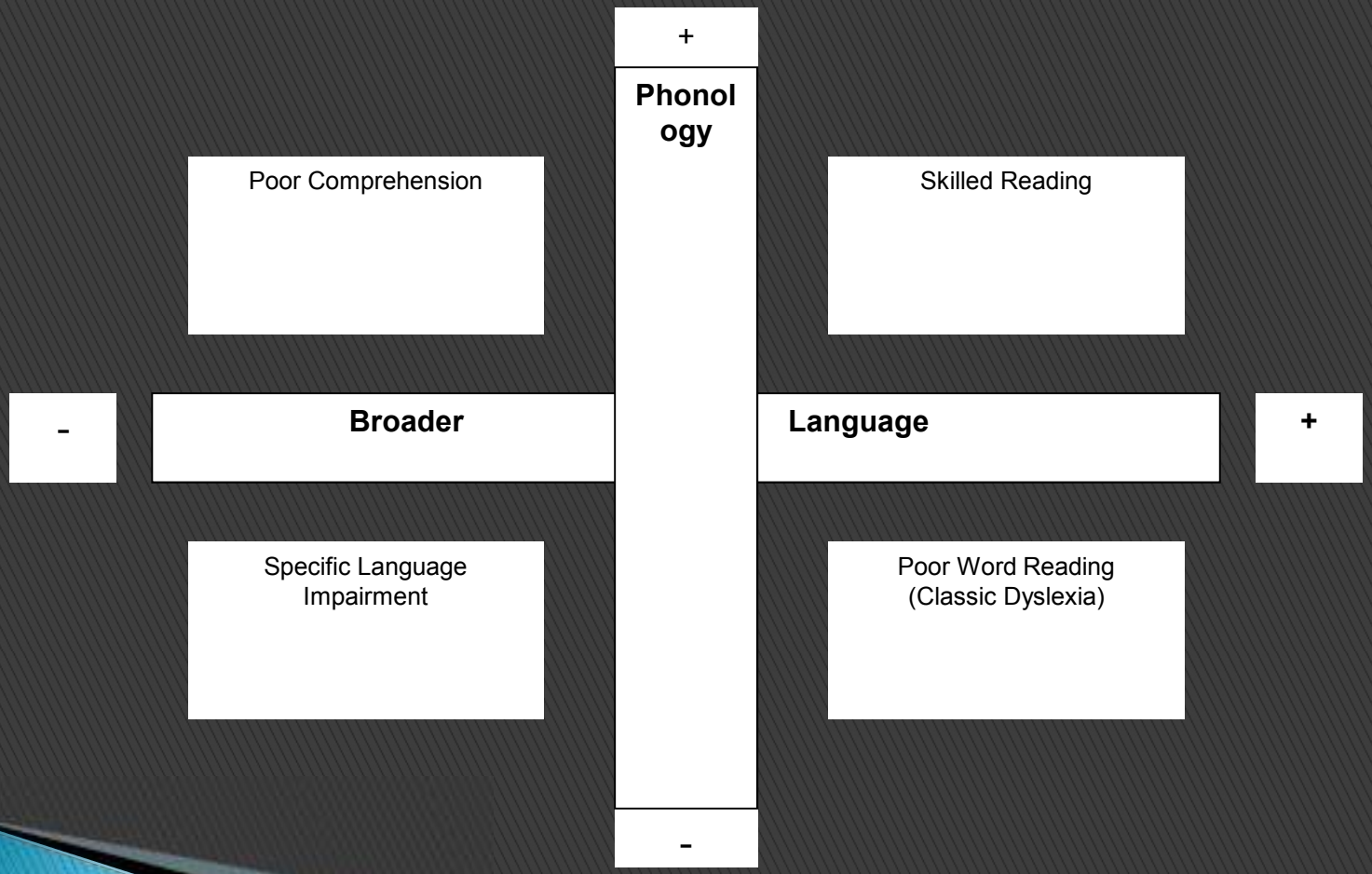
"Sea of Strengths" Model

Certain Strengths are Behaviourally Associated with Dyslexia

Construction	Art
Music	I.T
Drama	Sport
Maths	Drawing
Oratory	Perception and Intuition
Design	Story Telling

How to Diagnose

Reading Language Model (Spectrum)



How to Diagnose

Clinical Education

Collecting Evidence and Making Decisions

- Background and History
- Tests
- Clinical Decision

How to Diagnose

Collecting Evidence and Making Decisions

Background and History

- Educational (grades, teacher comment, yrs of schooling, learning support)
- Developmental/Family (hereditary, wider Dvlpmt probs)
- Medical (relevant diagnoses, anxiety, sleep disorder ADHD)
- Psychological (Cognitive/Memory Information)

How to Diagnose

Collecting Evidence and Making Decisions

Tests

- Diagnostic Tests — WISC IV
- Survey Tests — NAPLAN

- Diagnostic Achievement Tests ✓
  rd/sp/phon etc

How to Diagnose

Collecting Evidence and Making Decisions

Clinical Decision

Standardized numerical data should always be interpreted in the context of the clinical setting in which it was collected and should be generally interpreted only by the person who collected the data. Isolated test scores that are provided to non testing professionals are therefore usually of minimal value

How to Diagnose

Collecting Evidence and Making Decisions

Clinical Decision

Disorders of learning are now considered to be a strictly clinical diagnosis. This means that the patient's history, clinical performance and the practitioner's clinical skills are the essential components that contribute to the conclusions drawn. The type of tests used and the standardized information that such tests provide are of less value

How to Diagnose

Collecting Evidence and Making Decisions

Clinical Decision

The purpose of engaging a professional is to obtain that person's professional diagnostic and prognostic opinion. It is unusual and even dangerous for another professional to draw conclusions based on their interpretation of isolated numerical data gathered during a clinical process to which they have not been privy

How to Diagnose

Collecting Evidence and Making Decisions

Clinical Decision

However, it is vital that the testing professional's interpretations and conclusions accurately reflect the overall profile that that individual scores help to make up.

Treatment And Management

Treatment and Management

Who?

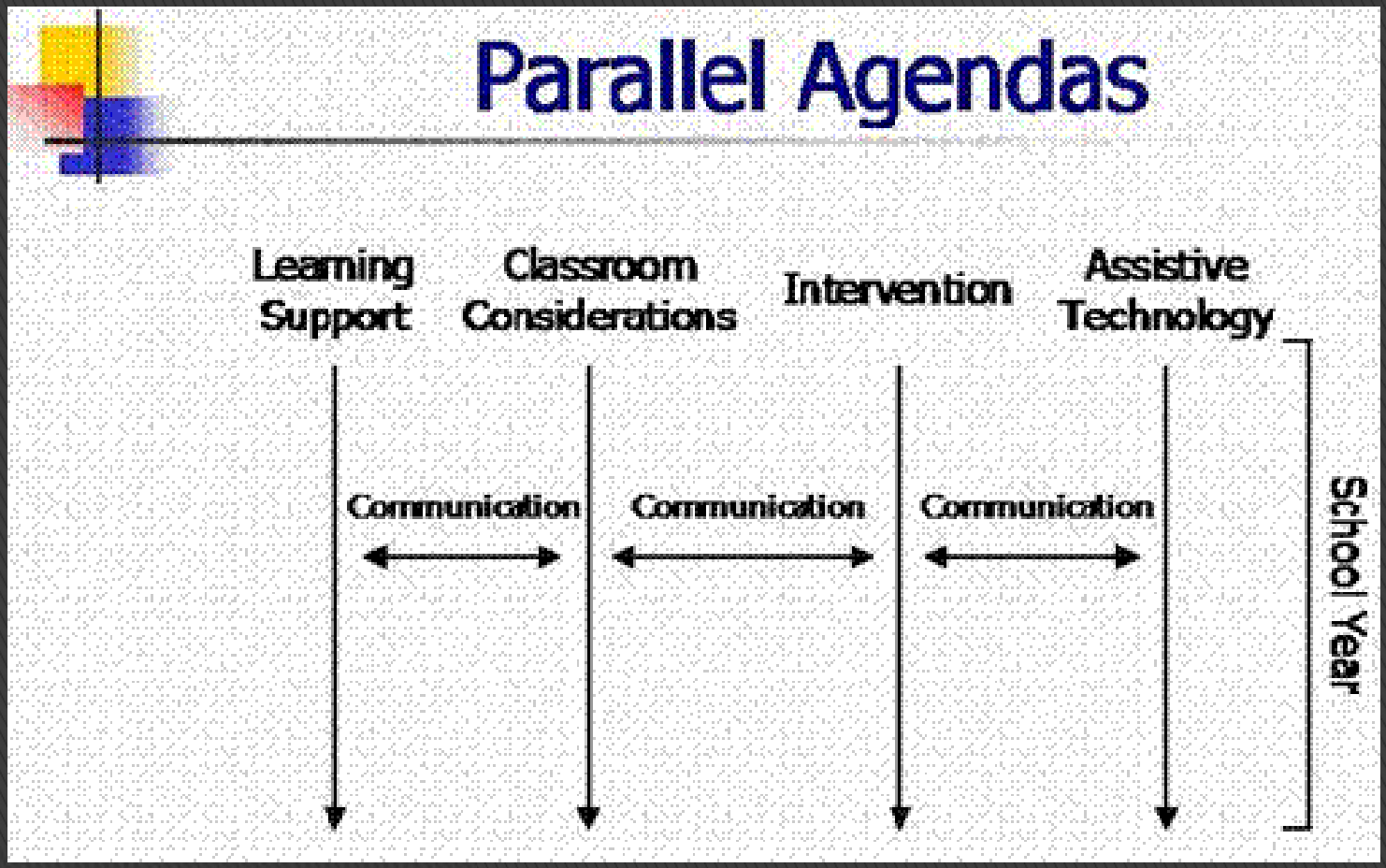
How?

Treatment /Management

Who?

- Teachers (CRT, LST) – Whole School Approach (3 Tier System)
- Parents
- Specialist Intervention (Often Private)
- Other Specialist (Medical and Allied Health, A.T)

Treatment /Management



Treatment /Management

Special Considerations

The basic and essential premise of Special Consideration is the concept of ‘Empathetic Insight’. The hope is that a proper level of insight into the child’s difficulty will lead to an empathetic based policy that governs how the child will be managed in the classroom. It is a way of painting a series of ‘do’s’ and ‘don’ts’ around the child in order to give him a profitable school day academically and a safe day in relation to mental health.

Treatment /Management

6 Key Areas of Special Consideration should be investigated:

"Level The Academic Playing Field"
"By-Pass The Problem"
"Navigate Not Remediate"

- Academic and Scholastic (This further breaks down to Classroom work and Homework)
- Tests and Reporting
- Mental Health
- Learning Support
- Home Agendas
- Peer Group

Treatment and Management

TRAMLIP

- Time Management
- Resilience
- Accommodations
- Measuring
- Love of Literacy
- Interventions
- Professionals

Treatment and Management

Time Management

The greatest thing you can do for the child with Dyslexia is to give them more time. Time to start work, time to complete work and time to think about what they have to do.

Treatment and Management

Resilience

Good Mental Health is More Important Than Great Reading Ability.

Treatment and Management

Accommodations

Accommodations and Modifications are not attempts to remediate or bypass the problem. They are strategies designed to 'level the playing field' for the affected student. Modifying the curriculum does not mean making life too easy for the child. It just means reducing the demands so that with a reasonable, sustainable level of effort, that child can experience success and learn at their best rate.

Treatment and Management

Measurement

Measure success on the Basis of personal improvement

Treatment and Management

Love of Literacy

For the struggling reader it is more important for them to read books they are interested in rather than always reading books that are at their level. It is better for a child with Dyslexia to read a book that they love with 65% accuracy then a book that is too immature for them even though they can read it with 99% accuracy.

Treatment and Management

Intervention

Commercial or Customized

Evidenced based

Efficacy (5 Levels)

Treatment and Management

Professionals

Research suggests that the most important factor in the treatment roles and responsibilities of the parent, school, child and professional and management of Dyslexia is the quality of the special Educator. It is important to have state of the art resources and of course the child must be willing. But above all of this is the vitally important issue of ongoing high quality instruction from dedicated and experienced specialist

Treatment and Management

How

Treatment /Management

Intervention
Two Broad Approaches

Prefabricated (On the Market) Programs

- (Barton, Hickey, Wilson, Alpha and Omega, The Sound Way, Reading Horizons, Lindamood (etc)

Eclectic Yet Prescriptive

- Individualised (customized) programs that progress on the principle of Response to Intervention (RTI)

Treatment /Management

Prefabricated (On the Market) Programs

Could be Administered by Teachers or Schools

Treatment /Management

The following points are a guide when considering which program is best

1. *Cost:* This includes cost of resources to be delivered to the school. Cost of ongoing updates. Teacher training costs.

2. *Teacher Training Time*
3. *Lesson Preparation Time*
4. *Accessible Human Support for Technical and Pedagogical Troubleshooting*
5. *Suitability for Students Relative to Age and Degree of Problem*
6. *Suitability to Wider Group*
7. *Potential Use in Future Years*

Treatment /Management

Eclectic Yet Prescriptive

Individualised (customized) programs that progress on the principle of Response to Intervention (RTI)

1. Schools use RTI to establish that a child has a legitimate disability (Dyslexia) and not merely a delay or difficulty (see slides 5 and 6)

In Other Words Commence Intervention Not Testing

Treatment/Management

Eclectic

2. Ed. Specialists use it (RTI) as a measuring tool that not only provides feedback on student progress but helps inform instruction on an ongoing basis

Remember we teach children NOT programs

Treatment /Management

Seven Important Principles

- 1 Multisensory
- 2 Alphabetic and Graphophonemic
- 3 Direct, Explicit, Repetitive, Drill-like Instruction
- 4 One on One
- 5 High Intensity, High Frequency, Moderate Duration
- 6 Systematic and Cumulative
- 7 Goal Driven

Treatment/Management

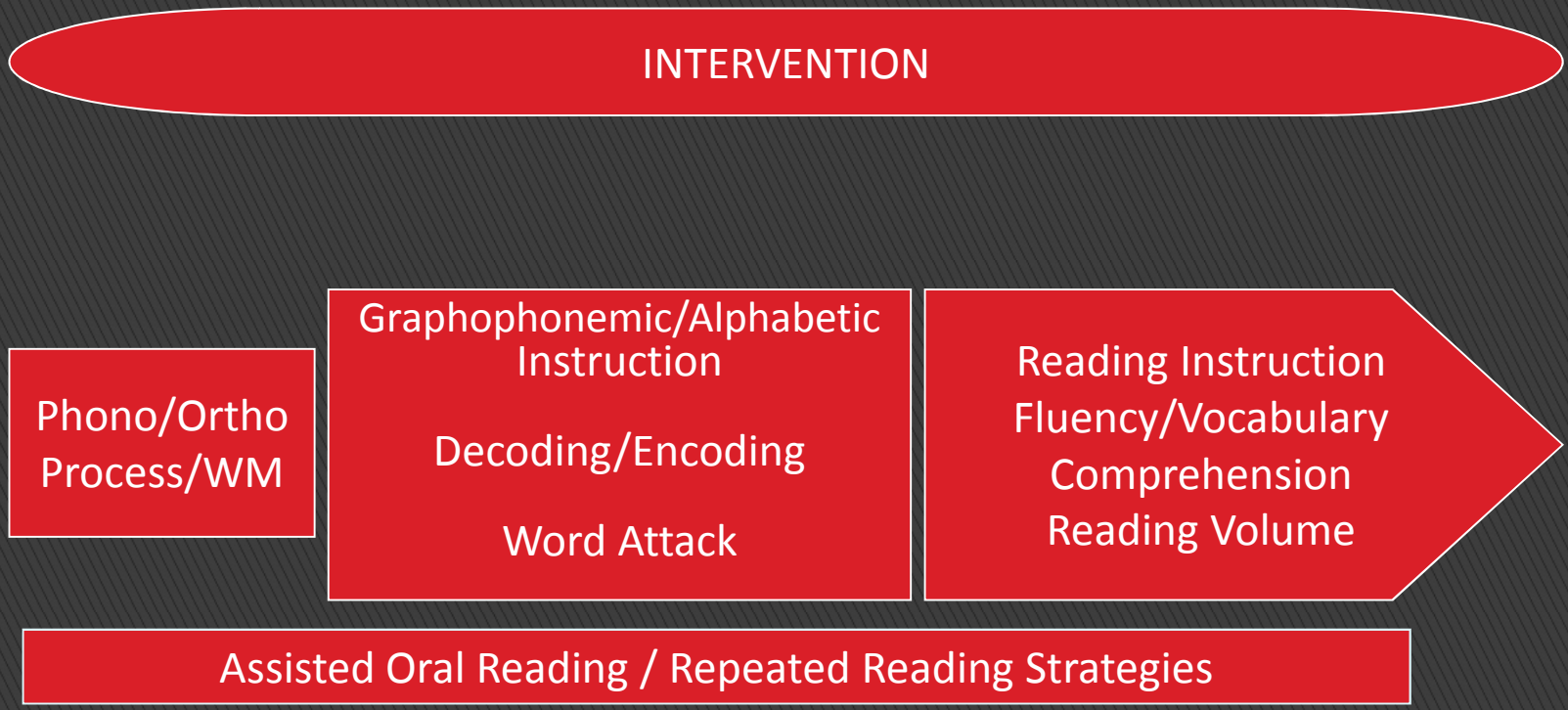
Three Treatment Models

Multi Stage Model

Multi Plan Model

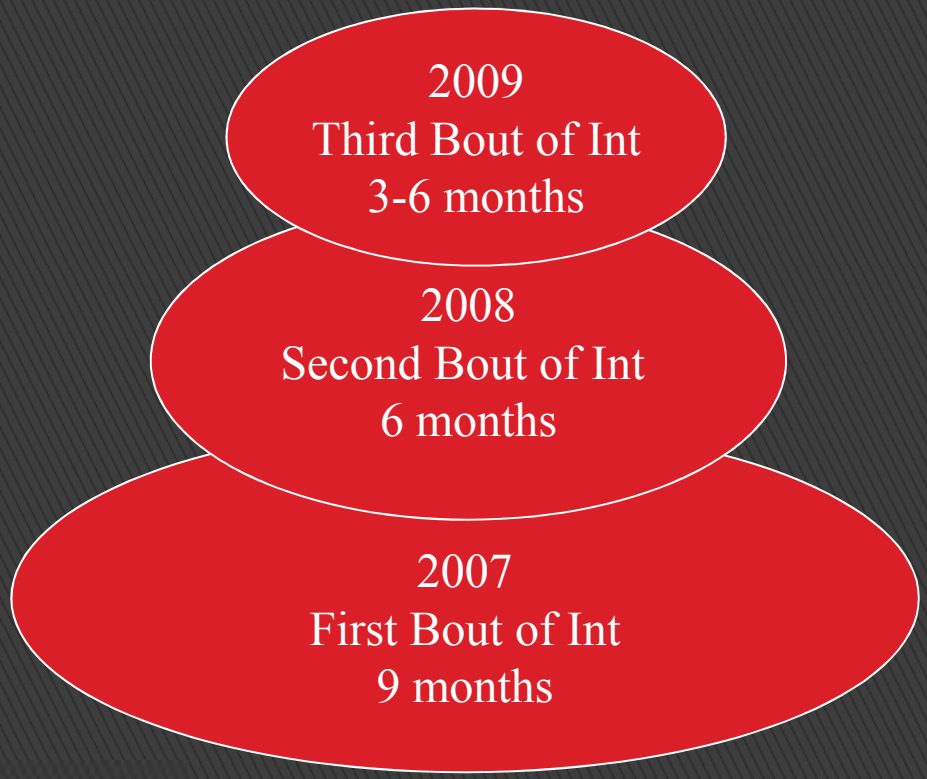
Multi Test Model

Multi-Stage Model

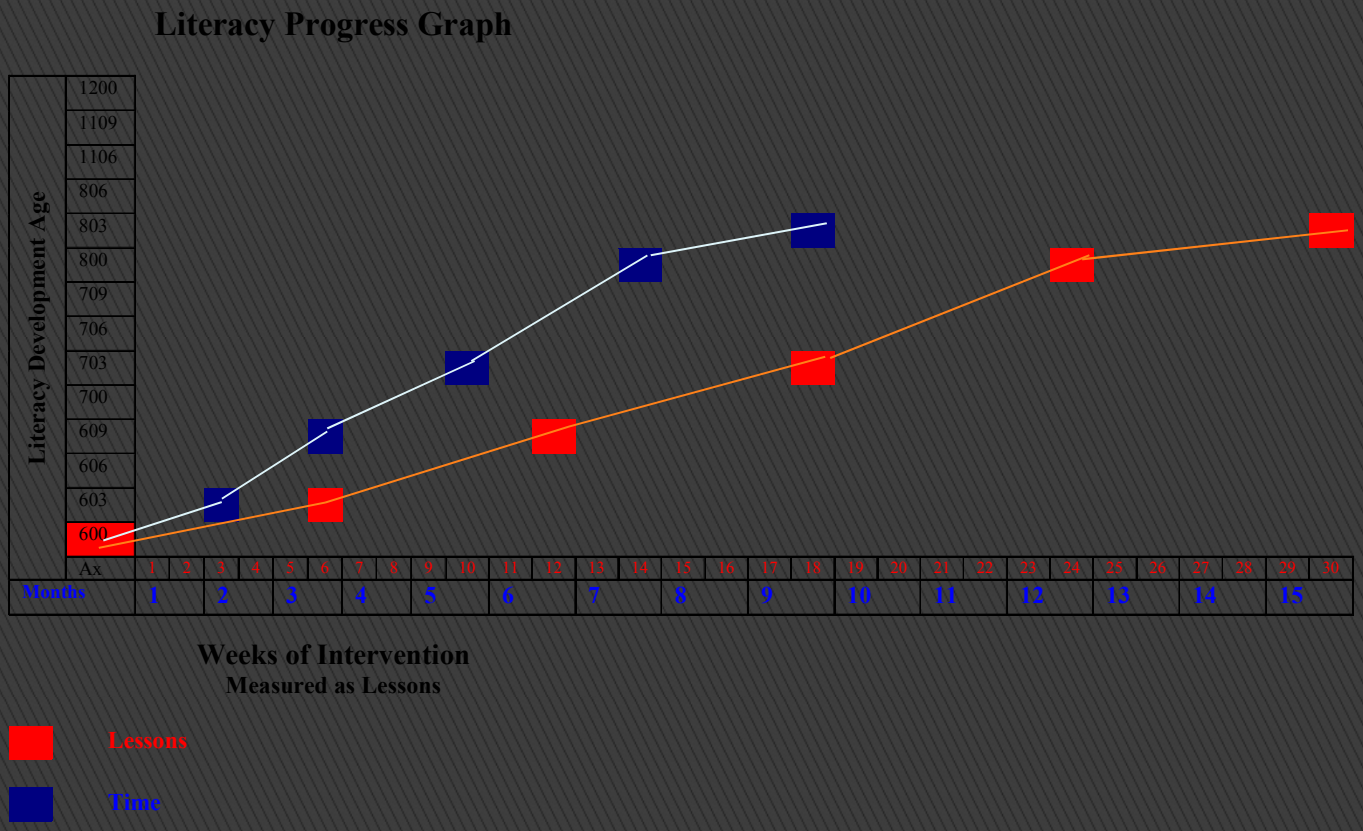


Multi-Plan Model

Plans or 'Bouts' of Intervention



Multi-Test Model



Treatment /Management

Program Efficacy

- Educational interventions should be subject to the same level of scrutiny and there should be the same requirement to prove the efficacy of educational interventions as there is for medical treatments. They are too important not to require this.
- So how do I evaluate a treatment?

Treatment /Management

Program Efficacy-Levels

- *Level 1.* Follows current theory and research. Treatment efficacy is supported by randomised control trials (RCTs).
  Example: Hatcher, Hulme & Ellis (1994).

- *Level 2.* Follows current theory and research but not supported by fully RCTs.
  Example: Wright (*in prep*).

Treatment /Management

Program Efficacy-Levels

- *Level 3.* Follows current theory and research. Supported by little or no empirical evidence. Example: THRASS.

- *Level 4.* Makes no conceptual sense in terms of current research and may claim empirical evidence for efficacy.
  Example: FastforWord, Cellfield, DORE, Reading Recovery

Treatment /Management

Program Efficacy–Levels

- *Level 5*. Based on assumptions counter to substantial scientific evidence. Any data on efficacy should be viewed with considerable scepticism. Example: behavioural optometry.

Controversial Therapies

- **Process-focused therapies** are based on the theory that what underlies a given learning disorder is a deficit in a simple sensory or motor process.

- **Performance-based therapies** target symptoms directly and treat them. For example, performance-based therapies for dyslexia would provide instruction and guided practice in reading itself.

Controversial Therapies
Process Focussed Therapies

it is easier to provide evidence of effectiveness for performance-based therapies than it is for those that are process-focused.

Controversial Therapies
Process Focussed Therapies

Controversial, *process-focused therapies* for learning disorders (including dyslexia) have a common logic: they claim that:

- … a disorder in some higher aspect of cognition, such as reading, language, attention or social cognition, is caused by a lower-level deficit in a modality of perception (auditory, tactile, or visual); or in some aspect of motor skill;

Controversial Therapies
Process Focussed Therapies

- that the lower-level deficit is present in children with the learning disorder
- that the lower-level deficit can be remediated with practice because of brain plasticity
- that fixing the lower-level deficit transfers and thus improves the deficit in higher cognition.

Controversial Therapies
Process Focussed Therapies

- Training in a particular skill rarely transfers to other skills, so it is particularly important that research meets the final criterion.

- These four assumptions need to be empirically tested before a therapy can be accepted. Is it theoretically plausible, associated with the learning disorder, treatable and directly transferable?

Controversial Therapies
Process Focussed Therapies

- By definition, a *performance-based therapy* just has to satisfy the treatable test (#3), since it is by definition theoretically plausible (#1), reading problems are associated with dyslexia by definition (#2), and because we are training the skill itself, transferability is not applicable (#4).

Controversial Therapies
Process Focussed Therapies

The following groups of therapies have not passed the empirical tests. They should not be used to treat children.

- Speed of word processing interventions
- Vision efficiency interventions
- Exercise-based interventions.

Controversial Therapies
Process Focussed Therapies

- The further away the proposed cause is from reading itself, the more skeptical you should be. So, a new theory that says the cause of dyslexia is — say — in the balance system of the brain, is much less plausible than the established theory that dyslexia is caused by a problem in the phonological aspect of language development.

Controversial Therapies
What To Avoid

- DORE
- Kinesiology
- Behavioural Optometry
- Sensory Motor Based Programs
- Computer Programs
- Physical Exercise Based Programs

Remember

- Practice the ‘thing’ you wish to be better at
- Reading is a taught skill not a biological Awakening
- Working Memory Can be trained
- The single greatest factor in the recovery of a child’s literacy is the quality of the human instruction
- Teach children NOT programs
- Empathetic insight is as necessary as excellent Instruction

Thank You

Are there any Questions?