

EXAMPLE REPORT



**Psychological
& Educational**
Consultancy Services

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**Example Comprehensive Psychological Report:
John Smith**

Strictly Confidential

This **Example Comprehensive Psychological Report** is provided to act as an example of the breadth and thoroughness of an assessment performed by Psychological & Educational Consultancy Services (PECS).

The assessment components meet the WA College of Education / School Curriculum and Standards Authority requirements for Learning Disorders; and the Department of Health / Stimulant Committee requirements for ADHD.

This example report also reflects changes relating to the recent release of the DSM-5 (APA, 2013).

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PREFACE

A *Comprehensive Psychological Assessment* is the systematic collection, analysis and interpretation of developmental, behavioural, socioemotional, cognitive and/or educational information for the purpose of making inferences about underlying brain function.

These inferences are achieved by investigating an individual's strengths and weaknesses across the aforementioned areas and identifying any patterns that may exist.

Ultimately, the investigation's aim is to rule out the presence of any clinically significant afflictions, or if indeed present, to facilitate diagnosis of the core underlying problem, identify its aetiology and impact on the individual, and identify any comorbid concerns that may exist.

The large majority of subsequent diagnoses are genetic, hereditary and familial in nature, with a significant minority environmental/experiential in origin.

A *Comprehensive Psychological Report* contains the information garnered from the *Comprehensive Psychological Assessment* and is compiled to convey the information to other health and educational professionals for the purpose of specialist diagnosis, further assessment, and/or the implementation of intervention/treatment.

BIOGRAPHICAL DETAILS

Name: John Smith
Date of Birth: 01/10/1987
Age: 26 years
Gender: Male
Address: 123 West Coast Drive, TRIGG WA 6029
Phone Number: 0444 444 444

REFERRAL INFORMATION

John was referred to Psychological and Educational Consultancy Services (PECS) by Dr Jane Brown (Consultant Psychiatrist) for a *Comprehensive Psychological Assessment* and indication of whether the results are reflective of an individual with a Specific Learning Disorder.

CURRENT CONCERNS

From a presented list, John identified concerns in the following areas:

- Academic
- Written language
- Spelling
- Attention
- Anxiety
- Depressive
- Self-esteem
- Memory

BRIEF BACKGROUND INFORMATION

Relevant information reported during the initial interview session:

- Was born prematurely (3 weeks), spent time in a neonatal intensive care unit and required assistance with breathing
- Reached all of the major developmental milestones (e.g., walking, speaking, toileting) early
- Solely right handed/footed; John's sister and uncle are both left handed
- No major medical or neurological conditions
- Needs glasses/contact lenses
- Normal acuity reported
- Past neurological examination and brain scan reported
- Suffers from Depression
- Current prescription medication use for Anxiety and Depression
- Primary School grades;
 - Maths and Science = approx 90%
 - Language/English subjects = approx 60-70%
- School reports indicated; "very good and well behaved"
- High School grades;
 - Maths, Physics and Chemistry = 80-100%
 - English and Humanities = 50-60%
- Is better at Maths than English
- Currently enrolled in Mechanical Engineering at UWA
- Primary concerns reported include;
 - Poor writing and spelling

Please note that only a brief overview was obtained due to John already having provided more detailed information to Dr Brown during the clinical interviewing portion of his psychiatric appraisal.

See checklists for more behavioural information.

Screening Tests Administered:

<i>Test</i>	<i>Date of Administration</i>
<i>Adult PsychProfiler</i> (APP; Langsford, Houghton, & Douglas 2014)	23/09/14

APP Outline:

The APP utilises two separate screening forms; the Self-report Form (SRF: 177 items) and Observer-report Form (ORF: 177 items) for the simultaneous screening of the 17 most prevalent disorders in adults aged 18 years and above.

The APP comprises screening criteria that closely resemble the diagnostic criteria of the *Diagnostic and Statistical Manual of Mental Disorders–Fifth Edition* (DSM-5: American Psychiatric Association: APA, 2013).

All items of the APP require responses to be made on a six-point scale pertaining to the perceived frequency of the behaviour (ie., Never, Rarely, Sometimes, Regularly, Often, or Very Often).

When calculating disorder screening scores, the items are coded as follows: Never = 0, Rarely = 0, Sometimes = 0, Regularly = 1, Often = 1, and Very Often = 1. These values were chosen because although many people with and without disorders may exhibit similar behaviours, it is the frequency of the behaviour that determines whether it is of clinical significance.

A small number of exceptions to these scoring rules apply where some of the behaviours (e.g., fighting with a weapon, stealing) are considered to be of sufficient severity that 'Sometimes' is also awarded a score of 1.

Therefore, the summation of the items within each disorder produces a screening score for that disorder, which if exceeding the screening cutoff score, designates that the individual has been awarded a *positive screen* for that disorder.

In order to ensure its validity and reliability, the first version of the *PsychProfiler* was subjected to a series of rigorous psychometric analyses over a number of years. This process has involved validation against a large mainstream sample (n>1000) as well as clinical calibration against individuals with formal diagnoses. These analyses found the *PsychProfiler* to be a highly reliable and valid screening instrument.

The APP is primarily administered in order to provide an objective indication of whether the individual exhibits behaviours characteristic of a suspected disorder, possible comorbid disorders, and issues pertaining to differential diagnosis.

For further information regarding the APP, please visit www.psychprofiler.com or contact Dr Shane Langsford on (08) 9388 8044.

Please note that any indication of a positive screen on the APP does not constitute a formal diagnosis. A positive screen merely indicates that the individual has met sufficient criteria for a disorder to warrant further investigation.

APP Screening Test Results:

In order to provide more comprehensive information, both John and his friend completed separate APP Forms.

John self reported positive screens for:

- Generalised Anxiety Disorder
- Panic Disorder
- Attention-Deficit/Hyperactivity Disorder: Predominantly Inattentive Presentation
- Bipolar II Disorder
- Speech Sound Disorder
- Persistent Depressive Disorder
- Major Depressive Disorder
- Schizophrenia
- Specific Learning Disorder – with Impairment in Written Expression

John's observer reported positive screens on John's behalf for:

- Generalised Anxiety Disorder
- Persistent Depressive Disorder
- Major Depressive Disorder
- Bulimia Nervosa
- Specific Learning Disorder – with Impairment in Written Expression

A copy of the APP Report is included as an Appendix, as is the completed APP Form.

SOCIO-EMOTIONAL ASSESSMENT

Checklists Administered:

<i>Checklists</i>	<i>Date of Administration</i>
Socio-Emotional Questionnaire (SEQ: Langsford, 2011)	23/10/14

Checklists Summary:

Socio-Emotional Questionnaire (SEQ: Langsford, 2011)

The Socio-Emotional Questionnaire is a 69-item self-report instrument for measuring Anxiety and Depression in individuals aged 15 years and older.

Individuals are asked to indicate their response to each statement that best describes the way they have been feeling during the past four weeks.

The results provide an indication of the likelihood of Anxiety and/or Depression, and also the frequency and severity of the respective symptomology.

Please note: The SEQ is a newly developed and at present invalidated instrument, therefore, although the results are considered to be accurate, they require further validation by an appropriate professional.

Section A: Anxiety:

This section of the Socio-Emotional Questionnaire contains 34 anxiety related items responded to on a 4-point Likert scale ranging from 0 “Never or Rarely” to 3 “Very Often”, therefore, the maximum total score for an individual is 102.

Furthermore, two supplementary yes/no questions pertaining to the caveats provided in the DSM-IV are also included. These questions relate to the length of symptoms, and the adverse affect of the symptoms on the individuals overall functioning.

The author provide the following category cut-offs as a measure of severity of anxiety:

<i>Score</i>	<i>Category</i>
0-14	No Anxiety
15-24	Mild Anxiety
25-39	Moderate Anxiety
40+	Severe Anxiety

Section B: Depression:

This section of the SEQ contains 35 depression related items also responded to on a 4-point Likert scale ranging from 0 “*Never or Rarely*” to 3 “*Very Often*”, therefore, the maximum total score for an individual is 105.

Furthermore, two supplementary yes/no questions pertaining to the caveats provided in DSM-IV-TR are also included. These questions relate to the length of symptoms, and the adverse affect of the symptoms on the individuals overall functioning.

The author provide the following category cut-offs as a measure of severity of depression:

<i>Score</i>	<i>Category</i>
0-14	No Depression
15-24	Mild Depression
25-39	Moderate Depression
40+	Severe Depression

Socio-Emotional Questionnaire Results:

Section A: Anxiety:

John’s score on the Anxiety scale was **47**, thereby placing him at the lower end of the **Severe Anxiety** category.

John answered *Often* or *Very Often* to Item 1 and/or Item 2, and indicated that the excessive worry and/or inability to control the worry had occurred for more days than not for at least 6 months.

John also indicated that the anxiety symptoms he experiences cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.

The results indicate that there is a **high probability** that John has clinical Anxiety.

Section B: Depression:

John’s score on the Depression scale was **76**, thereby placing him at the higher end of the **Severe Depression** category.

John answered *Very Often* to Item 35, and indicated that he had felt unhappy or sad for most of the day, for more days than not, for approximately 7 years.

John also indicated that the depression symptoms he experiences cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.

It should be noted that John indicated *Often* to Item 69 - Self-Harm and requires immediate follow-up.

The results indicate that there is a **high probability** that John has clinical Depression.

Please note: The SEQ is a newly developed and at present invalidated instrument, therefore, although the results are considered to be accurate, they require further validation by an appropriate professional.

COGNITIVE ASSESSMENT

Psychometric Tests Administered:

<i>Test</i>	<i>Date of Administration</i>
Wechsler Adult Intelligence Scale-Fourth Edition (WAIS-IV, 2008)	23/09/14

Examiner's Details:

EXAMINER: Kristie Robins
 TITLE: Registered Psychologist
 REGISTRATION: #PSY0001579297
 TEST SITE: Office at Psychological & Educational Consultancy Services

Test Behaviour:

No behaviours of interest were observed during testing.

It is my opinion that the scores that John achieved on the WAIS-IV are indicative of his general cognitive ability at this particular time.

Psychological Test Results:

Age at Testing: 26 years

Table 1: WAIS-IV Summary Scores

WAIS-IV Scale	IQ Score	Percentile Rank	95% Confidence Interval	Intellectual Classification
Verbal Comprehension Index (VCI)	100	50	94-106	Average
Perceptual Reasoning Index (PRI)	131	98	123-136	Very Superior
Working Memory Index (WMI)	100	50	93-107	Average
Processing Speed Index (PSI)	84	14	77-94	Low Average
Full Scale IQ (FSIQ)				Not Valid
General Ability Index (GAI)				Not Valid

Index scores have a mean Composite Score of 100 (50th percentile) and a standard deviation of 15.

Percentile Rank refers to John's standing among 100 adults of similar age.

Therefore, a Percentile Rank of 50 indicates that John performed exactly at the average level for his chronological age.

GAI is not considered to be valid if there is a 15+ difference between the VCI and PRI.

FSIQ is not considered to be valid if there is a 15+ difference between the VCI, PRI, WMI or PSI.

Note: Letter-Number Sequencing was substituted for Arithmetic.

The **Verbal Comprehension Index (VCI)** is a measure of verbal acquired knowledge and verbal reasoning incorporating the 3 core Verbal subtests of Information, Similarities, and Vocabulary and one supplemental subtest Comprehension.

The **Perceptual Reasoning Index (PRI)** is a measure of fluid reasoning, spatial processing, attentiveness to detail, and visual-motor integration comprising the 3 core Performance subtests of Visual Puzzles, Block Design, and Matrix Reasoning and two supplemental subtests; Figure Weights and Picture Completion.

The **Working Memory Index (WMI)** comprises the two core subtests of Arithmetic, Digit Span, and one supplemental subtest; Letter-Number Sequencing. The subtests provide a range of verbally presented tasks that require the individual to attend to information, to hold briefly and process that information in memory, and then to formulate a response.

The **Processing Speed Index (PSI)** is an indication of an individual's ability to process simple or routine visual information quickly and efficiently and to quickly perform tasks based on that information. Good speed of simple information processing may free cognitive resources for the processing of more complex information and ease new learning. The PSI comprises two core subtests; Coding and Symbol Search and one supplemental subtest; Cancellation.

The **General Ability Index (GAI)** is an optional summary score that is less sensitive to the influence of working memory and processing speed. As working memory and processing speed are vital to a comprehensive evaluation of cognitive ability, it should be noted that the GAI does not have the breadth of coverage as the FSIQ.

The **Full Scale IQ (FSIQ)** score is the overall summary score that estimates an individual's general level of intellectual functioning. It is usually considered to be the score that is most representative of global intellectual functioning.

Table 2: WAIS-IV Discrepancy Summaries

WAIS-IV Index	Difference	Critical Cutoff	Exceeds .05 Statistical Significance	Base Rate
Verbal Comprehension – Perceptual Reasoning	-31	8.32	Yes	0.9%
Verbal Comprehension – Working Memory	0	8.81	No	
Verbal Comprehension – Processing Speed	16	10.99	Yes	16.6%
Perceptual Reasoning — Working Memory	31	8.81	Yes	1.3%
Perceptual Reasoning – Processing Speed	47	10.99	Yes	0.5%
Working Memory — Processing Speed	16	11.38	Yes	14.9%
Full Scale IQ – General Ability Index				

Statistical Significance (Critical Values) at the .05 level

Base rate refers to the clinical significance (vs Ability Sample) - <15% = clinically significant

Between Index Interpretation:

John performed much better on nonverbal than on verbal reasoning tasks. The -31 point difference between the VCI and PRI scores **is** statistically significant at the .05 level.

The 31 point difference between the PRI and WMI scores **is** statistically significant at the .05 level.

John's performance on the Working Memory Index has been identified as a weakness relative to his performance on the Perceptual Reasoning Index. Although this score may indicate poor working memory abilities, other reasons for poor performance, such as poor vigilance, poor sequential reasoning, or poor number or letter skills, should also be considered.

John's PRI score is significantly higher than the PSI score. This result suggests that John's visual perceptual abilities may be hindered by slowed processing speed.

Furthermore, John's score on the PSI has been identified as a significant weakness relative to all his other WAIS-IV index scores. These results suggest relatively slow speed in completing visual motor integration tasks but do not necessarily imply a relative weakness in processing auditory or complex problems.

A relative weakness in processing speed may make the task of comprehending novel information more time-consuming and difficult for John.

John's **extremely poor performance** on the PSI is of particular interest because research has suggested that the PSI is highly sensitive to many different neuropsychological conditions, including ADHD, anxiety, and depression.

Verbal Comprehension weaknesses can cause difficulty learning and performing to ability in exams/performing in the work place by:

- Trouble understanding verbal directions and/or instructions. This will be more so with complex language, or when multiple steps are included in an instruction.
- Struggling in written exams, especially when also faced with added time pressures.
- Being seen as a 'poor listener'. These individuals can appear to be easily distracted and inattentive at times, especially when faced with high verbal task demands.
- Being more likely to be working in environments that are more practical, hands-on or require knowledge of maths, science, artistic skills etc.
- Improved learning and skill acquisition from charts, visual materials, diagrams, videos, or hands-on on the job training.
- Difficulty in terms of reading comprehension – they may need to re-read a given text in order to fully understand the meaning (i.e. filling out forms or completing paperwork may be particularly time consuming).
- Difficulty in understanding abstract concepts, particularly when asked to perform tasks that rely heavily on verbal abstract reasoning.
- Difficulty in understanding social conventions (i.e. what should you do if you find a wallet in a store).

Working Memory weaknesses can cause difficulty learning and performing to ability in exams/performing in the work place by:

- Difficulty absorbing instructions, particularly if they contain more than one step.
- Wide ranging difficulties in both maths and reading, both of which are activities that place high demand on working memory ability.
- These individuals will be slower than their peers in being able to pick up new skills, or in developing new concepts.
- Difficulty performing mental maths calculations, being able to recall names or phone numbers without prompts.
- Frequent errors across tasks that involve the individual needing to recall small amounts of information, while at the same time performing another task.
- Difficulty performing tasks with a number of steps, they may miss out steps or make mistakes in terms of not carefully paying attention to the details.
- Appearing to have a relatively short attention span, they may appear inattentive or distractible.

Processing Speed weaknesses can cause difficulty learning and performing to ability in exams/performing in the work place by:

- Difficulty processing large amounts of information, or being able to understand long, complex instructions.
- Poorer performances when given deadlines or are under time pressure. They simply need longer to complete a given task.
- Written work is very time consuming, it takes these individuals a long time to write. They are likely to have a preference for using a computer to complete the majority of their work.
- Easy to fatigue; these individuals need to use more cognitive resources to complete the same amount of work as their peers.
- Difficulty following conversations, or keeping track of the plot in books/movies

Figure 1: WAIS-IV Subtest Scaled Scores by Index

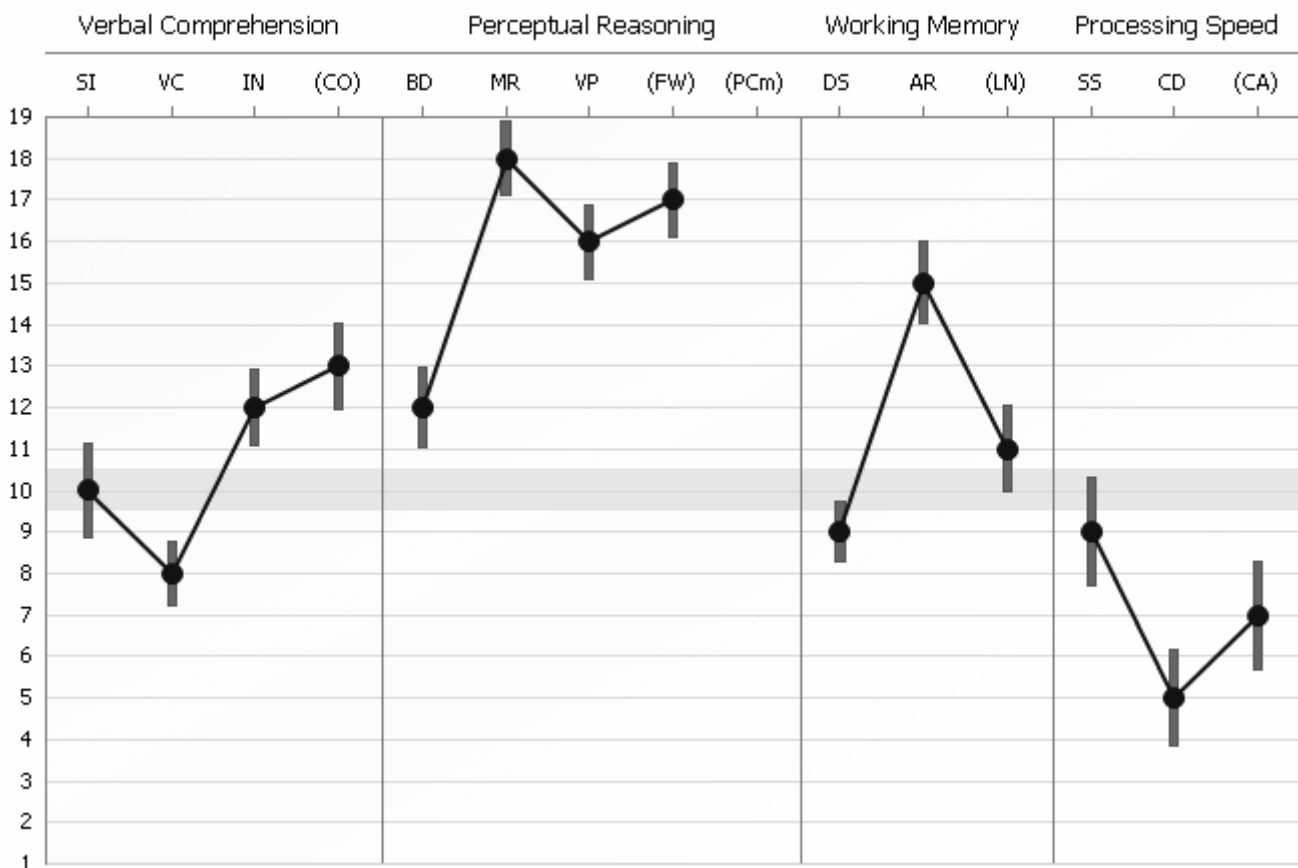


Table 3: WAIS-IV Subtest Scaled Scores

Subtests	Scaled Score	Percentile Rank
Verbal Comprehension Index		
Similarities	10	50
Vocabulary	8	25
Information	12	75
*Comprehension	13	84
Perceptual Reasoning Index		
Block Design	12	75
Matrix Reasoning	18	99.6
Visual Puzzles	16	98
*Figure Weights	17	99
Working Memory Index		
Digit Span	9	37
Arithmetic	15	95
*Letter-Number Sequencing	11	63
Processing Speed Index		
Symbol Search	9	37
Coding	5	5
*Cancellation	7	16

See Appendix 1 for complete subtest descriptions

*Non-core subtest

Table 4: WAIS-IV Within-Index Discrepancies

Discrepancy Comparisons	Difference	Critical Cut-off	Statistical Significance	Base Rate
Digit Span – Arithmetic	-6	2.57	Yes	1.9%
Symbol Search – Coding	4	3.41	Yes	8%

Statistical Significance (Critical Values) at the .05 level

Between Subtest Interpretation:

John's performance on the Digit Span subtest was significantly lower than his performance on the Arithmetic subtest, indicating that John is demonstrating variability in his performance across the two core working memory subtests.

John's performance on the Symbol Search subtest was significantly better than his performance on the Coding subtest, indicating that John is demonstrating variability in his performance across the two core processing speed subtests.

Table 5: Differences Between VCI Subtest Scores and Mean of VCI Subtest Scores

VCI Subtests	Scaled Score	VCI Mean	Difference From Mean	.05 Critical Value	Strength or Weakness
Similarities	10	10.00	0.00	1.91	
Vocabulary	8	10.00	-2.00	1.58	Significant Weakness
Information	12	10.00	2.00	1.64	Significant Strength
*Comprehension	13	10.00	3.00	2.50	Significant Strength

Statistical Significance (Critical Values) at the .05 level

*Non-core subtest

Table 6: Differences Between PRI Subtest Scores and Mean of PRI Subtest Scores

PRI Subtests	Scaled Score	PRI Mean	Difference From Mean	.05 Critical Value	Strength or Weakness
Block Design	12	15.33	-3.33	2.05	Significant Weakness
Matrix Reasoning	18	15.33	2.67	1.92	Significant Strength
Visual Puzzles	16	15.33	0.67	1.99	
*Figure Weights	17	15.33	1.67	2.50	

Statistical Significance (Critical Values) at the .05 level

*Non-core subtest

Table 7: WMI and PSI Subtest Discrepancies From PRI Index Subtest Mean

Please note, the statistics provided in this table are not standard WAIS-IV analyses and are provided as a guide only

Subtest	Subtest Scaled Score	PRI Mean Score	Difference From PRI Mean	Nominal Critical Cut-off	Strength or Weakness
Working Memory					
Digit Span	9	15.33	-6.33	2.50	Significant Weakness
Arithmetic	15	15.33	-0.33	2.50	
*Letter-Number Sequencing	11	15.33	-4.33	2.50	Significant Weakness
Processing Speed					
Symbol Search	9	15.33	-6.33	2.50	Significant Weakness
Coding	5	15.33	-10.33	2.50	Significant Weakness
*Cancellation	7	15.33	-8.33	2.50	Significant Weakness

See Appendix 1 for complete subtest descriptions

*Non-core subtest

Intellectual Strengths and Weaknesses:

Statistical analysis of the results revealed the following subtests to be significant (.05) cognitive strengths or weaknesses relative to John's own performance.

Strengths:

Three significant (.05) cognitive strengths relative to John's own performance were found; namely *Information*, *Comprehension* and *Matrix Reasoning*.

The *Information* subtest required John to respond verbally to a series of orally presented questions that assess the individual's knowledge about common events, objects, places, and people. The subtest is primarily a measure of his fund of general knowledge. Performance on this subtest also may be influenced by his cultural experience, as well as his ability to retrieve information from long-term memory.

The *Comprehension* subtest required John to provide oral solutions to everyday problems and to explain the underlying reasons for certain social rules or concepts. This subtest provides a general measure of verbal reasoning and conceptualisation, verbal comprehension and expression. In particular, this subtest assesses his comprehension of social situations and social judgment, as well as his knowledge of conventional standards of social behaviour.

The *Matrix Reasoning* subtest involves a series of incomplete gridded patterns that John completes by pointing to or saying the number of the correct response from 5 possible choices. This subtest assesses fluid intelligence, broad visual intelligence, classification and spatial ability, as well as John's knowledge of part-whole relationships and perceptual organisation abilities.

Weaknesses:

Seven significant (.05) cognitive weaknesses relative to John's own performance were found; namely *Vocabulary*, *Block Design*, *Digit Span*, *Letter-Number Sequencing*, *Symbol Search*, *Coding* and *Cancellation*.

The *Vocabulary* subtest required John to explain the meaning of words presented in isolation, both visually and orally. As a direct assessment of word knowledge, the subtest is one indication of his overall verbal comprehension and fund of knowledge. Performance on this subtest also requires abilities to verbalise meaningful concepts as well as to retrieve information from long-term memory.

The *Block Design* subtest required John to use two-colour cubes to construct replicas of two-dimensional, geometric patterns. This subtest assesses ability to mentally organize visual information. More specifically, this subtest assesses his ability to analyse part-whole relationships when information is presented spatially. Performance on this task also may be influenced by visual-spatial perception and visual perception-fine motor coordination, as well as planning ability.

The *Digit Span* subtest is a series of orally presented number sequences that John must repeat verbatim (Digit Span Forward), in reverse order (Digit Span Backwards) or recall the numbers in ascending order (Digit Span Sequencing). A direct assessment of John's short-term auditory memory, the Digit Span subtest requires attention, concentration, and mental control and can be influenced by the ability to correctly sequence information. The Digit Span Sequencing task increases the working memory demands of the task.

The *Letter-Number Sequencing* subtest involves a series of orally presented sequences of letters and numbers that John simultaneously tracks and orally completes, with the numbers in ascending order and the letters in alphabetical order. This task is a measure of sequential processing ability, short term auditory memory span, mental manipulation, attention, and concentration. Letter-Number Sequencing also assesses an individual's underlying information processing abilities, cognitive flexibility and fluid intelligence.

On the *Symbol Search* subtest John was required to inspect several sets of symbols and indicate if special target symbols appeared in each set. A direct test of speed and accuracy, the subtest assesses scanning speed and sequential tracking of simple visual information. Performance on this subtest also may be influenced by visual discrimination and visual-motor coordination

The *Coding* subtest required John to use a key to associate a series of symbols with a series of shapes and to use a pencil to draw the symbols next to the shapes. A direct test of speed and accuracy, the Coding subtest assesses ability in quickly and correctly scanning and sequencing simple visual information. Performance on this subtest also may be influenced by short-term visual memory, attention, or visual-motor coordination.

The *Cancellation* subtest asks John to scan a structured arrangement of shapes, for a specified target shape, which he will mark. The Cancellation subtest is a direct measure of processing speed, as well as visual selective attention, vigilance, perceptual speed and visual motor ability. The inclusion of a decision making component (selection is based on both shape and colour) places more complex demands upon John.

Table 8: Working Memory Process Score Summary

Subtest	Scaled Score	Percentile Rank
Digit Span Forward	8	25
Digit Span Backward	9	37
Digit Span Sequencing	10	50

John's performance on the Digit Span Forward portion of the subtest was at the **25th** percentile, indicating that his simple verbal attention was within the **Average** range.

John's performance on the Digit Span Backward portion of the subtest was at the **37th** percentile, indicating that his verbal working memory ability was within the **Average** range.

John's performance on the Digit Span Sequencing portion of the subtest was at the **50th** percentile, indicating that his ability to correctly sequencing digits mentally was within the **Average** range.

Table 9: Digit Span Process Discrepancy Comparison

Subtest/Process Score	Scaled Score 1	Scaled Score 2	Difference	Critical Cut-off	Exceeds .05 Statistical Significance	Base Rate
DS Forward – DS Backward	8	9	-1	3.65	No	46.8%
DS Forward – DS Sequencing	8	10	-2	3.60	No	31.7%
DS Backward – DS Sequencing	9	10	-1	3.56	No	43.4%

Statistical Significance (Critical Values) at the .05 level

Digit Span Process Discrepancy Interpretation:

John's performance on the Digit Span Backward portion of the subtest was commensurate with his performance on the Digit Span Forward portion.

John's performance on the Digit Span Forward portion of the subtest was commensurate with his performance on the Digit Span Sequencing portion.

John's performance on the Digit Span Backward portion of the subtest was commensurate with his performance on the Digit Span Sequencing portion.

EDUCATIONAL ASSESSMENT

Educational Achievement Tests Administered:

<i>Tests</i>	<i>Date of Administration</i>
Wechsler Individual Achievement Test-Second Edition (WIAT-II)	23/09/14

WIAT-II Subtests:

Table 1: WIAT-II Subtest Descriptions

READING	
Word Reading	Depending on the individual's age or grade, he or she identifies the letters of the alphabet, beginning and ending sounds of words, and rhyming words, or reads as quickly as possible from a list of words.
Pseudoword Decoding	The individual uses their phonetic knowledge to sound nonsense or unfamiliar words.
Reading Comprehension	The individual reads sentences and short passages and then answers questions about the main idea, specific details, or the order of events. He or she is also asked to make inferences, draw conclusions, or define unfamiliar words by using context clues.
MATHEMATICS	
Numerical Operations	The individual solves a word or stated problem requiring addition, subtraction, multiplication, and division using whole numbers, fractions, and decimals.
WRITTEN LANGUAGE	
Spelling	The individual spells a target word based on its meaning as it is used in a sentence.
Written Expression	The individual writes words, sentences and either a paragraph or short essay in response to a topic. Writing is evaluated on organisation, vocabulary, theme development, and mechanics such as spelling and punctuation.
ORAL LANGUAGE	
Listening Comprehension	The individual listens to a word or sentence and matches it to a picture or looks at a picture and responds with the corresponding word.

Examiner's Details:

EXAMINER: Kristie Robins

TITLE: Registered Psychologist

REGISTRATION #PSY0001579297

TEST SITE: Office at Psychological & Educational Consultancy Services

Test Behaviour:

John was observed to write the incorrect homonym for two test items (e.g. "addition" for edition) during the Spelling subtest. No following of the rule 'i before e, except after c' (e.g. 'recieved' for received), was also witnessed.

It is my opinion that the scores that John achieved on the WIAT-II are indicative of his general academic ability at this particular point in time.

WIAT-II Results:

Age Level at Testing: 26 years

Table 2: WIAT-II Summary Statistics

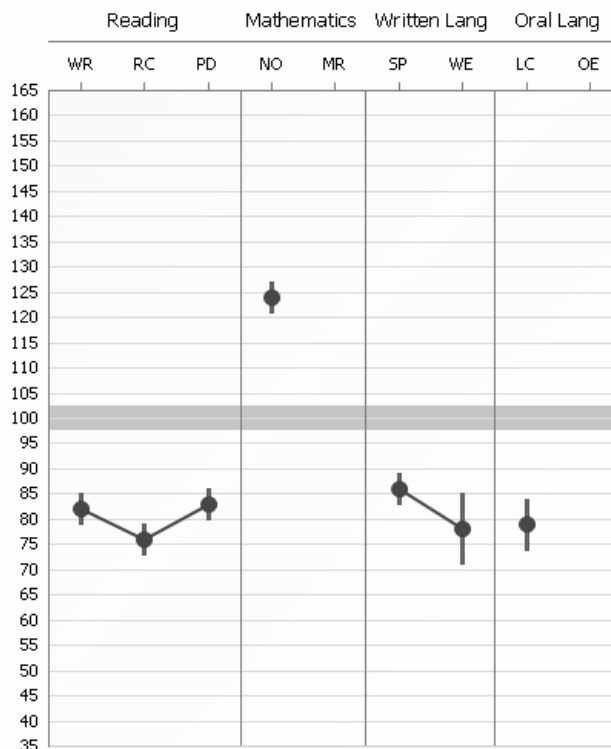
WIAT-II Subtest	Standard Score	95% Interval	Percentile	Grade Equivalent
READING				
Word Reading	82	75- 89	12	8:7
Reading Comprehension	76	69- 83	5	8:8
Pseudoword Decoding	83	76- 90	13	5:5
Reading Composite	80	75- 85	9	
MATHEMATICS				
Numerical Operations	124	118- 130	95	
WRITTEN LANGUAGE				
Spelling	86	79- 93	18	
Written Expression	78	64- 92	7	4:8
Written Language Composite	81	72- 90	10	
ORAL LANGUAGE				
Listening Comprehension	79	68- 90	8	8:2

Subtest scores have a mean Standard Score of 100 (50th percentile) and a standard deviation of 15.

Percentile Rank refers to John's standing among 100 adults of similar age.

Therefore, a Percentile Rank of 50 indicates that John performed exactly at the average level for his chronological age.

Figure 1: WIAT-II Subtest Standard Scores



Subtest Interpretation

Reading

In overall reading skills John performed in the Low Average range, as indicated by his Reading Composite standard score (80). His skills in this area exceed that of approximately 9% of individuals his age.

John's performance on tasks that required him to correctly read a series of printed words (Word Reading standard score = 82), is comparable to his performance on tasks that required him to correctly apply phonetic decoding rules when reading a series of nonsense words (Pseudoword Decoding standard score = 83) and that assessed his capability to read sentences and paragraphs and answer questions about what was read (Reading Comprehension standard score = 76).

Mathematics

John performed in the Superior range on tasks that required him to add, subtract, multiply, and divide one- to three-digit numbers (Numerical Operations standard score = 124). His skills in this area exceed that of approximately 95% of individuals his age.

Oral Language

John performed in the Borderline range on tasks that required him to identify the picture that best represents an orally presented descriptor or generate a word that matches the picture as indicated by his Listening Comprehension standard score (79). His skills in this area exceed that of approximately 8% of individuals his age.

Written Language

In overall written language skills, John performed in the Low Average range, as indicated by his Written Language Composite standard score (81). His achievement in this area is better than that of approximately 10% of individuals his age.

John's performance on tasks that required him to generate words within a category, generate sentences to describe visual cues, combine sentences, and compose an organised paragraph (Written Expression standard score = 78) is comparable to his performance on tasks that required him to correctly spell verbally presented words (Spelling standard score = 86).

Comparison of Cognitive Ability and Educational Achievement

Because of John's unusually diverse cognitive abilities, the combined WAIS-IV Full Scale IQ score is not the best representation of his general cognitive ability.

Therefore, John's scores on the WIAT-II were compared using his PRI score as the comparative cognitive measure.

Table 3: Comparative Analyses Between the WAIS-IV PRI and WIAT-II

WIAT-II Subtest	WAIS-IV Predicted Score	WIAT-II Actual Score	Difference	Critical Cut-off Required For Significance	Strength or Weakness	Base Rate
READING						
Word Reading	115	82	33	7.29	Significant Weakness	<1%
Reading Comprehension	118	76	42	8.15	Significant Weakness	<1%
Pseudoword Decoding	110	83	27	5.54	Significant Weakness	3%
Reading Composite	117	80	37	5.55	Significant Weakness	<1%
MATHEMATICS						
Numerical Operations	120	124	-4	8.41		
WRITTEN LANGUAGE						
Spelling	113	86	27	8.78	Significant Weakness	2-3%
Written Expression	116	78	38	11.14	Significant Weakness	<1%
Written Language Composite	116	81	35	7.97	Significant Weakness	<1%
ORAL LANGUAGE						
Listening Comprehension	118	79	39	13.67	Significant Weakness	<1%

Statistical Significance (Critical Values) at the .05 level.

Base Rates are not reported when the achievement score equals or exceeds the ability score.

Reading

John's performance on the Reading subtests were found to be significantly below his cognitive ability.

Mathematics

John's performance on the Numerical Operations subtest was commensurate with his cognitive ability.

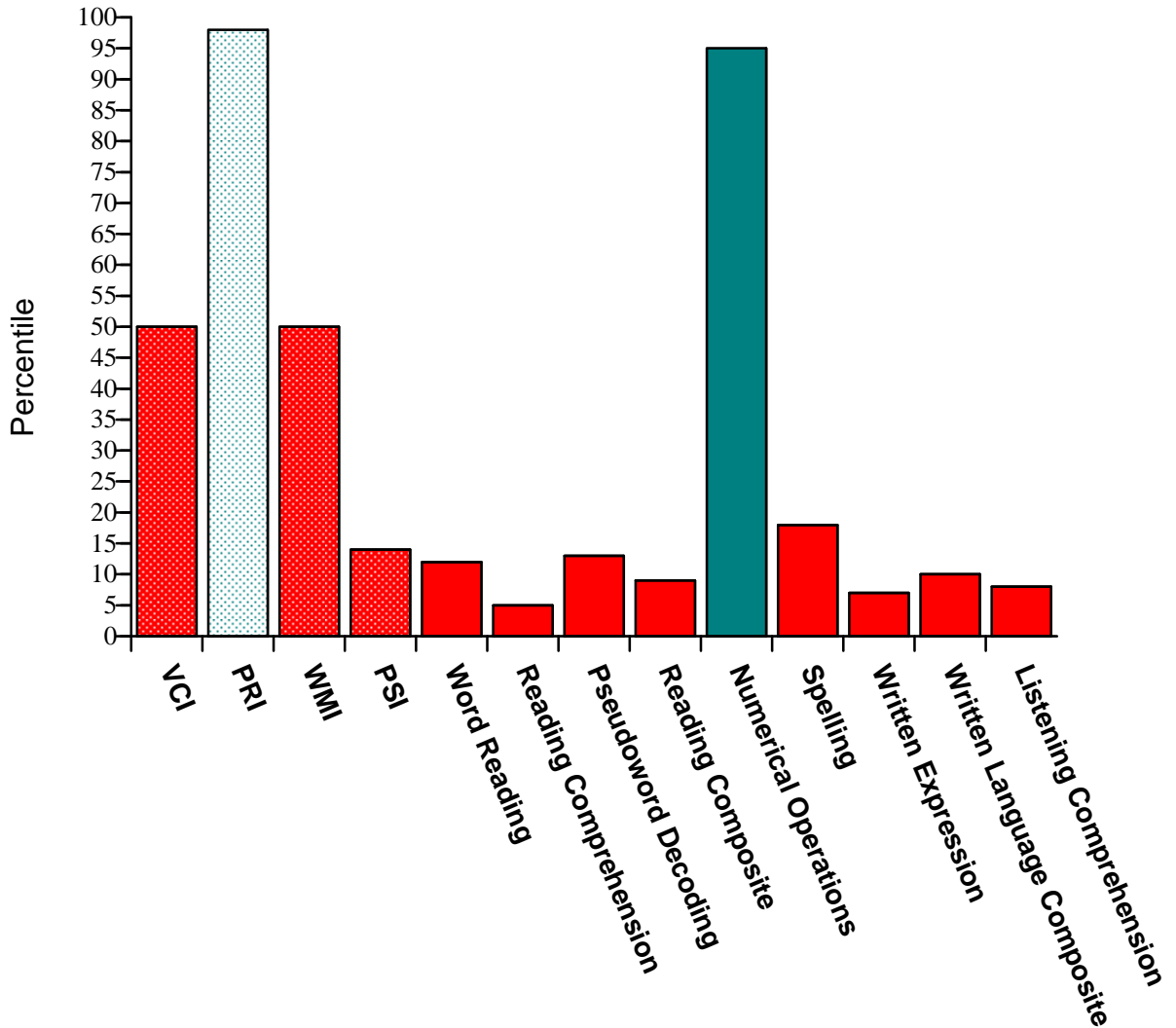
Written Language

John's performance on the Written Language subtests were found to be significantly below his cognitive ability.

Oral Language

John's performance on the Listening Comprehension subtest was found to be significantly below his cognitive ability.

Figure 2: WAIS-IV / WIAT-II Index / Subtest Strengths and Weaknesses



Please note: A percentile of 50 is representative of average for the given age group.

WAIS-IV:

John's scores on the WIAT-II were compared to his WAIS-IV PRI score (green spotted bar), which was identified as his most appropriate true ability cognitive measure.

Red spotted bars indicate where the WAIS-IV Index score is significantly below the WAIS-IV true ability cognitive measure, thus indicating a clinically significant weakness in that area.

Orange spotted bars indicate where the WAIS-IV Index score is below the WAIS-IV true ability cognitive measure, but not quite meeting statistical significance.

Green bars indicate where the WAIS-IV Index score is not below the WAIS-IV true ability cognitive measure.

WIAT-II:

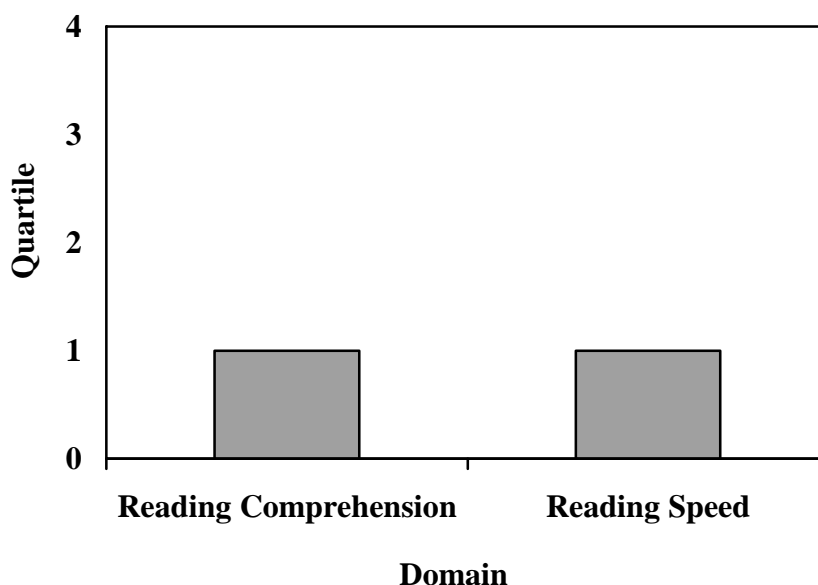
Red bars indicate where the WIAT-II Index score is significantly below the WAIS-IV predicted score, thus being deemed by the test authors as indicating a clinically significant weakness in that area.

Orange bars indicate where the WIAT-II actual score is below the WAIS-IV predicted score, but not quite meeting statistical significance

Green bars indicate where the WIAT-II actual score is not below the WAIS-IV predicted score.

Reading Speed:

Figure 3: WIAT-II Reading Comprehension and Reading Speed Quartiles



Comparison of Reading Comprehension and Reading Speed

John’s results demonstrated that his Reading Speed and Reading Comprehension are both in the first quartile (below average to far below average).

This illustrates that John’s Reading Speed is significantly below that of similar aged peers and intimates that he must read at a slower rate to successfully comprehend information he has read.

Educational Summary:

John demonstrated significant weaknesses in Word Reading, Reading Comprehension, Pseudoword Decoding, Spelling, Written Expression and Listening Comprehension on the WIAT-II.

Please note, due to the 15 plus difference between the Indexes, the FSIQ is deemed to be not valid, therefore the PRI score was used as the comparative cognitive measure.

John’s Reading Speed and Reading Comprehension are both below average to far below average.

This illustrates that John’s Reading Speed is significantly below that of similar aged peers and intimates that he must read at a slower rate to successfully comprehend information he has read.

SUMMARY

Reason for Referral:

John was referred to Psychological and Educational Consultancy Services (PECS) by Dr Jane Brown (Consultant Psychiatrist) for a *Comprehensive Psychological Assessment* and indication of whether the results are reflective of an individual with a Specific Learning Disorder.

Current Concerns:

From a presented list, John identified concerns in the following areas:

- Academic
- Written language
- Spelling
- Attention
- Anxiety
- Depressive
- Self-esteem
- Memory

Global Screening:

John self reported positive screens for:

- Generalised Anxiety Disorder
- Panic Disorder
- Attention-Deficit/Hyperactivity Disorder: Predominantly Inattentive Presentation
- Bipolar II Disorder
- Speech Sound Disorder
- Persistent Depressive Disorder
- Major Depressive Disorder
- Schizophrenia
- Specific Learning Disorder – with Impairment in Written Expression

John's observer reported positive screens on John's behalf for:

- Generalised Anxiety Disorder
- Persistent Depressive Disorder
- Major Depressive Disorder
- Bulimia Nervosa
- Specific Learning Disorder – with Impairment in Written Expression

Socio-Emotional Assessment:

Section A: Anxiety:

John's score on the Anxiety scale was **47**, thereby placing him at the lower end of the **Severe Anxiety** category.

John answered *Often* or *Very Often* to Item 1 and/or Item 2, and indicated that the excessive worry and/or inability to control the worry had occurred for more days than not for at least 6 months.

John also indicated that the anxiety symptoms he experiences cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.

The results indicate that there is a **high probability** that John has clinical Anxiety.

Section B: Depression:

John's score on the Depression scale was **76**, thereby placing him at the higher end of the **Severe Depression** category.

John answered *Very Often* to Item 35, and indicated that he had felt unhappy or sad for most of the day, for more days than not, for approximately 7 years.

John also indicated that the depression symptoms he experiences cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.

It should be noted that John indicated *Often* to Item 69 - Self-Harm and requires immediate follow-up.

The results indicate that there is a **high probability** that John has clinical Depression.

Cognitive Assessment:

Because of John's unusually diverse cognitive abilities, the combined WAIS-IV Full Scale IQ score is not a valid representation of his general cognitive ability, and therefore was not calculated.

The discrepancy between John's Verbal ability (VCI = 50th percentile) and Non-verbal ability (PRI = 98th percentile) scores was -31, which **is** statistically significant at the .05 level.

John's Working Memory was measured at the 50th percentile and Processing Speed at the 14th percentile.

Educational Assessment:

John achieved the following scores on the various academic subtests, with all but Numerical Operations being identified as significant weaknesses.

Reading:

Word Reading (12th percentile), Reading Comprehension (5th percentile), Pseudoword Decoding (13th percentile), Reading Composite (9th percentile)

John's Reading Speed and Reading Comprehension are both below average to far below average.

This illustrates that John's Reading Speed is significantly below that of similar aged peers and intimates that he must read at a slower rate to successfully comprehend information he has read.

Mathematics:

Numerical Operations (95th percentile)

Written Language:

Spelling (18th percentile), Written Expression (7th percentile), Written Language Composite (10th percentile)

Oral Language:

Listening Comprehension (8th percentile)

CONCLUSION

SPECIFIC LEARNING DISORDERS:

When investigating the possibility of Specific Learning Disorders, PECS aligns itself with the DSM-5 (see DSM-5 Specific Learning Disorder Fact Sheet information in Appendix) and uses a best-practice hybrid approach which is a cross-battery assessment comprising key elements of the major theoretical models; namely, Aptitude-Achievement Discrepancy model, Low Achievement model, Intra-Individual Differences model, and the Response to Intervention (RTI) model.

John's academic attainments in Reading (Word Reading, Pseudoword Decoding, Reading Comprehension), Written Language (Spelling, and Written Expression) and Oral Language (Listening Comprehension) were found to be significantly below those expected given his chronological age, cognitive ability and education/years of schooling.

These significant, unexpected academic underachievements have persisted despite the provision of at least 6 months of continued, targeted systematic and evidence-based interventions (i.e. little or no improvement in *response to intervention* (RTI)).

John's cognitive profile shows marked intra-individual variability and evidence of inherent processing difficulties.

Further investigation reveals that John does not have an intellectual disability, has consistently attended school, does not lack proficiency in the language of academic instruction (e.g., ESL) and does not have any significant medical (e.g., uncorrected visual or auditory acuity), emotional (e.g., other mental or neurological disorders) or family (e.g., psychosocial adversity) history that may be impeding his academic development.

In combination, the current pattern of cross-battery assessment results, background information, exclusion of other possible causes, and little or no improvement in *response to intervention* (RTI), diagnoses of **Specific Learning Disorder – With Impairment in Reading** (also known as Dyslexia), and **Specific Learning Disorder – With Impairment in Written Expression** (also known as Dysgraphia) are confirmed and are deemed to be of a severe nature requiring a high level of ongoing support.

ANXIETY/DEPRESSION:

The assessment results support the earlier diagnosis of **Anxiety** and **Depression**.

ADHD:

ADHD can also present a cognitive profile of depreciated Working Memory and Processing Speed. This area could be further investigated should John or Dr Brown (Consultant Psychiatrist) feel it is warranted and not better explained as symptomatic of the long-term **Anxiety** and **Depression**.

Please note, ADHD can only be diagnosed by a Paediatrician, Psychiatrist or Clinical Neurologist. Therefore, if an individual's cognitive and/or behavioural results suggest that ADHD is a possibility, it is deemed appropriate of PECS to recommend that the appropriate medical professional be consulted for their expert opinion. PECS does not make the recommendation on the basis that they believe the individual has ADHD.

Please note that a GP referral is required to see a specialist.

RECOMMENDATIONS

Please note, PECS does not provide micro-strategies (e.g., sit student at front of classroom, etc) as part of their recommendations. PECS's provides recommendations on what further assessment is required, what intervention is necessary, and who is the most appropriate to provide the assessment/intervention recommended.

Psychiatric Involvement:

- (1) John should once again be seen by Dr Brown, now that this new information is available for incorporation into his psychiatric assessment.
- (2) John should continue regular appointments with Dr Brown, as part of a multimodal intervention plan.

Psychological Involvement:

- (1) John would benefit from on-going psychological counselling, given the levels of anxiety/depression being self-reported.

Please note that this counselling can be provided periodically, as desired, and does not have to occur on a weekly basis.

- (2) Due to the large discrepancies identified within the cognitive and educational tests, administration of another assessment in 2 years or beyond would be wise.

Behavioural Strategies:

- (1) John may wish to contact Dr Michele Toner for assistance with ADHD management strategies.

*Dr Michele Toner
ADHD Consultant and Life Coach
Suite 3, 82 Reserve Street, WEMBLEY WA 6014
Phone: 0411 067 541 www.micheletoner.com*

Please note that strategies to assist with poor concentration, low attention and distractibility are beneficial to people with these characteristics even if they are not formally diagnosed with ADHD.

Self-help Organisations:

- (1) John would benefit from accessing the Learning & Attention Deficit Society's (LADS) for assistance with ADHD resources.

*LADS - The Niche,
Suite B, 11 Aberdare Rd (cnr) Hospital Ave, NEDLANDS WA 6009
Phone: (08) 9346 7544 www.ladswa.com.au*

Please note that strategies to assist with poor concentration, low attention and distractibility are beneficial to people with these characteristics even if they are not formally diagnosed with ADHD.

- (2) John may also wish to access the Australian Council for Educational Research (ACER) bookshop for assistance with ADHD, learning, and/or behaviour management resources.

*ACER Bookshop
1/1329 Hay Street, WEST PERTH WA 6005
Phone: (08) 9235 4800 www.acer.edu.au*

Please note, these resources assist adults that display similar traits without actually meeting a diagnosable condition

- (3) John would benefit from accessing the Anxiety Self-Help Association (ASHA) for assistance with anxiety resources.

*ASHA - The Niche,
11 Aberdare Rd (cnr) Hospital Ave, NEDLANDS WA 6009
Phone: (08) 9346 7534*

- (4) John would benefit from accessing the *beyondblue* website for assistance with depression resources.

*www.beyondblue.org.au
beyondblue National Information Line- 1300 22 4636*

University Involvement:

*For individuals with Specific Learning Disorders to be successful at university, they require two areas of support, **remediation** and **accommodation**.*

***Remediation** involves direct instruction in skills by a specialist teacher and **accommodation** involves adaptations and modifications of curriculum and instructional practices.*

- (1) Results of the assessment should be provided to Student Services so that John's individual learning requirements can be taken into account.

Educational Remediation:

- (1) John would benefit from specialist reading, writing, spelling, and language tutoring from the following place.

*Dyslexia SPELD Foundation
Literacy and Clinical Services
10 Broome Street, SOUTH PERTH WA 6051
Phone: (08) 9217 2500
www.dyslexia-speld.com*

Please note, Dyslexia-SPELD has over 100 tutors across the State, and online tutoring is also available.

Health & Well-Being:

- (1) John needs to continue/implement regular exercise and maintain a healthy diet.

Please note, the above is a generic recommendation that should be followed by all and is not a recommendation specific to John due to any of his results or reported behaviours.

<p>Dr Shane Langsford Managing Director -PECS Registered Psychologist APS College of Educational & Developmental Psychologists Academic Member</p>	<p>Date of Report</p>
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APPENDIX 1 - WAIS-IV SUBTEST DESCRIPTIONS

VERBAL COMPREHENSION INDEX SUBTESTS:

Vocabulary:

The Vocabulary subtest required John to explain the meaning of words presented in isolation, both visually and orally. As a direct assessment of word knowledge, the subtest is one indication of his overall verbal comprehension and fund of knowledge. Performance on this subtest also requires abilities to verbalise meaningful concepts as well as to retrieve information from long-term memory.

Similarities:

On the Similarities subtest John was required to respond orally to a series of word pairs by explaining the similarity of the common objects or concepts they represent. This subtest examines his ability to abstract meaningful concepts and relationships from verbally presented material. As well as involving crystallised intelligence, abstract reasoning, auditory comprehension, memory, associative and categorical thinking, distinction between nonessential and essential features and verbal expression.

Information:

The Information subtest required John to respond verbally to a series of orally presented questions that assess the individual's knowledge about common events, objects, places, and people. The subtest is primarily a measure of his fund of general knowledge. Performance on this subtest also may be influenced by his cultural experience, as well as his ability to retrieve information from long-term memory.

Comprehension:

The Comprehension subtest required John to provide oral solutions to everyday problems and to explain the underlying reasons for certain social rules or concepts. This subtest provides a general measure of verbal reasoning and conceptualisation, verbal comprehension and expression. In particular, this subtest assesses his comprehension of social situations and social judgment, as well as his knowledge of conventional standards of social behaviour.

WORKING MEMORY INDEX SUBTESTS:

Arithmetic:

John was required to mentally solve a series of orally presented arithmetic problems on the Arithmetic subtest. A direct measure of his numerical reasoning abilities, the subtest requires attention, concentration, short-term memory, and mental control. The Arithmetic subtest also measures logical reasoning, quantitative knowledge and sequential processing.

Digit Span:

The Digit Span subtest is a series of orally presented number sequences that John must repeat verbatim (Digit Span Forward), in reverse order (Digit Span Backwards) or recall the numbers in ascending order (Digit Span Sequencing). A direct assessment of John's short-term auditory memory, the Digit Span subtest requires attention, concentration, and mental control and can be influenced by the ability to correctly sequence information. The Digit Span Sequencing task increases the working memory demands of the task.

Letter-Number Sequencing:

The Letter-Number Sequencing subtest involves a series of orally presented sequences of letters and numbers that John simultaneously tracks and orally completes, with the numbers in ascending order and the letters in alphabetical order. This task is a measure of sequential processing ability, short term auditory memory span, mental manipulation, attention, and concentration. Letter-Number Sequencing also assesses an individual's underlying information processing abilities, cognitive flexibility and fluid intelligence.

PERCEPTUAL REASONING INDEX SUBTESTS:

Block Design:

The Block Design subtest required John to use two-colour cubes to construct replicas of two-dimensional, geometric patterns. This subtest assesses ability to mentally organize visual information. More specifically, this subtest assesses his ability to analyse part-whole relationships when information is presented spatially. Performance on this task also may be influenced by visual-spatial perception and visual perception-fine motor coordination, as well as planning ability.

Matrix Reasoning:

The Matrix Reasoning subtest involves a series of incomplete gridded patterns that John completes by pointing to or saying the number of the correct response from 5 possible choices. This subtest assesses fluid intelligence, broad visual intelligence, classification and spatial ability, as well as John's knowledge of part-whole relationships and perceptual organisation abilities.

Visual Puzzles

The Visual Puzzles subtest requires John to view a completed puzzle and to then select three response options, which when combined will form the completed puzzle. This is a measure of an individual's non-verbal reasoning ability and their ability to both analyse and synthesise abstract visual stimuli.

Picture Completion:

The Picture Completion subtest required John to identify the important missing part in each of a series of pictures of common objects, events, or scenes. An indication of his ability in visual discrimination, the Picture Completion subtest assesses the abilities to detect essential details in visually presented material and to differentiate them from nonessential details. Performance on this task also may be influenced by an individual's general level of alertness to the world around him and long-term visual memory.

Figure Weights

The Figure Weights subtest involves John viewing a scale, which is missing weight(s) and then he has to select the response option which balances that scale. This is a measure of quantitative and analogical reasoning, which involves reasoning processes that can be expressed mathematically. The task emphasises the use of deductive and inductive logic.

PROCESSING SPEED INDEX SUBTESTS:

Symbol Search:

On the Symbol Search subtest John was required to inspect several sets of symbols and indicate if special target symbols appeared in each set. A direct test of speed and accuracy, the subtest assesses scanning speed and sequential tracking of simple visual information. Performance on this subtest also may be influenced by visual discrimination and visual-motor coordination

Coding:

The Coding subtest required John to use a key to associate a series of symbols with a series of shapes and to use a pencil to draw the symbols next to the shapes. A direct test of speed and accuracy, the Coding subtest assesses ability in quickly and correctly scanning and sequencing simple visual information. Performance on this subtest also may be influenced by short-term visual memory, attention, or visual-motor coordination.

Cancellation

The Cancellation subtest asks John to scan a structured arrangement of shapes, for a specified target shape, which he will mark. The Cancellation subtest is a direct measure of processing speed, as well as visual selective attention, vigilance, perceptual speed and visual motor ability. The inclusion of a decision making component (selection is based on both shape and colour) places more complex demands upon John.

SPECIFIC LEARNING DISORDER

The upcoming fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) takes a different approach to learning disorders than previous editions of the manual by broadening the category to increase diagnostic accuracy and effectively target care. Specific learning disorder is now a single, overall diagnosis, incorporating deficits that impact academic achievement. Rather than limiting learning disorders to diagnoses particular to reading, mathematics and written expression, the criteria describe shortcomings in general academic skills and provide detailed specifiers for the areas of reading, mathematics, and written expression.

Characteristics of Specific Learning Disorder

Specific learning disorder is diagnosed through a clinical review of the individual's developmental, medical, educational, and family history, reports of test scores and teacher observations, and response to academic interventions. The diagnosis requires persistent difficulties in reading, writing, arithmetic, or mathematical reasoning skills during formal years of schooling. Symptoms may include inaccurate or slow and effortful reading, poor written expression that lacks clarity, difficulties remembering number facts, or inaccurate mathematical reasoning.

Current academic skills must be well below the average range of scores in culturally and linguistically appropriate tests of reading, writing, or mathematics. The individual's difficulties must not be better explained by developmental, neurological, sensory (vision or hearing), or motor disorders and must significantly interfere with academic achievement, occupational performance, or activities of daily living.

Because of the changes in DSM-5, clinicians will be able to make this diagnosis by identifying whether patients are unable to perform academically at a level appropriate to their intelligence and age. After a diagnosis, clinicians can provide greater detail into the type of deficit(s) that an individual has through the designated specifiers. Just as in DSM-IV, dyslexia will be included in the descriptive text of specific learning disorder. The DSM-5 Neurodevelopmental Work Group concluded that the many definitions of dyslexia and dyscalculia meant those terms would not be useful as disorder names or in the diagnostic criteria.

Broader Approach for Targeted Care

Broadening the diagnostic category reflects the latest scientific understanding of the condition. Specific symptoms, such as difficulty in reading, are just symptoms. And in many cases, one symptom points to a larger set of problems. These problems can have long-term impact on a person's ability to function because so many activities of daily living require a mastery of number facts, written words, and written expression.

Early identification and intervention are particularly important. The broader DSM-5 category of specific learning disorder ensures that fewer affected individuals will go unidentified, while the detailed specifiers will help clinicians effectively target services and treatment. DSM is the manual used by clinicians and researchers to diagnose and classify mental disorders. The American Psychiatric Association (APA) will publish DSM-5 in 2013, culminating a 14-year revision process. APA is a national medical specialty society whose more than 36,000 physician members specialize in the diagnosis, treatment, prevention and research of mental illnesses, including substance use disorders. Visit the APA at www.psychiatry.org

For more information, please contact Eve Herold at 703-907-8640 or press@psych.org

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DYSLEXIA

WIKIPEDIA (<http://en.wikipedia.org/wiki/Dyslexia>):

Dyslexia is a broad term defining a learning disability that impairs a person's fluency or accuracy in being able to read, speak, and spell and which can manifest itself as a difficulty with phonological awareness, phonological decoding, orthographic coding, auditory short-term memory, and/or rapid naming. Dyslexia is separate and distinct from reading difficulties resulting from other causes, such as a non-neurological deficiency with vision or hearing, or from poor or inadequate reading instruction. It is believed that dyslexia can affect between 5 to 10 percent of a given population although there have been no studies to indicate an accurate percentage.

There are three proposed cognitive subtypes of dyslexia: auditory, visual and attentional. Although dyslexia is not an intellectual disability, it is considered both a learning disability and a reading disability. Dyslexia and IQ are not interrelated, since reading and cognition develop independently in individuals who have dyslexia.

Accomplished adult dyslexics may be able to read with good comprehension, but they tend to read more slowly than non-dyslexics, and may perform more poorly at nonsense word reading (a measure of phonological awareness), and spelling.

The *World Federation of Neurology* defines dyslexia as "a disorder manifested by difficulty in learning to read despite conventional instruction, adequate intelligence and sociocultural opportunity".

MedlinePlus and the *National Institutes of Health* define dyslexia as "a reading disability resulting from the inability to process graphic symbols".

The *National Institute of Neurological Disorders and Stroke* gives the following definition for dyslexia: "Dyslexia is a brain-based type of learning disability that specifically impairs a person's ability to read. These individuals typically read at levels significantly lower than expected despite having normal intelligence. Although the disorder varies from person to person, common characteristics among people with dyslexia are difficulty with spelling, phonological processing (the manipulation of sounds), and/or rapid visual-verbal responding. In adults, dyslexia usually occurs after a brain injury or in the context of dementia. It can also be inherited in some families, and recent studies have identified a number of genes that may predispose an individual to developing dyslexia".

INTERNATIONAL DYSLEXIA ASSOCIATION (<http://www.interdys.org/>):

Dyslexia is a specific learning disability that is neurological in origin. It is characterised 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.

Adopted by the IDA Board of Directors, Nov. 12, 2002. This Definition is also used by the National Institute of Child Health and Human Development (NICHD).

Studies show that individuals with dyslexia process information in a different area of the brain than do non-dyslexics. Many people who are dyslexic are of average to above average intelligence.

DYSLEXIA SPELD FOUNDATION (<http://www.dyslexia-speld.com/>):

Dyslexia is one of several distinct learning disabilities. It is characterised by a difficulty with reading and writing that often appears to be surprising in a child who otherwise appears capable and academically promising.

Most current definitions of dyslexia focus on the fact that "accurate and fluent word reading and/or spelling develops very incompletely or with great difficulty". This focuses on literacy at the 'word level' and implies that the problem is severe and persistent despite appropriate learning opportunities (*The British Psychological Society* 1999). Spelling, comprehension, reading accuracy, reading rate, word identification and phonological coding are all affected.

AUSTRALIAN DYSLEXIA ASSOCIATION (<http://dyslexiaassociation.org.au/>):

The student who struggles with reading and spelling often puzzles teachers and parents. The student receives the same classroom instruction as other students, but continues to struggle with some or all of the many facets of reading and spelling. This student may have dyslexia.

The primary symptoms are:

Problems learning the letter sounds for reading and spelling

Difficulty in reading single words, such as on flash cards and in lists (decoding)

Lack of fluency

Reading slowly with many mistakes

Poor spelling

Poor visual gestalt / coding (orthographic coding)

The word dyslexia comes from the Greek language and means difficulty with words. Individuals with dyslexia have trouble with reading and spelling despite having the ability to learn. Individuals with dyslexia can learn, they just learn in a different way. Often these individuals, who have talented and productive minds, are said to have a language learning difference.

A student with dyslexia will have a particular pattern of strengths and weaknesses which indicate a dyslexic profile. The central difficulty for a student with dyslexia is to convert letter symbols to their correct sound (decode) and convert sounds to their correct written symbol (spell). Research into dyslexia subtypes indicate that poor visual (i.e., orthographic) coding can also be part of the difficulty.

DYSLEXIA AUSTRALIA (<http://www.dyslexia-australia.com.au/>):

The *Oxford English Dictionary* defines dyslexia as a disorder involving difficulty in learning to read words, letters and other symbols.

Dyslexia literally means 'trouble with words'. It is the term used to describe difficulties with spelling, writing and reading. The challenges can come in many different forms and are not limited to reversals of letters and words, a common misconception.

Dyslexia Australia's definition: Dyslexia is the capacity to process information differently, enabling innovative thought and perception. It is characterised by a visual and experiential learning style. Methods using this learning style allow dyslexic people to realise their capabilities and minimise the negative impact commonly developed by conventional methods. (*concept by C. Fraser. Wording by B. Baird and C. Fraser*).

DYSGRAPHIA

DYSLEXIA-SPELD FOUNDATION (<http://www.dsf.net.au>)

Dysgraphia is a specific learning disability that affects written expression.

Dysgraphia can appear as difficulties with spelling, poor handwriting and trouble putting thoughts on paper. Dysgraphia can be a language based, and/or non-language based disorder.

Many people have poor handwriting, but Dysgraphia is more serious. Dysgraphia is a neurological disorder that generally appears when adults are first learning to write. Experts are not sure what causes it, but early treatment can help prevent or reduce problems.

Writing requires a complex set of motor and information processing skills. Not only does it require the ability to organise and express ideas in the mind. It also requires the ability to get the muscles in the hands and fingers to form those ideas, letter by letter, on paper.

Dysgraphia that is caused by a language disorder may be characterised by the person having difficulty converting the sounds of language into written form (phonemes into graphemes), or knowing which alternate spelling to use for each sound. A person with Dysgraphia may write their letters in reverse, have trouble recalling how letters are formed, or when to use lower or upper case letters. A person with Dysgraphia may struggle to form written sentences with correct grammar and punctuation, with common problems including omitting words, words ordered incorrectly, incorrect verb and pronoun usage and word ending errors. People with Dysgraphia may speak more easily and fluently than they write.

Non-language based Dysgraphia's are those caused by difficulties performing the controlled fine motor skills required to write. The generic term apraxia refers to a wide variety of motor skill deficits in which the voluntary execution of a skilled motor movement is impaired. Apraxia can involve a single controlled movement, or a sequence of movements, such as writing a single letter or entire words.

DYSLEXIA AUSTRALIA (<http://www.dyslexia-australia.com.au>)

People with Dysgraphia may display the following signs:

- May exhibit strong verbal but particularly poor writing skills.
- Random (or non-existent) punctuation.
- Generally illegible writing, despite appropriate time and attention given the task.
- Inconsistencies: mixtures of print and cursive, upper and lower case.
- Irregular sizes, shapes or slant of letters.
- Unfinished words or letters, omitted words.
- Inconsistent position on page with respect to lines and margins and inconsistent spaces between words and letters.
- Cramped or unusual grip, especially holding the writing instrument very close to the paper, or holding thumb over two fingers and writing from the wrist.
- Talking to self while writing, or carefully watching the hand that is writing.
- Slow or laboured copying or writing - even if it is neat and legible.

Clinical Cohort: Attention Deficit/Hyperactivity Disorder (Adult)

Attention Deficit/Hyperactivity Disorder (ADHD) is characterised by an individual displaying a persistent pattern of inattention and/or hyperactivity-impulsivity, which occurs in at least 2 different settings (eg. work, home). ADHD symptoms, which lead to functional impairments (social, behavioural, occupational and academic), must have been present from before seven years of age, although the individual need not have been necessarily diagnosed before that age. ADHD symptoms will tend to worsen in group situations, situations which require sustained effort and attention and situations which are not novel or interesting to the individual.

There are three subtypes of ADHD;

- ADHD, Predominantly Inattentive Type
- ADHD; Predominantly Hyperactive-Impulsive Type
- ADHD; Combined Type

Individuals with primarily inattentive symptoms often fail to pay close attention to details or will tend to make careless mistakes. These individuals tend to find it difficult to sustain their attention long enough to complete a task, in which case they will often rush the task or complete it quickly and with little care. They will tend to start tasks and not complete them, continuously shifting on to something new and more interesting. These individuals will often appear as though they are not listening or are paying attention to something else, appearing distracted and disinterested. These difficulties with sustained attention will often lead to the individual displaying a strong dislike for and avoiding such tasks which require prolonged concentration, (eg. homework, writing a letter etc), as they have difficulties with attention that make completing such tasks difficult for them.

Individuals with hyperactive symptoms will often be observed as being unable to sit still, fidgeting in their chair, or by moving around when it is inappropriate. These individuals will appear as though they have boundless energy, moving around and talking excessively, and will struggle to be able to stay still and engage in sedentary activities, such as sitting and reading a book. They will tend to appear to be increasingly restless and have considerable difficulty completing and engaging in quiet and sedentary activities.

Individuals with impulsive symptoms can be characterised as being excessively impatient and displaying difficulty in delaying their responses (having to do something as soon as it is mentioned) or waiting their turn. These individuals will seem to say things without thinking, and others may feel as though it is difficult to get a word in the conversation. They will often appear to be inappropriate in social situations, interrupting others, making inappropriate or unrelated comments and often intruding on other people. This impulsivity may lead to an increased risk of accidents, with the individual rushing in and touching or doing things without allowing time to be careful and consider the potential risks that may be associated, eg driving recklessly.

Cognitive:

Research findings suggest that individuals with ADHD typically achieve scores in the average range for intellectual functioning, but tend to perform relatively poorly on tasks related to working memory and on tasks requiring sustained attention and processing speed.

WAIS-IV Index Interpretation:

Results from studies conducted as part of the WIAS-IV norming process illustrated that adults with ADHD (combined type), whom when compared with matched controls ($n=4$), were found to present with significantly lower ($p<.05$) average scores on the Working Memory Index (5.9 points lower) and the Processing Speed Index (6.4 points lower) than the matched controls.

Evidence for the ADHD characteristics of poor working memory and processing speed is best investigated by the comparison between the individual's own WMI and VCI, and between the PSI and PRI. The WAIS-IV norming studies of individuals with ADHD have shown that they tend to score on average 6.2 points lower on the WMI than the VCI, and 4.6 points lower on the PSI than the PRI.

WAIS-IV Subtest Interpretation:

When compared with matched controls as part of the WAIS-IV norming process, adults with ADHD were found to present with **significantly lower scores** ($p < .05$) than their matched controls on Matrix Reasoning, Arithmetic, Coding, Letter-Number Sequencing, and Figure Weights subtests.

In particular, large effect sizes (effect sizes indicate the substantiveness of the significant result) were found between the adults with ADHD and the matched controls for (in descending order) the Coding, Arithmetic, Matrix Reasoning and Figure Weights subtests.

Behavioural & Psychological:

Adults with ADHD may display the following behavioural characteristics:

- Chronic forgetfulness
- Difficulty concentrating on tasks for extended periods of time
- Difficulties with time management
- Appearing disorganised and constantly unprepared for tasks and events
- Experience frequent changes in employment or moving constantly
- Appear quick to anger and become easily frustrated
- Tendency to be impulsive, making decisions with little consideration of the potential consequences and long term implications
- Experience relationship and interpersonal difficulties
- Engaging in a number of short term hobbies and interests, which they will fail to maintain for any substantial time
- Poor social skills and a difficulties with assertiveness

Individuals with ADHD tend to leave school early, and obtain a poorer education, than their peers. They also tend to have fewer employment opportunities, as a consequence of having less education, their inability to maintain adequate sustained attention and being generally more impulsive and overactive individuals.

Adults with ADHD are at increased risk of experiencing a number of psychological disorders, including depression, anxiety, substance abuse and anti-social behaviours (Biederman, et al., 2006).

Adults who continue to express ADHD symptoms have been found to overall experience higher levels of distress in their lives, especially experiencing more low moods, relative to positive moods. Relationship difficulties may also exacerbate or be the consequence of the manifestation of the individual's ADHD symptoms, which in turn can lead to greater psychosocial impairment for the individual.

Clinical Cohort: Learning Disorder and ADHD:

When compared with matched controls (n=45) as part of the WISC-III norming process, adults with Learning Disorder and ADHD were found to present with **significantly lower** (p<.01) average scores on the FSIQ (14 points lower) and **all of the Indexes**, in particular the WMI (12 points lower) and the PSI (12 points lower).

Evidence for poor working memory and processing speed is best investigated by the comparison between the WMI than the VCI, and between the PSI and PRI.

Studies of individuals with comorbid LD and ADHD have shown that they score on average 4 points lower on the WMI than the VCI, and 4.5 points lower on the PSI than the PRI.

Adults with comorbid Learning Disorder and ADHD, whom when compared with matched controls as part of the WISC-III norming process, were found to present with **significantly lower** scores (p<.01) on Similarities, Vocabulary, Information, Word Reasoning, Matrix Reasoning, Picture Completion, Letter-Number Sequencing, Digit Span, Arithmetic, Symbol Search and Coding,

Large effect sizes (effect sizes indicate the substantiveness of the significant result) were found between the adults with comorbid Learning Disorder and ADHD and the matched controls for (in descending order) Arithmetic, Letter-Number Sequencing, Coding, Vocabulary, and Information.

Picture Completion (p=.12), and Cancellation (p=.08) were found to be the subtests **least effected** by comorbid Learning and ADHD.

The comorbid Learning Disorder and ADHD cohort was also found to score **substantially lower** on Digit Span Backward than Digit Span Forward.

Please note that 65 percent of adults in the ADHD sample were on medication during the matched testing.

Clinical Cohort: Major Depressive Disorder (Adults)

All people from time to time may experience feelings of low mood and sadness, but typically these pass relatively quickly. However, a major depressive episode (depression) differs in the level of intensity and longevity of those feelings, as well as the widespread negative impact upon the individual's day to day functioning. Approximately one in five adults will experience at least one episode of depression in their lifetime, making it among the most common of all the psychological disorders. Depression is associated with thoughts of helplessness, excessive guilt and worthlessness, thoughts which individuals with depression will tend to ruminate and focus on throughout the day. There are a number of theories related to the causes and maintenance of depression, although it can be conceptualised through a 'stress-diathesis' model, where an environmental stressor (loss, transitions...) can act as a trigger, in the presence of existing vulnerabilities and genetic risk factors.

Cognitive:

Evidence for the presence of cognitive impairments in depression currently remain contradictory, with many questions remaining as to the stable and universal nature of any deficits and the impact of these deficits on the expression of depression in the individual.

A review by Casteneda and colleagues (2008) summarised a number of different research studies which looked at the possible areas of cognitive impairment seen in depression. Impairments in executive functioning were seen, particularly in performance on the Wisconsin Card Sorting Test (increasing severity of depression lead to poorer outcomes) and the Trail Making Test (slower and more errors), suggesting difficulties with mental flexibility and inhibiting prepotent responses. Attentional deficits and psychomotor slowing were also found, thus the use of speeded tasks with an individual with depression are unlikely to be true measures of the desired construct, rather are likely to be more reflective of psychomotor slowing. Evidence for short term and working memory deficits, in both the visual and verbal domains have also been found, through the WAIS Digit Span Task, Verbal Fluency Task (FAS) and Visual Span tasks.

A comprehensive study of cognitive functioning in depression (single episode) was conducted by Hill (2004), using a range of measures from the WAIS-R (Block Design, Digit Symbol, and Digit Span), WMS (Visual Reproduction), WRAT and other commonly used measures of executive functioning. Those with current major depression were found to be impaired on measures of attention (Cancellation Test, Digit Span, Digit Symbol and Trails A), relative to a control group. Individuals with psychotic depression (where the individual also experiences hallucinations and delusions, often of a depressive nature) were found to have a wider range of impairments, with deficits in executive functioning and motor skills demonstrated, patterns similar to schizophrenia.

Overall, **impairments in executive functioning, attention and motor speed** are the most frequently reported in studies of cognitive functioning in depression. Questions as to the extent that these deficits are specific to the acute stage of the disorder, or more trait characteristics continues to remain unclear.

Research conducted with a sample of individuals over 50 years of age, with major depressive disorder, the majority of whom were on antidepressant medication, demonstrated a small but significant decrease on the WAIS-IV Processing Speed Index, relative to healthy controls.

Behavioural:

There are many physiological/somatic symptoms of depression, which are a consequence of the disorder, as well as acting to maintain the individual's low mood and feelings of worthlessness. These include:

- Increased/decreased appetite
- Insomnia or increased feelings of sleepiness
- Low energy, fatigue
- Anhedonia, limited motivation

These behaviours lead to the individual engaging less with other people and with things that they used to do and enjoy. This isolation then feeds into the cycle of depression, which only serves to reinforce the underlying depressive thought processes of the individual. Social isolation is a large part of depression as the individual wants to be on their own, but in doing so they are inadvertently removing themselves from people and situations that they would normally enjoy and which would help to lift their current low mood.

Memory problems, difficulty concentrating and in making decisions are frequently reported in individuals with depression, which tend to resolve with successful treatment. These difficulties can interfere with people's education and work functioning, further reinforcing the individual's sense of worthlessness and thoughts of failure.

Psychological:

Depression is generally associated with a distinct pattern of thinking, known as the 'cognitive triad', where the individual sees themselves, the world and their future as being pointless and a failure, leading to a sense of hopelessness and despair. Suicidal ideation is included in the DSM-IV-TR criteria for depression and often these thoughts emerge out of a sense of such overwhelming hopelessness and feelings that it will never get any better. Approximately 60% of people who commit suicide have depression, and increased rates of self harm are also seen, making it important to identify and treat the disorder as soon as possible. Interpersonal relationships are also strained in depression, as a consequence of the withdrawal and self focus of the person with depression. Again these difficulties are both a consequence of the depressive episode and can also serve to maintain it, for these difficulties only increase the individual's feelings of worthlessness and reduce their available sources of social support.

Depression tends to have a high rate of co-morbidity with anxiety disorders, which may possibly be due to the overlap in diagnostic criteria for both disorders, although research has yet to conclusively disentangle the causal mechanisms behind this association. Particularly in men, high incidences of substance abuse and depression are seen, as drugs and alcohol are often used as coping strategies, to avoid dealing with the uncomfortable feelings associated with low mood.

Clinical Cohort: Anxiety Disorders (Adults)

All people experience some levels of anxiety, although most will simply find that the feelings pass and continue on. Feelings of anxiety can be in response to a real or imagined threat, with the symptoms evolving as part of the 'flight/fight' mechanism, an adaptive pattern of physiological changes in the body which help the person to deal with threat. The natural anxiety response can become disordered when the physiological and psychological symptoms are maintained for prolonged periods of time and are associated with increasing distress and impaired daily functioning in the individual. Anxiety is described as having four clusters of symptoms; physiological/somatic, behavioural, affective and cognitive, which when combined leave the individual feeling highly worried or apprehensive. Avoidance behaviours are common in these disorders, as by avoiding the feared situation or stimulus, the individual attempts to maintain control over their feelings of anxiety and to avoid the consequential catastrophe they believe will occur if have to confront it. There are a number of disorders which are classified as 'anxiety disorders' in the DSM-IV-TR: Panic Disorder (with/without Agoraphobia), Obsessive-Compulsive Disorder, Social Phobia, Specific Phobia, Generalised Anxiety Disorder, Posttraumatic Stress Disorder, ...). Internalising disorders, such as anxiety, have also been shown to be more common in women than men, although biases in the reporting of such symptomology, between the genders need to be considered.

Cognitive:

A comprehensive review of the cognitive impairments seen in anxiety disorders was conducted by Casteneda and colleagues (2008). From this review the main areas of cognition which showed **impairments were verbal episodic memory and executive functioning**. However, there appeared to be distinct patterns of deficits which occurred according to disorder, which may be reflective of the truly heterogeneous nature of anxiety disorders. Those with panic disorder were shown to have impairments in divided attention but not in selective attention and on the California Verbal Learning Task (CVLT) they **exhibited deficits in short term and long term verbal memory and learning**. On measures of executive functioning (Trial Making Task, Digits Cancellation Test), decision making (Iowa Gambling Task) and visual memory (Benton Visual Retention Test), no differences were found relative to a control population. Kaplan (2006) found that panic disorder, coupled with major depression, lead to wider and more severe cognitive deficits.

Hopko, et al (2005) recorded data from 80 undergraduate students who completed a battery of self-report anxiety instruments and WAIS-III performance sub-tests. Physiological data were also recorded. Hopko and his team explored relations among testing anxiety, general anxiety, physiological responsivity, and online anxiety. Results found testing anxiety (negatively) and heart rate reactivity (positively) accounted for **significant unique variance** in predicting performance IQ. The **negative impact** of testing anxiety was particularly relevant to the **Block Design** and **Picture Arrangement** sub-tests and heart rate reactivity positively was associated with performance on the **Digit-Symbol Coding** sub-test.

Studies looking at individuals with social phobia found evidence for deficits in **attention, executive functions and visuo-spatial processing, as well as impairments in short term verbal memory and learning**, as measured using the WAIS-R, Trail Making Task, Benton Visual Retention Test & Matching Familiar Figures Test.

Individuals who displayed higher cognitive skills, as adults, have been demonstrated to be at a significantly reduced risk of developing GAD as adults, which may be associated with the individual having available cognitive resources to allow them to deal more effectively with ambiguous, worrying situations (Martin, et al., 2007).

Depending on the anxiety disorder, individuals have been shown to be more attentive to specific threat stimuli (eg. Spider related words with a spider phobia), on attentional measures, such as the Stroop Task, Dot-probe tasks etc. Interpretive biases have also been demonstrated in anxiety disorders, whereby when given ambiguous information the individual will be more likely to interpret the information in a way which is congruent with their fears and worries.

Behavioural:

A range of avoidance behaviours are usually seen with anxiety disorders. For example in individual with social phobia may avoid classes, due to anxiety surrounding the possibility of interacting with other people. These avoidance behaviours can involve partners and other family members who have a role in facilitating the avoidance behaviours, for example they will do the shopping for someone with agoraphobia or not force the individual into feared situations. Such relationships are highly dependent and enmeshed, which only serves to further maintain the anxiety disorder. Safety behaviours (e.g. carrying medication at all times, always knowing where the exit is) are also seen in anxiety disorders, as they help the person to feel in control and safe, if they have to go into a situation which they are fearful of.

Psychological:

The physiological symptoms associated with anxiety disorders leave the individual feeling extremely tired, as they are constantly looking to avoid the feared stimuli, coupled with having increased levels of stress hormones in their body. Individuals will experience high levels of fatigue and muscle tension and often exhibit poor sleep patterns, as they tend to be constantly worrying and on edge. Anxiety disorders typically have high co-morbidities with major depression, although research has yet to conclusively disentangle the causal mechanisms behind this association. Early onset anxiety disorders are associated with greater levels of psychopathology, having higher rates of co-morbidities and often displaying a more chronic course.