Wolfe & Co. Solicitor
Market Street Skibbereen
Co. Cork.

PSYCHOLOGY DEPARTMENT
NEUROPSYCHOLOGICAL REPORT
Private & Confidential

Client Details

Name: Mr. John O'Toole

Address: 48 Tawnies Crescent,
Clonakily,
Co. Cork

Date of Birth: 13/11/1954

Age: 54 years

Date of Injury: 07/07/2006

Date of Assessment: 22/05/2009

Date of Report: 26/06/09

Referred by: Wolfe & Co. Solicitors

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1 Reason for Referral

1.1 Mr. O'Toole was referred by Ms. Helen M Collins, Wolfe & Co. Solicitors, to ascertain the possible presence of cognitive deficits on a background of RTA in July 2006.

2 Existing Records & Clinical Interview

2.1 Mr. O'Toole is a 54-year old gentleman who sustained his acquired brain injury as a result of a road traffic accident on 07/07/2006, when he was struck by a car as a pedestrian. According to medical records available to me at the time of writing this report, he was initially admitted to the Intensive Care Unit of Cork University Hospital, where he remained unconscious for a period of 7 days (initial Glasgow Coma Scale score 3/15). Of note, he was sedated only for two of the seven days. He had regained full consciousness and orientation by the 14th of July. There is no evidence of retrograde amnesia. A CT brain scan showed a small haemorrhage in the right occipital lobe, close to the right lateral ventricle. He also sustained significant fractures to his right leg as a result of his accident, and was transferred to St. Mary's Orthopaedic Hospital on 10/08/2006 where he remained for management of these fractures until 30/09/2006.

2.2 I understand, Mr. O'Tool returned to live alone in Clonakilty after discharge. He separated approximately five years ago and is a father of two, with whom he has had no contact since a barring order from contacting his wife. Of note, the barring order passed as a consequence of incidents occurred before hia RTA.

2.3 Mr. O'Toole has in the past been diagnosed as having a bipolar affective disorder and had been attending West Cork Mental Health Services as an outpatient prior to his accident. He also had two inpatient psychiatric admissions to Bantry Hospital in 2003 and 2004. Reportedly, he also has a history of excessive alcohol intake and attempted suicide.

2.4 Mr. O' Tool is one seven siblings, all of whom are, reportedly doing well. His father died, aged 70, due to cardiovascular problems on a background of depression and alcohol misuse.

2.5 Mr. O'Toole left school at age 16, following completion of his Group Certificate. He then began to work as a musician, and later as a bar man. He also worked on Community Employment Schemes with FÁS from the age of 22, and began employer-based training with the National Learning Network in 2004. I was unable to ascertain if was working at the time of the accident.

3. Current & Clinical Presentation

3.1 Mr. O' Tool came accompanied by his sister , Ms. Christine McKnight. He was pleasant and co-operative but a relatively poor historian especially in relation to events that occurred following his accident. He often looked at his sister to seek reassurance about the accuracy of his accounts. At the time of my clinical interview he impressed as objectively and subjectively euthymic. Of note, his sister reported to feel worried, at times, that he might loose his temper. On questioning, she denied him ever being violent towards any member of the family. However, "since his accident I feel scared, at times, he could loose his temper". Ms. McKnight also reports that Mr. O' Tool's memory appears deteriorated since the accident and that he has lost his ability to play the guitar. Mr. O' Tool also confirmed a worsening in his memory and concentration (mind wondering) as a well as an inability to play the guitar. He also reports problem

with orientation, navigation and planning (i.e., "I would have been able to come to Dublin by myself prior to the accident, while now I cannot").

3.2 Mr. O' Tool reports taking Effexor, Zyprexa and Epilim but was unable to recall the dosage.

4. Neuropsychological Examination

4.1 *General Intellectual Ability*

4.1.1 I assessed Mr. O'Toole's intellectual ability using eleven subtests of the Wechsler Adult Intelligence Scale – Third Edition (WAIS-III)[1]. His Full Scale IQ on this fell within the borderline range at the 7th percentile.

4.1.2 His performance on the verbal subtests also fell within the borderline range, at the 4th percentile. His Verbal Comprehension Index score was consistent with this (at the 7th percentile), indicating less than optimal verbal abstraction and concept formation. Mr. O'Toole showed poor semantic memory for previously acquired knowledge (Scaled score of the Information subtest). His performance on the Working Memory Index also fell at the 7th percentile. Inspection of individual subtests revealed that while he was relatively able to manipulate information within working memory, his performance was especially poor when arithmetic skill were required (scaled score of 5).

4.1.3 Mr. O'Toole obtained a Performance IQ score which fell within the low average range, at the 18th percentile. He demonstrated preserved attention to visual detail, as well as visuo-spatial constructional ability on these tasks. Unfortunately, due to time restrictions, not all subtests necessary to calculate his Perceptual Organization Index could be administered. However, this is clearly the area in which Mr. O' Tool demonstrated his strongest skills. His Processing Speed Index score fell within the extremely low range at the 2nd percentile, which indicates a significant slowing of psychomotor speed and speed of information processing.

Full Scale IQ Score: 78 Confidence Interval: 74-83										
Verbal IQ Score: 74 Confidence Interval: 70-80						Performance IQ Score: 86 Confidence Interval: 80-94				
Verbal Comprehension Index Score : 78 Confidence Interval: 73-85			Working Memory Index Score: 78 Confidence Interval: 73-86			Perceptual Organization Index Score: Confidence Interval:			Processing Speed Index Score: 69 Confidence Interval: 64-82	
Vocabulary Scaled Score:	Similarities Scaled Score:	Information Scaled Score:	Arithmetic Scaled Score:	Digit Span Scaled Score:	Letter-Number Sequencing Scaled Score:	Picture Completion Scaled Score:	Block Design Scaled Score:	Matrix Reasoning Scaled Score:	Digit-Symbol Coding Scaled Score:	Symbol Search Scaled Score:
7	7	4	5	7	7	9	9		5	3

1 The Wechsler Adult Intelligence Scale – Third Edition (WAIS – III) is an individually administered clinical instrument for assessing the intellectual ability of adults aged 16 through 89. It consists of 14 subtests, each measuring a different facet of intelligence. It also yields the traditional of 3 composite IQ scores – verbal, performance, and full scale as well as the four index scores (see table 1 in Appendix for description of indices).

4.1.4 I estimated Mr. O'Toole's premorbid level of functioning using the Wechsler Test of Adult Reading (WTAR)[2]. The results suggest premorbid verbal and performance IQ scores of 83. This score lies within the low average range.

4.1.5 Overall, the assessment indicates that Mr. O'Toole's current general intellectual ability is approximately consistent with those expected on the basis of Mr. O'Toole's estimates of premorbid function. A marked decline was seen in Mr. O'Toole's psychomotor and information processing speed. While it is possible that part of his processing speed slowing can be accounted for by his mental health difficulties, it is likely that the current extent of slowing is also a consequence of Mr. O'Toole's acquired brain injury.

4.3 Memory

4.3.1 Due to time restrictions, only a partial assessment of Mr. O'Toole's verbal memory functioning was completed, using selected subtests from the Wechsler Memory Scale – Third Edition UK (WMS-III)[3]. When presented with a complex auditory prose passage, Mr. O'Toole was able to recall only 4 out of 25 units of information, and following a 30-minute delay, was not able to retrieve the passage. In terms of learning, he showed limited ability to benefit from repetition over time, both for complex contextualized information and word lists. Of note, his performance did not improve when cues were provided, during recognition trials.

4.3.2 Overall, assessment of verbal memory indicated some very significant difficulties with encoding, retaining and retrieving verbal information adequately, which suggests a breakdown of frontotemporal pathways in the left hemisphere as well as frontal lobe and left hippocampal involvement.

4.3.3 Mr. O'Toole's visual memory ability was assessed using the Rey Complex Figure Test[4], which is a measure of visual memory and visuo-spatial constructional abilities. Mr O'Toole had notable difficulties constructing the overall gestalt of the figure on the copy trial, where his score fell below the 1st percentile, and was not able to recall it following a five minutes delay or a delay of thirty minutes. On the recognition trial of this test, his performance did not improve significantly.

4.3.4 Mr' O' Tool's poor performance on the copy section of the test indicates problems with the executive functioning component of the complex figure reproduction. More specifically he had problems with organising and planning his work rather than specifically with the visuo-constructional aspect.

4.3.5 Overall assessment of memory functioning indicate major difficulties with encoding, retaining and retrieving verbal and visual stimuli, which suggests frontal lobe and hippocampi involvement, as well as a breakdown of frontotemporal pathways bilaterally.

4.4 Executive Functioning:

2 The WTAR provides an estimate of the premorbid intellectual functioning of adults aged 16 – 89. It has been validated for a brain injured population.

3 The WMS-III is an individually administered battery of learning, memory, and working memory measures The WMS-III is intended for use with adults, ages 16-89 years. In rehabilitation settings, the WMS-III is useful for determining domains of spared memory capacity that may be recruited to compensate for impaired abilities in other cognitive domains.

4 The RCFT consists of four separate tasks. First, the respondent copies the figure, then five and thirty minutes later the respondent is asked to draw the figure from memory. Finally a recognition trial (with cues provided is administered). Scores in this test are obtained by transforming the various RCFT raw scores to normalized T scores and associated percentile scores. T scores have been constructed to have a mean of 50 and a standard deviation of 10.

4.4.1 In the Hayling and Brixton Test[5], the Hayling investigates skills associated with frontal lobes functioning such as the client's ability to promptly respond to stimuli (response initiation) as well as the ability to inhibit inappropriate/undesired responses (response inhibition). On this, Mr. O'Toole's response initiation score fell into the "poor" range, whereas his response inhibition score was within the "impaired" range, reflecting his difficulties with inhibiting undesired verbal responses on this task. The Brixton section of the test investigates specific executive functions such as the client's ability for planning, problem solving, rule detection and mental flexibility. Here, Mr. O'Toole's scores fell within the "abnormal" range. His responses were markedly perseverative in nature, and demonstrated relatively poor rule detection, rule application and cognitive flexibility.

4.4.2 Mr. O'Toole's self-endorsed pre- and post injury scores on the Frontal Systems Behaviour Scale (FrSBe)[6] indicate that he perceives little change in symptoms of apathy, disinhibition and executive dysfunction since his injury (pre-injury T-score range of 66 – 79; post-injury T-score range of 63 – 74). In contrast, scores provided by his sister on the family rating form indicated that symptoms have markedly increased on all three subscales (pre-injury T-score range of 50 – 70; post-injury T-score range of 88 - 94). This difference suggests that Mr. O'Toole has limited insight into his current level of functioning.

4.4.3 Overall, examination of executive skills indicated difficulties with response initiation and response inhibition, as well as considerable difficulties with rule detection, rule application and cognitive flexibility. Additionally, it is likely that Mr. O'Toole has considerable insight difficulties at present. These results indicate frontal lobe involvement.

4.5 Assessment of Adjustment & Mood

4.5.1 I assessed his mood using the Symptom Checklist-90-R (SCL-90)[7]. Mr. O'Toole's responses yielded considerably elevated scores on 8 of the 9 subscales. He indicated feeling extremely distressed by "repeated unpleasant thoughts that won't leave his mind", having "trouble remembering things", "feelings of being trapped or caught". He also endorsed items indicating distress caused by "thoughts of ending his life". When questioned about this, he did not report intent or plans about this. I am also aware that his psychiatrist is aware of his mental health presentation. Overall, his SCL-90 scores indicated a significant degree of emotional turmoil. However, some of his emotional difficulties were clearly present before his RTA.

5. Conclusion & Recommendation

5.1 Mr. O'Toole is a 54-year old gentleman who sustained his acquired brain injury as a result of a road traffic accident on 07/07/2006, when he was struck by a car as a pedestrian. He was initially admitted to Cork University Hospital, where he remained unconscious for a period of 7 days (initial Glasgow Coma Scale score 3/15). A CT brain scan showed a small haemorrhage in the right occipital lobe, close to the

5 The Brixton Test is a concept (or 'rule') attainment task. There is no one reason for failure on the Brixton Test. There are three broad classes of error: perseverations (i.e. repeating one's response); the misapplication of a strategy; or 'guessing' or 'bizarre responses'(See Table 4.3 in Appendix for score descriptions). The metric used in the Hayling and Brixton Test is known as 'Standard Ten (Sten) Scores'. Sten scores have a scale running from 1 to 10 (most people are familiar with the concept of 'marks out of 10').

6 The Frontal Systems Behaviour Scale (FrSBe) is a rating scale designed to measure behaviours associated with damage to the frontal systems of the brain. It assesses behaviour before and after damage occurs, allowing the clinician to track behaviour changes over time. It permits both self-ratings and multiple observers to rate behaviour relating to apathy, disinhibition and executive dysfunction.

7 The SCL-90-R is a 90-item self-report symptom inventory designed to reflect the psychological symptom patterns of respondents.

right lateral ventricle. He also sustained significant fractures to his right leg as a result of his accident. Mr. O'Tool lives alone in Clonakilty after discharge. He separated approximately five years ago and is a father of two, with whom he has had no contact since a barring order from contacting his wife. Mr. O'Toole has an history of bipolar affective disorder and had been attending West Cork Mental Health Services as an outpatient prior to his accident. He also had two inpatient psychiatric admissions due to mental healt reasons. Reportedly, he also has a history of excessive alcohol intake and attempted suicide.

5.2 Mr. O'Toole's current neuropsychological profile indicates that while his general intellectual ability is consistent with that expected on the basis of his estimates of premorbid function, a significant decline in information processing and psychomotor speed was observed. Assessment of memory functioning suggested marked difficulties with encoding, retaining and retrieving both verbal and visual information. Combined, these results suggest bilateral frontal and hippocampal involvement, as well as a breakdown in frontotemporal pathways bilaterally. In terms of executive functioning, the assessment showed that Mr. O'Toole has significant difficulties with response initiation response inhibition, as well as rule detection, rule application and cognitive flexibility. Additionally, it is likely that Mr. O'Toole has limited insight into the extent of his difficulties at present. Some of this difficulties are likely to have been exacerbated by Mr. O'Toole's acquired brain injury.

5.4 Mr. O' Tool's presentation is a complex one with many pre-morbid factors likely contributing to his current neuropsychological presentation. Both his mental health difficulties and the history of alcohol misuse can be compounding his current memory and processing speed slowing problems. However, given that he was able to attend a community employment working scheme and play the guitar (both activities he is no longer able to attend to), it is very likely that the ABI has significantly worsened his presentation. It is also of note that it is now more than two years since the RTA and the likelihood of further significant recovery is now limited.

Date of Completion: 25/06/09

I confirm that insofar as the facts stated in my report are within my own knowledge, which they are and I believe them to be true, and that the opinion that I have expressed represent my true and complete professional opinion.

Salvatore Giangrasso, BSc., MSc., Clin Psych.
Senior Clinical Neuropsychologist
Headway

6. Appendix

Table 1: Descriptions of the WAIS-III Indices

Verbal Comprehension *Verbal conceptualization, knowledge and expression.*	Perceptual Organization *Nonverbal reasoning, visuo-spatial skills and visual motor coordination.*	Working Memory *Tracking & sequential processing, requiring good attention & an ability to manipulate auditory information.*	Processing Speed *Speed of thought and motor ability.*
2. Vocabulary	1. Picture Completion	6. Arithmetic	3. Digit Symbol-Coding
4. Similarities	5. Block Design	8. Digit Span	12. Symbol Search
9. Information	7. Matrix Reasoning	13. Letter-Number Sequencing	

Table 2: Description of the WMS-III Indices and Composites

Indices and Description
Auditory Immediate - Indicates the examinee's ability to remember information immediately after it is orally presented.
Visual Immediate - Indicates the examinee's ability to remember information immediately after it is visually presented.
Immediate Memory - Indicates the examinee's ability to remember both visual and auditory information immediately after it is presented.
Auditory Delayed - Indicates the examinee's ability to remember orally presented information after a 25 to 35 minute delay.
Visual Delayed - Indicates the examinee's ability to remember visually presented information after a 25 to 35 minute delay.
Auditory Recognition Delayed - Indicates the examinee's ability to remember (via recognition) auditory information after a 25 minute to 35 minute delay.
General Memory - Indicates the examinee's delayed memory capacity.
Working Memory - Indicates the examinee's capacity to remember and manipulate both visually and orally presented information in the short-term memory storage.