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**The Psychological Effects of Road Traffic Accidents: An Exploration of a UK Medico  
Legal Examiner's Career of RTA Assessments**

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**ABSTRACT**

Around 20 to 50 billion people are injured as a result of a Road Traffic Accident (RTA) each year throughout the world. In the UK there have been considerable efforts made to review the assessment of whiplash claimants following RTAs due to the perceived level of fraud. However, very little has been done with regards to assessments for mental disorder; this article seeks to investigate how such assessments are undertaken. Data originating from one Clinical Forensic Psychologist's practice (N=305) are examined to provide an insight into the assessment of mental disorder in the medico legal arena in the UK building upon previous research. Many important findings emerged from this analysis including a complicated relationship between the diagnosis of mental disorder and the gender of the claimant. In addition, this article provides detailed normative data using the Symptom Checklist 90 Revised, the Impact of Events Scale and the Beck Depression Inventory.

**Keywords: Medico legal, Traffic Accidents, Psychological Reporting, Travel Anxiety**

## Introduction

It has been estimated by the World Health Organisation that between 20 to 50 million people are injured as a result of Road Traffic Accidents (RTAs) around the world each year (WHO, 2013). Researchers have advocated that alongside gaining a further understanding of the injuries caused by RTAs it is imperative to explore the psychological and social consequences of road collisions (Redelmeir & McLellan, 2013). RTAs have been argued to be the leading cause of PTSD (Norris, 1992) and researchers have suggested that in around 15 – 30 % of collisions this results in genuine PTSD (Hall & Hall, 2006). Mayou, Bryant and Duthie (1991) provide an insight into the consequences of motor collisions in the UK and suggest that anxiety is very common and debilitating in around 20% of RTA survivors.

Mayou, Bryant and Duthie's (1991) research certainly evidences the severity that RTAs can have on psychological and social functioning. However, little research has explored RTAs in a UK medico legal context and this is deemed to be crucial due to the severity of the psychological injuries that may present after RTAs. Recent research by Cartwright and colleagues (2016) alluded to a variety of issues within the assessment of mental disorder following Road Traffic Accidents (RTAs) in the United Kingdom. As a result, it has been argued that a thorough insight into the assessment methods of RTA claimants in the UK should be achieved in order to understand how assessments are undertaken whilst assessing their suitability for the current era where deception may be of concern (Cartwright et al., 2016; Cartwright & Roach, 2016). The reason for this, being that between 2006 and 2011 the number of RTAs in the UK fell by 20% yet the number of personal injury claims for RTAs increased by 60% (Merton et al, 2013).

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Understanding this issue is particularly important in determining whether the UK indeed is the 'Whiplash Capital of the World' as the UK Government have previously claimed (Transport Committee, 2013). Cartwright and Roach (2016) evidenced that the perceptions regarding malingered the effects of an RTA are held in mind with little severity by a sample of the UK public and this may go some way in explaining the aforementioned paradoxical statistic. This statistic has occurred despite the number of collisions in the UK reducing and cars in general being manufactured that are safer.

Placing the issue of malingering aside, perhaps a more serious concern is that there appears to be very little research exploring assessments in this arena. Due to a lack of research outlining methods of best practice it is argued here that this has led professionals to conduct their own assessments with minimal research to compare their assessment methodology with best practice alongside not being able to compare the diagnoses of the claimants that they assess with other medico legal experts. In the present context psychologists and psychiatrists are sought as experts to offer their opinion as to the extent to which a traffic accident has caused a claimant's stated mental disorder. In order to do this, the professional is required to compile a report based on their findings and in response to an instructing party's questions. Part 35 of the Civil Procedure Rules (and the practice direction supplement) provide guidelines to experts regarding the contents and presentation of their reports. Furthermore, documents such as: *psychologists as expert witnesses: guidelines and procedure* by the British Psychological Society (BPS, 2015) offer some guidance to experts completing reports. Such guidelines only provide direction in areas such as: writing up a report, professionalism, confidentiality, dealing with instructing parties, appearance in court and many other important topics relating to working as a psychologist in the legal system. The guidelines provided to experts do not

provide instruction on how experts should assess claimants and what methods of assessment are appropriate in the present context.

The present article seeks to address this issue by publishing a case study of one psychologist's portfolio of RTA medico legal assessments in order to offer an insight into how assessments are undertaken in this context. Furthermore, the present article seeks to provide normative psychometric data from a large sample of claimants who have been involved in a traffic accident on the following assessments: The Symptom Check List 90 Revised (SCL-90-R, Derogatis, 1977), the Beck Depression Inventory (BDI, Beck, 1961) and the Horowitz Impact of Events Scale (IES, Horowitz, Wilner & Alvarez, 1979). As a result, the present article has three main aims. The first is to offer an understanding of how psychological assessment is undertaken in this arena. The second is to offer normative data to professionals who may be undertaking similar assessments in this context. Finally, the present article seeks to offer further insight into the psychological effects of road traffic collisions.

### **Method**

#### **Sample**

The present article examines 305 RTA claimants, which were all assessed by one clinical forensic psychologist between the years of 1992 and 2013 in the North of England. The psychologist's dataset was recorded on Excel as a measure of creating normative data, which could be referred back to when assessing other claimants.

#### **Procedure**

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The psychologist was instructed to assess the extent and nature of any psychological problems attributable to the accident (the “psychological injuries”) by the claimant’s solicitor. In order to do this the psychologist conducted a semi-structured interview with the claimant. The claimant also completed three psychometric self-report questionnaires. These questionnaires were originally sent by post to the claimant to be completed and brought to the interview, but later on claimants took the forms away following the interview and returned them by post. In nearly all cases the psychologist conducted a brief interview with a third party, usually a close family member. The psychologist also examined the claimant’s general medical practice and hospital records and any medical and other reports relating to the accident itself. All diagnoses were made using the latest DSM that was available at the time of the assessment.

### **Data**

Included within the present article are the results of three psychometric assessment tools (SCL-90-R, Derogatis, 1977; (BDI, Beck, 1961; IES, Horowitz, Wilner & Alvarez, 1979). In addition to the psychometric data, demographic data regarding the claimants was recorded. This includes their age, gender, and employment status. The present article also explores several variables, which were created based on information sent by the instructing party. Details of the RTA included the following variables: time elapsed between the accident and the assessment; the direction from which the claimant’s vehicle was hit in the collision with the other vehicle; and whether the claimant was the driver or a passenger (front or rear) when the accident occurred.

What makes this article particularly interesting is that the psychologist recorded his own personal interpretations of each claimant against various parts of the clinical interview, which

are pertinent to the assessment of RTA claimants. These were recorded as variables on differing Likert scales. The variables included are as follows: the claimant's level of anxiety as a driver; the claimant's level of anxiety as a passenger; the severity of the claimant's injuries at the time of the accident and also the interview. Also included was: restrictions on everyday activities (recorded on Likert scale of 0-6); the claimant's previous psychiatric history antedating the accident (recorded on a Likert scale of 0-5) and whether there had been any significant life problems since the accident which are not related to the RTA (recorded on Likert scale of 0-4).

### **Analysis**

The present article employs descriptive statistics alongside parametric statistical analyses. Parametric statistics were employed due to research that has evidenced two tailed parametric analyses are in fact robust enough to handle non normally distributed data (Glass, Peckham & Sanders, 1972). On visual inspection of the data, a number of variables were normally distributed and a number of variables were non-normally distributed using the measures of skewness and kurtosis. Consequently, parametric assessments were deemed appropriate on inspection of the homogeneity of variance with the majority of variables meeting this assumption.

Given that parametric assessments can handle non normally distributed data, adjustments can be made within parametric analyses to adjust the statistics produced to account for heteroscedastic data. Therefore, one-way ANOVAs were conducted within the present study and in the situation where the data was heteroscedastic Welch's ANOVA was conducted instead to adjust the F value. Following significant ANOVA analyses post-hoc tests were employed and where data had homogeneity of variance Tukey's HSD post-hoc tests were

employed and where the data was heteroscedastic Games-Howell's post hoc analyses were employed. In addition to the above, independent samples t-tests were undertaken. Pearson Chi Square analyses were employed and correlational analyses were also employed to reveal relationships within the data. In addition, to the statistics described above, measures of effect sizes were also calculated and the statistics reported.

### **Results**

#### **Descriptive Statistics and Demographics**

Displayed in table one are the demographic characteristics for all of the claimants included in the present analysis. In addition to the demographic data, collateral information alongside variables recorded by the psychologist are also displayed in table one. Following evaluation 44.6% ( $n=136$ ) of claimants were diagnosed with having no mental disorder as a result of the RTA, 28.2% ( $n=86$ ) with travel phobia, 8.5% ( $n=26$ ) with depression, 7.9% ( $n=24$ ) with PTSD, 4.6% ( $n=15$ ) with another mental illness, 4.6% ( $n=15$ ) with depression and travel phobia and 1.6% ( $n=5$ ) with PTSD and depression.

[TABLE ONE HERE]

#### **Sex and the psychological effects of RTAs**

An important area to examine in the present article is whether a claimant's sex is an important variable in understanding the psychological effects caused by RTAs. Therefore, the first area of interest was to examine whether there are any sex differences in the distributions of diagnoses. As can be seen in table two the distribution of diagnoses is somewhat evenly distributed for most disorders. However, the diagnostic occurrence for travel phobia is substantially higher for females as opposed to males with 83% of travel phobia diagnoses



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attributed to female claimants. This finding was also present in the comorbidity diagnosis of travel phobia and depression, as 93% of claimants meeting this diagnosis were female.

Furthermore, only 14% ( $n=15$ ) of male claimants who presented for an assessment with the psychologist were diagnosed with travel phobia as opposed 36% ( $n=71$ ) of female claimants who attended an assessment with the psychologist.

[TABLE TWO HERE]

A chi-square test of independence was calculated comparing the frequency of travel phobia in men and women who were assessed by the psychologist. A significant relationship was found between sex and diagnoses of travel phobia,  $X^2(2, N = 305) = 16.37, p < .001$ , thus indicating the female claimants (36%) were significantly more likely to be diagnosed with travel phobia than men (14%) following their involvement in a RTA. In addition, a Chi Square test of independence revealed that a significant relationship was also present between the frequency of diagnoses for depression and travel phobia in males and females  $X^2(2, N = 305) = 5.59, p < .05$ ; thus indicating the female claimants (7%) were more likely to be diagnosed with depression and travel phobia than men (1%). A significant relationship was also found between sex and no diagnosis of mental disorder,  $X^2(2, N = 305) = 11.90, p < .001$ , thus indicating the male claimants (58%) were more likely to receive a diagnosis of no mental disorder than females (37%). Chi square tests of independence were additionally run for diagnoses made for Depression, PTSD, PTSD and Depression and other mental disorders but no significant relationships were found among these diagnoses and the sex of the claimant.

The results described above indicate a relationship between several disorders and the sex of the claimant. Therefore, attention was given to the factors that would be indicative of this.

The raw t-scores for the SCL 90 R were used and independent samples t-tests were conducted

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to determine whether males and females in general responded differently on the SCL 90 R and the BDI and IES. The raw scores of the SCL-90-R were chosen as opposed to the T-scores as the normative data, which the T-scores are calculated upon are not appropriate for RTA claimants.

Detailed in table three are the results of the independent sample t tests examining the psychometric assessment scores for male and female claimants. As can be seen male claimants scored significantly higher on four of the SCL-90-R scales: the obsessive compulsive, interpersonal sensitivity, hostility and paranoia scales. However, no significant differences emerged on the remaining psychometric scales.

[TABLE THREE HERE]

Alongside examining whether males and females differed in their psychometric assessment scores, the present study was interested in examining whether the claimants differed in the scores given to them according to the psychologist's judgement alongside various variables coded from the claim information. Detailed within table three are the results of the independent t-tests for the variables relating to the psychologist's judgement and the variables coded from the collateral data regarding the circumstances of the RTA.

[TABLE FOUR HERE]

As can be seen from table four the findings indicate that female claimants were rated by the psychologist as suffering with significantly higher levels of anxiety for both driving a car and travelling in a car as a passenger. In addition, female claimants were rated by the psychologist as having a more significant history of psychological problems than males and

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were also seen by the psychologist significantly sooner than male claimants following the RTA. The most pertinent finding when considering the analyses conducted in table three and table four is that on all of the psychometric assessment scales male claimants scored higher than females. However, when judged by the psychologist, female claimants were rated as suffering with significantly more anxiety when travelling as either a passenger or a driver of a motor vehicle.

As revealed earlier, the distribution of travel phobia and diagnoses of mental disorder were significantly different among male and female claimants. Therefore, further analyses were undertaken. Independent sample t-tests were conducted examining the differences across both the psychologist's interpretive data and the self-report psychometric data across the claimants' sex just for diagnoses of travel phobia. Upon analysis no significant differences were found in the claimants' self-report data for all three psychometric assessment tools across all of the individual scales. This being said, significant differences were found between male ( $M=3.50$ ,  $SD=1.36$ ) and female ( $M=4.40$ ,  $SD=1.25$ ) claimants diagnosed with travel phobia on their scores given by the psychologist as to his interpretation to their reported level of anxiety when driving  $t(72)=-2.22$ ,  $p < .04$ ,  $d=-0.7$ . The same finding was revealed for the level of anxiety as a passenger for males ( $M=2.00$ ,  $SD=1.84$ ) and females ( $M=3.14$ ,  $SD=1.21$ ) claimants diagnosed with travel phobia  $t(82)=-2.23$ ,  $p < .04$ ,  $d=-0.7$ .

The same analyses were undertaken for claimants who the psychologist determined did not have any mental disorder following the RTA. The results of the independent sample t-tests yielded a total of 11 significant difference in the mean scores obtained on the psychometric assessments; the results of these analyses are displayed in table five. However, only one significant differences emerged in the variables based on the psychologist's judgement/

collateral data; male claimants diagnosed with no mental disorder ( $M=19.40$   $SD=11.59$ ) had a significantly longer period of time between the RTA and the psychologist's evaluation than their female counterparts ( $M=15.72$   $SD=9.55$ )  $t(134)=-2.01, p < .05, d=.03$ .

[TABLE FIVE HERE]

Consequently, the results indicate that even though male and female claimants who were diagnosed with travel phobia did not differ on any self-report measures of psychopathology the psychologist judged that female claimants were suffering with significantly more anxiety as a driver and as a passenger of a motor vehicle. Whereas for those diagnosed with no mental disorder, male claimants scored significantly higher on the majority of self-report measures administered. However, the psychologist did not rate the claimants as significantly different on any of the following variables based on his judgement: level of anxiety as a passenger and a driver, extent of physical injuries, restrictions on every day activities or previous psychiatric history.

### **Disfiguring between the diagnoses made**

A further area to explore is whether from any of the variables recorded by the psychologist and the psychometric assessment scores, whether these variables could be utilised to distinguish between the different diagnoses. Claimants were split according to their diagnosis given and a one-way ANOVA was run across the claimants' psychometric results and then across the interview rating/ collateral data variables. In the present results the Welch test was used to adjust the F value of the ANOVA to correct for inequality of variance. Therefore, where the Levene's test indicated that homogeneity of variance was not present the Welch

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test was used to adjust the F value; this is evidenced in table six and seven using the \* symbol.

[TABLE SIX HERE]

As can be seen in table six the one-way ANOVA evidences highly significant differences between the psychometric assessment results and the seven diagnostic categories given by the psychologist, thus suggesting that differences exist between diagnoses and that discriminating attributes can be analysed. In addition to psychometric assessment scores, variables extracted from the clinical interview and collateral information available to the assessor were analysed in the same way using a further one-way ANOVA. Detailed in table seven are the findings of this ANOVA examining whether any differences are present between the seven diagnostic categories and the variables measuring the psychologist's personal interpretations and the collateral data regarding the RTA.

[TABLE SEVEN HERE]

The results from table six and seven indicate that differences indeed exist between diagnoses due to finding a number of highly significant differences. However, in order to reveal whether there are any significant differences between the individual diagnoses post-hoc tests needed to be conducted. Post hoc tests were conducted and are displayed in table eight and nine; for those variables where homogeneity of variance was present the Turkey's HSD post-hoc test was implemented and, where inequality of variance was present, Games-Howell post hoc tests were conducted. The variables where the Games-Howell test was conducted are indicated using the \* symbol.

[TABLE EIGHT & NINE HERE]

The results of the post-hoc analyses revealed in table nine indicate that no significant differences were found in the psychometric scores between those who were diagnosed with having no mental disorder and those who were given a diagnosis of travel phobia.

Subsequently, this evidences that the claimants included in the present study that were diagnosed with travel phobia and those who were diagnosed as having no mental disorder reported comparable symptomology in the self-report assessments. From the post-hoc analyses, in table nine these two categories of claimants can be distinguished from one another. This can be seen in their scores given by the psychologist for the level of anxiety that they experience either when driving or travelling by car as a passenger. Considering that no differences were prevalent in the self-report, psychometric data evidences that the psychologist made this judgement based on the amount of anxiety that was displayed during the clinical interview regarding driving.

The post-hoc analyses indicate that those who were diagnosed with PTSD as opposed to travel phobia scored significantly higher on: the BDI, the IES Total and IES Intrusion scales, and all nine of the SCL 90 R scales. However, the self-report psychometric scores suggest that the two groups of claimants do not significantly differ on the avoidance scale of the IES. Furthermore, the two categories of claimant's did not significantly differ on any of the variables that were determined by the psychologist's judgment. In particular, the two groups did not significantly differ in the level of anxiety reported to the psychologist regarding travelling by car as a passenger and a driver. Thus, the difference between claimants with travel phobia and those with PTSD appears to be that although they may have comparable levels of travel anxiety, claimants with travel phobia alone do not report a sufficient tally of

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other symptoms to qualify for the PTSD diagnosis (i.e. PTSD claimants are also usually travel phobic but travel phobia is subsumed under PTSD, according to DSM-IV criteria).

In total 8.5% (n=26) of claimants assessed in the present analysis received a diagnosis of depression as a result of the RTA. However, this figure rises to 14.8% (n=45) when comorbidity diagnoses are considered (depression & travel phobia/ or PTSD). Notably, depression was diagnosed in a relatively infrequent amount of claimants examined by the psychologist. The post hoc analyses revealed that those claimants who were diagnosed with depression scored significantly higher on the BDI, five of the SCL-90R scales (HOS, O-C, INS, DEP & GSI). Thus, the claimants diagnosed with depression reported significantly more symptoms of on the two scales directly measuring depression symptomology (DEP & BDI). The HOS scale measures thoughts, feelings, or actions characteristic of the negative affect state of anger; the INS measures feelings of personal inadequacy and inferiority in comparisons with others and self-deprecation, uneasiness, and discomfort during interpersonal interactions; the O-C measures symptomology typical of obsessive compulsive disorder (Derogatis, 1983). Finally, claimants diagnosed with depression scored significantly higher on the GSI. The GSI is suggested be the best single indicator of the current level of the disorder and symptomology that the individual is suffering from (Derogatis, 1983). Therefore, claimants diagnosed with depression indicated significantly higher symptomology relating to depression directly and additional symptoms as described above.

In addition, to the self-report data, the post-hoc analyses found significant differences in those diagnosed with depression and those with no mental disorder in the variables recorded by the psychologist. The psychologist rated those suffering with depression significantly higher in terms of the level of restrictions that their symptomology and physical injuries have

on their everyday life and the severity of the physical injuries at the interview. Notably, this suggests a relationship between receiving more severe physical injuries as a result of the RTA and the development of depression.

In addition to diagnoses made just for depression, diagnoses were also made for depression and travel phobia together. Those who were given a diagnosis of both disorders scored significantly higher on the ratings given by the psychologist as to the claimants' reported levels of anxiety regarding driving and travelling as a passenger, which supports the earlier finding that diagnoses made appear to be heavily based upon the psychologist's rating of the claimant's reported anxiety while travelling by car as a passenger and a driver. In addition, those with the comorbidity diagnosis scored significantly higher on the BDI and the O-C scale of the SCL 90R.

The post hoc analyses displayed in table eight and nine evidence that the discriminating factor between a diagnosis of depression and a diagnosis of PTSD was a significantly lower level of reported anxiety while travelling by car as a passenger and a driver and a significantly lower score on the IES total score. Therefore, in light of the differences between the PTSD claimants and those diagnosed with travel phobia (revealed somewhat earlier), this suggests that the IES was useful in the diagnosis of PTSD. For those claimants who were diagnosed with PTSD and depression co-occurring together, these claimants scored among the highest on all of the psychometric assessment scales.

### **Significant life problems and history of previous psychological problems**

The psychologist rated the claimants on a five point Likert scale (0-4) as to the extent of their life problems since the RTA. Upon analysis, it was found that 213 claimants were rated as



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having no significant life problems (Likert scale=0), 28 were rated as having mild life problems (Likert scale=1), 42 were rated as having mild but significant life problems (Likert scale=2), 19 were rated as having moderately difficult life problems (Likert scale=3) and 2 claimants were rated as having very difficult life problems (Likert scale=4).

Pearson correlations were undertaken to understand the overall relationship between life problems and the variables recorded in the present study. Consequently, table ten demonstrates a number of weak positive correlations and this demonstrates that although the correlation is weak an increase in significant life problems weakly increases the self-report symptomology on 10 scales whilst the time between the RTA and assessment somewhat increases with additional life problems and the level of psychiatric history also weakly increases.

{TABLE TEN HERE}

In regards to the claimants' history of psychological problems the psychologist rated 167 claimants as having no previous mental disorder (Likert scale 0); 58 claimants with slight history of mental disorder (Likert scale 1); 58 claimants with a mild history of mental disorder (Likert scale 2); 20 claimants with a moderate a history of mental disorder (Likert scale 3); and 2 claimants with a severe history of mental disorder (Likert scale 4). Pearson's correlations were undertaken and the results of these analyses are presented in table eleven.

[TABLE ELEVEN HERE]

As can be seen in table eleven, weak positive correlations occurred across all of the psychometric assessments when correlated with the claimants' previous mental health scores.

Consequently, this further demonstrates a relationship between previous mental disorder and greater levels of mental disorder endorsement following an RTA. In addition, previous mental disorder was also correlated with the claimants' levels of anxiety as a driver and a passenger when travelling by car as rated by the psychologist and again the same relationship as described above was also present in the variables based on the psychologist's judgement.

### **Type of RTA and the Psychological Effects**

A further area of interest was to determine whether any of the variables associated with the RTA contributed to the type of psychological distress suffered by the claimants. Therefore, the first area to explore was whether being a passenger or a driver of the motor vehicle had any effect of the psychological distress attested by claimants. Therefore, independent sample t-tests were conducted and it was found that those who were a passenger and those who were a driver significantly differed on two variables. Those claimants who were passengers in the RTA were rated as suffering with significantly more anxiety travelling by car as a passenger ( $M=3.0, SD=1.2$ ) compared to those who were driving in the RTA ( $M=2.1, SD=1.4$ )  $t(296) = 6.1, p < .001, d=0.7$ . The extent of the claimants' physical injuries at the most severe stage was rated as significantly more severe by the psychologist for those claimants who were a passenger in the RTA ( $M=2.6, SD=1.2$ ) as opposed to the claimants who were driving ( $M=2.2, SD=0.9$ )  $t(303) = -2.9, p < .005, d=-0.4$ . In order to assess whether being a passenger or driver had any overall effect on the claimants' diagnoses several chi-square tests were performed producing 7 2x2 contingency tables (one for each diagnosis). The results from the chi square analyses highlighted that there was no relationship between being a passenger/driver in an RTA and the attribution of a diagnosis of: travel phobia  $X^2(1, N = 305) = 0.14, p = .71$ ; depression  $X^2(1, N = 305) = 0.43, P = .51$ ; no mental illness  $X^2(1, N = 305) = 0.49, p = .48$ ; PTSD  $X^2(1, N = 305) = 0.93, p = .34$ ; depression and travel phobia  $X^2(1, N = 305) =$

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0.08,  $P=.78$ ; or another mental illness  $X^2(1, N = 305) = 2.6, p = .11$ . Consequently, in the present sample, a claimant who was a passenger in a RTA reported significantly higher levels of anxiety to the psychologist during the clinical interview; however, whether a claimant was a passenger or driver in the RTA had no direct effect on the outcome of the final diagnosis.

A further area of concern was to examine whether the psychological effects caused by a RTA differ depending on the nature of the accident for example the type of collision. In the present study five different types of collision occurred: no other vehicle involved ( $n=18$ ), car was hit from the rear ( $n=106$ ), car was hit from the offside ( $n=47$ ), car was hit from the near side ( $n=56$ ), car was hit from the front ( $n=56$ ) and the car was shunted into the car in front from behind ( $n=16$ ). In order to assess whether the direction of the collision had any effect on the psychological effects attested by the claimants a one-way ANOVA was undertaken across all of the psychometric scores and the variables recorded by the psychologist. The results of the one way ANOVA revealed one significant difference suggesting that the direction that a claimant was hit resulted in significantly different scores on the interpersonal sensitivity scale of the SCL 90 R  $F(5, 289)=2.28, p < .04$ . A Tukey's post hoc analysis revealed that those who were hit from offside ( $M=1.09, SD=0.89$ ) scored significantly lower than those who were involved in a collision with no other vehicle ( $M=1.59, SD=1.03$ )  $p < .02$ . In addition, those who were hit from the front also scored significantly lower ( $M=1.49, SD=1.00$ ) than those claimants who were involved in an accident with no other vehicles ( $M=1.59, SD=1.03$ )  $p = .032$ .

### Discussion

Despite improved car safety the present study confirms that the psychological effects of road traffic collisions in the UK are still an issue and many claimants assessed by this psychologist

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were suffering with a debilitating and diagnosable mental disorder. There are many key findings that have emerged from this article's exploration but it is argued here that the main contribution of this article is the detailed normative data that is available in the results section; in addition, available on request are more detailed normative data displayed in a differing format that may be of better use to practitioners.

One finding that should firstly be discussed is the distribution of diagnoses, 44% of the claimants sent to this psychologist could not be diagnosed with a mental disorder attributable to the RTA. It is argued here that this is something certainly worthy of discussion as it is suggested that instructing parties would benefit from a screening tool that could avoid sending claimants unnecessarily to medico legal examiners. The reason being that the average time between the collision and the date of the psychological assessment in the present study was 17 months and this is argued to be an unnecessary amount of time for a claimant who has no mental disorder to be within the claims process.

The amount of time between the accident and the evaluation is also worthy of discussion for several further reasons. It was found that significant life events correlated with the scores obtained on the psychometric assessments measuring the participants' level of psychological functioning. This is particularly problematic as this may make determining the cause of the claimant's mental disorder difficult should the claimant had suffered a significant life event between the accident and the evaluation. As a result, it is suggested here that future research should examine this issue to determine whether assessing claimants within a shorter period of time is suitable and possible within this context.

A further key finding that the present article has demonstrated is a complex relationship between sex and diagnoses of travel phobia. It was revealed here, that females in the present study who have been involved in a motor accident were significantly more likely to be diagnosed with travel phobia than male claimants. This finding is consistent with previous research which suggests that 67% of all travel phobia diagnoses made one year after an RTA in the UK were attributed to female victims (Mayou, Bryant & Ehlers, 2001). Having said this, the results in the present study suggest the possibility of a bias; male and female claimants reported similar levels of self-report psychopathology but the psychologist judged female claimants to be suffering with significantly more anxiety than male claimants within the clinical interview. It is, however, not possible to determine whether in fact this was a bias as there are several hypothesised explanations. For example, this could have been due to male claimants exaggerating symptoms in their self-report. However, the choice of psychometric assessments did not include exaggeration scales so it is impossible to investigate this hypothesis further.

A further explanation may be due to the psychometric assessment tools that were used in this study being unsuitable for the detection of travel phobia in RTA victims. Nonetheless, the mere suggestion of an examiner bias warrants further research and changes to be made to minimise such effect should it exist. Biases in the assessment of mental disorder for sex have indeed been evidenced in previous research whereby doctors have been shown to be more likely to diagnose depression in women compared with men even though they scored similarly on standardised measures of depression (e.g. Callahan et al, 1997; Stoppe, Sandholzer, Huppertz, Duwe & Staedt, 1999). Having said this, it is impossible to understand the relationship described here further, therefore, it is imperative that future research explores this issue and the present article offers this finding as an important discussion point.

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The present study was also able to offer some further insight into the psychological effects of RTAs that may be of use to practitioners and researchers alike. It was revealed that in general the circumstances of the collision itself did not play a significant role in the causality of mental disorder. For example, whether a claimant was a passenger or driver did not contribute to the development of a particular diagnosable disorder. However, those who are passengers in a traffic accident were more likely to be rated as suffering with significantly more anxiety regarding travelling as a passenger in a motor vehicle. Furthermore, the direction in which a claimant is hit in an RTA only proved to be significant in higher scores on the interpersonal sensitivity scale of the SCL 90 R for claimants who were involved in an accident where no other car was involved. Thus, this suggests that those claimants may place the blame on their self for the accident which leads to greater feelings of self-doubt and inferiority.

A further finding that is of clinical significance is that those who were diagnosed with depression were significantly more likely to be rated as having more severe physical injuries and greater level of restriction on their everyday activities than those without mental disorder. Furthermore, the psychometric tools employed could be argued to be effective in measuring depression due to a variety of significant differences between those diagnosed with depression and those diagnosed with differing disorders. In regards to diagnoses made for PTSD the IES appeared to be of significant use in discriminating and identifying those claimants with PTSD. Furthermore, many of the SCL 90 R scales also differentiated between those with PTSD and differing diagnoses. However, as previously mentioned diagnoses of travel phobia could not be discriminated using the psychometric assessment scores and relied upon clinical judgment. In sum, the combination of the three psychometric instruments in the

present study were shown to be of significant use in distinguishing between PTSD, Depression and no mental disorder, however, the tools were not useful in identifying those claimants who were diagnosed with travel phobia.

Cartwright & Roach's (2016) research suggests that people in general do not perceive malingering to be serious and thus argue it may be likely to occur more often than practitioners believe. This provides some worrying implications when the findings of the present article are taken into account. From the analysis of the assessment methodology employed here it is unclear whether malingering was being considered; the reason for this being that the psychometric assessment tools employed did not have any measures of validity. Furthermore, both the IES and the BDI were both outdated instruments and both of which are available to access in full online. Therefore, it is suggested here that such assessment tools may not be appropriate within this context. As a result, the present paper offers empirical academic research that can contribute to the development of more detailed guidelines for undertaking psychological assessment in this context.

It is essential to acknowledge that the present article is not claiming to provide a representative argument that is applicable to all RTA medico legal claims in the UK. Rather, this article has provided an insight into one very experienced clinical forensic psychologist's experience assessing RTA claimants. This is a particular limitation of the present study and future research would be encouraged to develop this area of research through the incorporation of additional forensic examiners to gain a better understanding of how medico legal claims of this type are conducted across the UK in general.

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In sum, the present article has contributed to an under studied area of medico legal practice and the findings of this article offer a number of important discussion points for both practitioners and future research to resolve.

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