

ALCOHOL-RELATED PROBLEMS AND FITNESS TO DRIVE

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Abstract — This paper analyses the alcohol consumption patterns in Spanish drivers, the incidence of alcohol-related problems and attempts to ascertain whether, in the end, drivers with alcohol-related problems are considered fit or unfit to drive. In accordance with Spanish and European Union legislation, driving licences cannot be issued or renewed to people suffering from alcohol-related problems. A medical, psychological and eyesight evaluation was performed to test the driving fitness of 8043 drivers attending 25 Medical Driving Test Centres on a national scale. Among other things, information was collected on the patterns of alcohol consumption, the AUDIT and CAGE tests, the incidence of alcohol-related problems (DSM-IV criteria for abuse, dependence and alcohol-induced disorder), as well as an evaluation of their fitness to drive. In all, 60.3% of drivers drink alcohol on a regular basis; 7.3% of drivers scored ≥ 8 points in the AUDIT test, and 2% met criteria for DSM-IV alcohol abuse, dependence or induced disorder. Drivers with alcohol-related problems have been involved in traffic accidents (23.2%) and have infringed driving regulations (18.7%) more frequently ($P < 0.0001$) than those without alcohol-related problems. Of those with alcohol-related problems, 72.2% were considered fit to drive. The study reveals that alcohol consumption is common among drivers, that a significant number of drivers have alcohol-related problems, and that three in four of the latter were considered fit to drive.

INTRODUCTION

Alcohol consumption has been identified as the most important factor in road traffic accidents (European Transport Safety Council, 1995). The relationship between the alcohol level in the blood and the risk of accidents has been known for a long time and it is estimated that driving under the effects of alcohol is responsible for 30–50% of accidents with fatalities, 15–35% of those with light injuries and 10% of those without injury (Council on Scientific Affairs, 1986). Furthermore, it has been estimated that a 1% ‘hard core’ of drink-drivers have 200 times the average risk of being involved in a road traffic accident fatality (Chick, 1995). In this sense, Spain has one of the highest rates of traffic accidents, alcohol consumption and problems derived from its consumption in the European Union (EU). Among Spanish drivers, 62.9% drink alcohol on a regular basis (Alvarez *et al.*, 1995); in 47% of drivers killed in traffic accidents between 1991 and 1998, alcohol was detected in the blood and, in 35% of those where alcohol was detected in the blood, the level exceeded 0.8 g/l. (Del Río and Alvarez, 1999a).

Within the scope of the EU, the relationship between alcohol and driving can be seen from a dual perspective. On the one hand, although there is no common legislation among all members, all have legislated in the sense that it is prohibited to drive while under the effects of alcohol, establishing a maximum permitted level of alcohol in the blood. For some years now, there has been a growing demand to unify these maximum levels (Alvarez and Del Río, 1996). At present, virtually all EU countries have established 0.5 g/l as the maximum permitted level. In Spain, according to the new legislation (Royal Decree 2282/1998, which came into force on 7 May 1999), drivers may not drive if their blood alcohol concentration is >0.5 g/l (or 0.25 mg/l in exhaled air). These limits are 0.3 g/l of blood (0.15 mg/l in exhaled air) for drivers of commercial vehicles and for new drivers (with <2 years experience).

On the other hand, current EU legislation does not permit the issuing or renewal of driving licences for those who do not possess adequate driving ability. Council Directive 91/439/CEE (1991), on driving licences, establishes in Annexe III the minimum standards of physical and mental fitness for driving a power-driven vehicle. Under the heading referring to alcohol, it establishes that ‘driving licences shall not be issued to, or renewed for, applicants or drivers who are dependent on alcohol or unable to refrain from drinking and driving. After a proven period of abstinence and subject to authorized medical opinion and regular medical check-ups, driving licences may be issued to, or renewed for, applicants or drivers who have in the past been dependent on alcohol’. In accordance with this regulation, the different member countries of the EU possess national regulations concerning driving licences. Significant differences between member states exist concerning the implementation of this regulation, and as far as the periodicity and procedures of the medical examinations are concerned [Comisión Internationale des Examens de Conduite Automobile (CIECA), 1999].

Spanish legislation (Royal Decree 772/1997) establishes that driving licences cannot be issued or renewed to drivers who suffer from alcohol abuse, dependence or induced alcohol disorders. A case history of such disorders will not be accepted either, unless there is duly provided evidence of abstinence and rehabilitation (a psychiatrist’s or psychologist’s report is required beforehand). However, this legislation introduces a section dealing with adaptations and restrictions, which establishes the possibility of reducing the duration of the licence where abuse, dependency or induced disorders exist, if a favourable medical–psychological report is received (i.e. for those with a favourable fitness test but an alcohol-related disorder).

In Spain, it is the responsibility of the Home Office (National Traffic Agency) to issue or renew driving licences. In order to renew licences, it is obligatory to apply for a new licence every 10 years until the age of 45 years, then every 5 years from 46 to 70 years, and from 70 years onwards every 2 years. Before obtaining a driving licence for the first time or for its renewal, it is necessary to pass a medical–psychological

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examination. For a driving licence to be issued or renewed, the person has to be examined at a Medical Driving Test Centre by a general practitioner, an ophthalmologist and a psychologist. As a result of the medical–psychological assessment, drivers are classified as: (1) fit; (2) fit, with restrictions (for example, must report for a medical–psychological check-up at regular, more frequent intervals or needs to adapt the vehicle); (3) suspended (in cases where the driver is not granted the report certifying fitness for a specific period of time, for example 1 year); (4) unfit (permission to drive is irrevocably refused for medical, psychological or ophthalmological reasons).

In Spain there are about 2000 Medical Driving Test Centres, where around two million drivers attend a check-up every year. The Medical Driving Test Centres are centres which assess drivers under regulation by Royal Decree 2272/1985 and administrative control by the National Traffic Agency (Dirección General de Tráfico). In accordance with Spanish Legislation (Royal Decree 2272/1985), the team of professionals working in the centres is composed of a general practitioner, an ophthalmologist and a psychologist. At these centres, a medical–psychological evaluation is carried out on those about to obtain a first-time licence and those about to renew their existing one. For Spanish legal reasons, and owing to the confidential nature of the information, there are no records of the results of the medical–psychological tests conducted on drivers and their driving fitness.

The aim of this study is three-fold: (1) to study alcohol consumption patterns; (2) to characterize the frequency with which alcohol-related problems in drivers are detected; and (3) to ascertain whether, in the end, drivers with alcohol-related problems are considered fit or unfit to drive according to the current medical–psychological assessment. This research was undertaken among drivers reporting to the Medical Driving Test Centres to undergo medical, eyesight and psycho-physical testing for the purposes of renewing or obtaining driving licences.

SUBJECTS AND METHODS

Medical Driving Test Centre participants

The study was planned as a multicentre-based study on a national scale. Information collected throughout the study has only been used for scientific purposes and has no administrative and/or legal consequence. The participation of the Centres was voluntary. Twenty-five Medical Driving Test Centres were selected, all of which agreed to participate in the study. A list of the participating Centres and persons can be found in Appendix 1 below.

Recruitment of drivers to be interviewed

All the people who attended the Medical Driving Test Centres in order to obtain (in the case of new drivers), or renew, driving licences were approached and informed about the study, and asked to consent to participation. Participants were told the study was separate from the Clinic assessment.

Routine evaluation of psycho-physical abilities by the Centre

The Centre staff routinely gather information for each applicant relating to sight, hearing, locomotor system, cardiovascular, neurological and renal disease, diabetes mellitus,

mental disorders, alcohol-related problems, and any problems related to other drugs and medicinals. In addition, Spanish legislation (Royal Decree 772/1997) decrees that ‘perceptual motor skills’ are evaluated among all drivers, including at least: (1) speed anticipation; (2) senso-motor co-ordination; (3) multiple-reaction time. At the end of this process, a report is issued stating if the person is: (1) fit; (2) fit, with restrictions; (3) suspended; (4) unfit.

Information collected for the study

The present study collected information relating to: (1) socio-demographic aspects; (2) driving patterns and their self-revealed implications for traffic accidents and commitment of traffic offences (speeding, driving through a red light, improper overtaking, positive breathalyser test, etc.); (3) alcohol consumption patterns; (4) AUDIT test; (5) CAGE; (6) incidence of alcohol-related problems (abuse, dependence, induced disorder; DSM-IV criteria, American Psychiatric Association, 1994); (7) the final result of the Centre’s evaluation of psycho-physical abilities.

The amounts of alcohol intake have been expressed in terms of absolute alcohol consumed per day, in accordance with the alcohol content of Spanish drinks and the volume of intake of each of the different drinks. Drinkers were classified, with regard to drinking level, as low consumption/low risk (females: <14 units/week; males: <21 units/week); moderate consumption/intermediate risk (females: 15–35 units/week; males: 22–50 units/week); high consumption/high risk (females: >35 units/week; males: >50 units/week) (Alvarez *et al.*, 1995).

Field study

Each Centre had to conduct 400 interviews. This included all the drivers who attended the centre until this figure was reached. The sample was designed in order to obtain 8000 valid interviews. The field study was carried out from February to April 1999. Of the 10 000 drivers approached, 1260 refused to participate and 203 began to participate in the study and then withdrew before it ended. Also, 494 cases were discarded, because the information collected contained data that were erroneous, inconsistent or had large sections without information.

Statistical analysis of the data

Analysis of the data was conducted at the Data Processing Centre at Valladolid University. Statistical analysis was undertaken using SAS software version 6.07. $P \leq 0.05$ was considered to be significant.

RESULTS

Table 1 shows alcohol use by Spanish drivers as a function of gender and age. From a total of 8043 drivers, 1509 (18.8%) were under the age of 25 years, 1631 (20.3%) between 25 and 34 years, 1673 (20.8%) between 35 and 44 years, 1454 (18.1%) between 45 and 54 years, 1097 (13.6%) between 55 and 64 years and 679 (8.4%) ≥ 65 years. In the week before the survey, 60.3% of those interviewed had consumed some type of alcoholic beverage (69.5% of males and 41.1% of females; $\chi^2 = 593.9$, 1 df, $P < 0.0001$); 54.3% of those surveyed drink at a low level (60.9% of males and 40.5% of females;

Table 1. Alcohol use by Spanish drivers in the week prior to the survey

Gender and age range (years)	Sample size (n)	Weekly drinkers				Alcohol intake (mean ± SD)
		Drinkers (%)	Drinking level			
			Low (%)	Moderate (%)	High (%)	
Total	8043	60.3	54.3	5.7	0.3	15.97 ± 12.8
Males	5435	69.5	60.9	8.3	0.3	18.00 ± 16.4
<25	909	60.2	57.4	2.3	0.5	14.71 ± 16.7
25–34	960	71.8	65.7	6.0	0.1	14.83 ± 13.3
35–44	1002	74.5	64.2	9.9	0.4	18.69 ± 17.0
45–54	1048	72.3	59.9	11.9	0.5	19.81 ± 17.6
55–64	914	72.2	60.4	11.5	0.3	20.32 ± 16.9
>65	602	62.3	54.8	7.3	0.2	19.44 ± 15.1
Females	2608	41.1	40.5	0.4	0.2	8.83 ± 9.2
<25	600	45.8	45.5	0.3	0.0	7.66 ± 7.1
25–34	671	42.9	42.3	0.5	0.1	8.03 ± 8.2
35–44	671	40.5	39.8	0.4	0.3	9.42 ± 11.1
45–54	406	35.7	35.5	0.0	0.2	9.77 ± 8.8
55–64	183	35.5	34.4	1.1	0.0	10.70 ± 9.5
>65	77	33.8	32.5	0.0	1.3	14.01 ± 13.1

$\chi^2 = 294.2$, 1 df, $P < 0.0001$), 5.7% drink at a moderate level (8.3% of males and 0.4% of females; $\chi^2 = 204.3$, 1 df, $P < 0.0001$) and 0.3% drink at a high level (0.3% of males and 0.2% of females; $\chi^2 = 1.2$, 1 df, $P > 0.05$). Average daily alcohol intake among weekly drinkers (\pm SD) was 15.97 \pm 12.8 g of absolute alcohol (18 \pm 16.4 g in the case of males and 8.83 \pm 9.2 g in the case of females; $F = 3.21$, 3775/1067 df, $P < 0.001$).

Of the 8043 drivers, 589 (7.3%) scored ≥ 8 points on the AUDIT test (9.8% of males and 2.1% of females; $\chi^2 = 156.9$, 1 df, $P < 0.0001$) and 113 (1.4%) scored ≥ 2 points on the CAGE test (1.9% of males and 0.4% of females; $\chi^2 = 26.9$, 1 df, $P < 0.0001$) (Table 2). The lower age ranges were those that were positive with higher frequency in the AUDIT test (Table 2).

Of those interviewed, 2.0% were diagnosed as having alcohol-related problems, categorized according to DSM-IV as follows: 1.6% of those interviewed (2.2% of males and 0.3% of females; $\chi^2 = 37.8$, 1 df, $P < 0.0001$) fulfilled the diagnostic criteria for 'abuse', 0.2% the diagnostic criteria for 'dependence' (0.2% of males and 0.04% of females; $\chi^2 = 3.6$,

1 df, $P > 0.05$) and 0.2% for alcohol-induced disorder (0.3% of males and 0.04% of females; $\chi^2 = 4.5$, 1 df, $P < 0.05$) (Table 2). For 60.9% of those who fulfilled the criteria for alcohol-related problems (abuse, dependence and alcohol-induced disorder), the result of the AUDIT test was positive (≥ 8 points) with an average (\pm SD) score of 9 \pm 4.53 points. The average age of those who fulfilled one of the 'abuse', 'dependence' or 'alcohol-induced disorder' criteria was 45.5 \pm 13.6 years.

Of all the drivers interviewed, the Centre assessed 88.3% as 'fit', 10.3% as 'fit with restrictions', 1.1% as 'suspended' and 0.3% as irrevocably 'unfit' (Table 3). Of those diagnosed as having alcohol-related problems (abuse, dependence and alcohol-induced disorder), in 72.2% the assessment was 'fit', in 16.1% 'fit with restrictions,' in 9.7% 'suspended' and in 1.9% irrevocably 'unfit'. These figures were significantly different ($\chi^2 = 123.7$, 3 df, $P < 0.0001$) from the assessments in people in whom we did not give a study diagnosis of alcohol-related problems. Similarly, if we consider two groups in the final result, one whose result was 'fit' and the other whose result was negative (fit with restrictions, suspended and

Table 2. Prevalence of alcohol-related problems in motor vehicle operators

Gender and age range (years)	n	AUDIT-positive scores (≥ 8) (%)	CAGE-positive scores (≥ 2) (%)	Alcohol-related problems (DSM-IV criteria)		
				Abuse (%)	Dependence (%)	Induced disorder (%)
Total	8043	7.3	1.4	1.6	0.2	0.2
Gender						
Male	5435	9.8	1.9	2.2	0.2	0.3
Female	2608	2.1	0.4	0.3	0.04	0.04
Age range						
<25	1509	11.5	0.7	0.5	0.2	0.1
25–34	1631	8.3	1.1	1.3	0.1	0.2
35–44	1673	6.9	1.8	2.1	0.1	0.1
45–54	1454	5.2	1.5	2.0	0.3	0.2
55–64	1097	6.6	1.9	2.2	0.3	0.4
>65	679	2.6	1.6	1.5	0.0	0.3

unfit), the prevalence of the negative medical–psychological assessment was significantly greater among people diagnosed as having alcohol-related problems than among those who did not have any alcohol-related problems ($\chi^2 = 39.1$, 1 df, $P < 0.0001$). Furthermore, the ‘fit’ cases were more common amongst those diagnosed ‘abuse’ (79.5%) than among those diagnosed as ‘dependence’ (30.8%) or ‘alcohol-induced disorder’ (46.7%) ($\chi^2 = 19.4$, 2 df, $P < 0.0001$, Table 3).

Finally, among the people diagnosed as having alcohol-related problems, 23.2% of these admitted to a traffic accident in the 3 years preceding the survey and 18.7% said they had been fined in the year preceding the survey. These figures are significantly higher than those obtained for those who did not have alcohol-related problems (12.1%, $\chi^2 = 17.2$, 1 df, $P < 0.0001$; 9.3%, $\chi^2 = 15.4$, 1 df, $P < 0.0001$, respectively) (Table 3).

Regarding AUDIT (scores of ≥ 8) and CAGE (scores of ≥ 2) positive test cases, figures for traffic accident involvement (21.4 and 22.1%, respectively) and being fined (15.8 and 16.8%, respectively) were also significantly higher than those AUDIT negative cases (11.6%, $\chi^2 = 47.9$, 1 df, $P < 0.001$; 9.0%; $\chi^2 = 29.2$, 1 df, $P < 0.0001$, respectively) and CAGE negative cases (12.2%, $\chi^2 = 10.1$, 1 df, $P < 0.001$ and 9.4%; $\chi^2 = 7.1$, 1 df, $P < 0.008$, respectively).

DISCUSSION

The present study demonstrated that 60.3% of Spanish drivers are weekly drinkers, with an average daily alcohol consumption of 16 g. On the AUDIT, 7.3% scored ≥ 8 points and 2% of those interviewed were diagnosed as having alcohol-related problems (abuse or dependence or disorders induced by alcohol). Of those diagnosed as having alcohol-related problems, the result of the medical–psychological assessment was 1.9% ‘unfit’, 16.1% ‘fit with restrictions’ and 1.2% suspended, whereas in the majority of these, the result of the assessment was ‘fit’ (72.2%). Furthermore, these drivers have had more accidents and have committed more traffic offences than those that did not have alcohol-related problems.

The results obtained in respect of the frequency of consumption of alcoholic beverages from this study do not differ from those obtained in previous studies of Spanish drivers.

Among the general public, data from the 1997 National Health Survey (Ministerio de Sanidad y Consumo, 1999) show that 53.2% of the population are weekly drinkers and that the mean daily alcohol consumption among these drinkers is 33 g. According to data from the SARTRE 2 (1998) report, 11% of Spanish drivers drink more than 5 units of alcohol per day. In our previous study of a sample of drivers examined in Medical Driving Test Centres, 56.7% were regular drinkers with a mean alcohol intake of 37.4 g/day (Alvarez and Del Rio, 1993) and in another study carried out in Spain on the general driver public, 62.9% were regular drinkers with a mean daily alcohol consumption of 46.9 g (Alvarez *et al.*, 1995). However, in the present study we observed a lower prevalence of high level drinkers and of mean daily consumption than in studies previously carried out among Spanish drivers. This may be because the evaluation for alcohol consumption was carried out within the environment of the Centre’s medical–psychological assessment of fitness to drive and therefore fear of obtaining a negative report may have led to a tendency on the part of the interviewee to reduce self-reported alcohol consumption. It is unlikely to be due to the small differences in the age structure of the samples of drivers in the different studies.

The screening of people with disorders or problems related to alcohol can be carried out using various types of instruments (Saunders *et al.*, 1993). In this study, we have used the AUDIT test (Alcohol Use Disorders Identification Test) and its clinical report, the CAGE test, a diagnostic interview in which any toxicological background is explored, as well as consumption patterns, psycho-pathological disturbances and DSM-IV (American Psychiatric Association, 1994) criteria, physical investigation and laboratory tests. The cut-off point in the AUDIT test in our study coincides with the findings of previous studies which have been validated internationally (World Health Organization, 1992; Bohn *et al.*, 1995) as well as nationally (Rubio *et al.*, 1998; Contel *et al.*, 1999). A 7.3% of drivers were positive in the AUDIT test (≥ 8 points).

Of those surveyed, 1.4% obtained ≥ 2 points in the CAGE test, a score lower than that obtained in previous studies conducted on the general public (Alvarez and Del Río, 1994; Del Río and Alvarez, 1999b).

Furthermore 2% of drivers were diagnosed as having problems relating to alcohol, most of these falling into the ‘abuse’ category (82%). In this sense, one of the questions raised relates to the validation and utility of the DSM-IV

Table 3. Alcohol-related problems and fitness to drive

Category	All sample (<i>n</i> = 8043)	Alcohol-related problems					No alcohol-related problems (<i>n</i> = 7888)
		Total (<i>n</i> = 155)	Abuse (<i>n</i> = 127)	Dependence (<i>n</i> = 13)	Induced disorder (<i>n</i> = 15)		
Fit	88.3	72.2	79.5	30.8	46.7	88.6	
Unfit	0.3	1.9	0.0	15.4	6.7	0.2	
Fit, with restrictions	10.3	16.1	16.5	15.4	13.3	10.2	
Suspended	1.1	9.7	3.9	38.5	33.3	1.0	
Accident involvement ^a	12.4	23.2	25.2	15.4	20.0	12.1	
Fined ^b	9.5	18.7	19.7	30.8	33.3	9.3	

All values are percentages. Differences between groups which are statistically significant are shown in text.

^aThe drivers had been involved in some traffic accident in the past 3 years.

^bThe drivers had been fined in the year preceding the survey.

'alcohol abuse' category. Numerous studies have indicated difficulties in the abuse category, suggesting that some type of change is needed (Hasin and Paykin, 1999; Hasin *et al.*, 1999). No population studies at a national level are available on the frequency of alcohol-related problems among Spaniards. If there was under-reporting of alcohol consumption in this sample, a possibility mentioned above, then under-reporting may also have occurred in the screening and diagnostic procedure.

This study demonstrates how drivers with alcohol-related problems more frequently have traffic accidents and are fined more frequently than those who do not have alcohol-related problems. Different studies show that there is a greater incidence of alcoholism among drivers previously arrested for driving offences, and many of the deaths caused in traffic accidents are related to chronic alcohol misuse (Sonderstrom *et al.*, 1992; Brewer *et al.*, 1994).

Effects of alcohol clearly make people more vulnerable to accidents through reduction of reaction times and co-ordination. Waller and Turkel (1966) found that alcoholics tended to have a much greater number of fatal traffic accidents, compared to social drinkers. Alcoholism was found to be frequent in people with antisocial personality disorders and alcoholics tended to display antisocial behaviour. In a review of the relationship between personality and traffic accidents, Beirness (1993) found evidence to indicate that alcohol interacts with existing personality factors, such as hostility and aggression, allowing them to become more expressive, and the vulnerability of alcoholic patients to accidents may be due to the expression of antisocial personality as well as the depressive effects of alcohol on the nervous system. Furthermore, a significant number of accidents is related to psychiatric disturbances, but it is not clear whether there is a direct relationship between the seriousness of the alcoholic illness and functional driving incapacity (Waller, 1965; Metzner *et al.*, 1993; McDonald and Davey, 1996).

However, the problem arises when trying to make an evaluation of the fitness of such people to drive. Seven out of ten drivers we diagnosed as having alcohol-related problems were evaluated 'fit' by the Medical Driving Test Centre. In part, this may reflect a reticence to tell the truth for fear of a negative report on their fitness to drive, and partly to the fact that the consumption of alcohol is a social and cultural custom in Spain and many Spaniards do not identify alcohol-related problems as such. There may also be reticence on the part of health professionals to intervene in this area (which has been called the 'user mentality').

Spain is the EU country that obliges its drivers to carry out the greatest number of assessments during the period that the driving licence is in force. In the majority of EU countries, medical-psychological evaluations are not part of the licence renewal process, and such a process involves only a small percentage of drivers (CIECA, 1999). We believe the type of assessment centres which exist in Spain could be useful; however, it is questionable whether these assessment centres carry out their functions efficiently.

The fact that 70% of those having alcohol-related problems were considered 'fit' to drive (while the legislation says alcohol-dependent persons are 'unfit') brings into question the functioning of these centres and legislation observance. It should be recognized that there is no clear explanation of this surprising fact. One possible explanation for the problem is

that tests evaluating perceptual-motor aptitude tend to be normal among these drivers, and, as a result, there is a dilemma whether an illness (alcoholism) without any alteration to perceptual-motor aptitude is enough to deprive the driver of a driving licence. In addition, some professionals working in these centres question whether there is sufficient scientific evidence that individuals with alcohol problems are unfit to drive. This is one of the many cases in which the law is perfect but its implementation is deficient.

Neither the EU legislation (Council Directive, 1991) nor the specific Spanish legislation (Royal Decree 772/1997) allow the issuing or renewal of driving licences when the driver suffers from certain chronic illnesses, one of which is being dependent on alcohol or 'unable to refrain from drinking and driving'. However, the problem is that there is no real validation of tests or standardized criteria to identify and demonstrate the competence of drivers suffering from alcohol dependence. This would require standardizing and validating a group of tests in the same way as used in other types of situation, for example in the group of older drivers (Janke and Eberhard, 1998). The tests should be designed and selected without it being forgotten that some drivers have a tendency to under-report alcohol consumption, or also to lie for fear of not obtaining the licence. Information provided by the ongoing EU projects for DG TREND (Directorate-General for Energy and Transport) within the fourth framework programme CERTIFIED (Conception and Evaluation of Roadside Testing Instruments to Formalise Impairment Evidence in Drivers) and the fifth framework programme IMMORTAL (Impaired Motorists, Methods of Roadside Testing and Assessment for Licensing), will be very useful in establishing the most appropriate instruments for an evaluation of fitness to drive.

Perhaps drivers with alcohol-related problems should be remitted to care services for a proper diagnosis and intervention. This lies outside the area of the Medical Driving Test Centres in Spain and that of the licensing agencies elsewhere. There is interest in the rehabilitation of drink-driver offenders (Openshaw, 1999) and criteria for regranting of driving licences to these individuals have been described (Wolf-Rudiger, 1996). The rehabilitation of drivers with alcohol-related problems should aim to change the practice of drinking and driving (Openshaw, 1999).

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APPENDIX 1. THE MULTI-CENTRE STUDY GROUP ON ALCOHOL-RELATED PROBLEMS AMONG DRIVERS

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