Psychopathology and traffic violations in subjects who have lost their driving license

S. Valero [a,b,*], R. Bosch [a,b], M. Corominas [a,b], A. Giannoni [a], V. Barrau [a],
J.A. Ramos-Quiroga [a,b,c], M. Casas [a,b,c]

[a]*Department of Psychiatry, Hospital Universitari Vall d'Hebron, Universitat Autònoma de Barcelona, Barcelona, Catalonia, Spain*
[b]*Biomedical Network Research Center on Mental Health (CIBERSAM), Madrid, Spain*
[c]*Department of Psychiatry and Legal Medicine, Universitat Autònoma de Barcelona, Barcelona, Catalonia, Spain*

Abstract

Background: The persistence of risky behaviors while driving and traffic accidents despite campaigns to increase awareness suggest that there may be underlying causes that maintain proneness to traffic violations. The aim of the current study was to assess: a) the prevalence of psychopathology in a sample of people who have lost their driving license due to former traffic violations and b) the discriminatory capacity of each psychopathological disorder to differentiate among people with high and low proneness to perform risky behaviors while driving.
Methods: 383 participants in a course to recover their driving license after its loss due to previous traffic violations were included. The International Neuropsychiatric Interview (M.I.N.I.) according to DSM-IV was used to assess psychopathology.
Results: Between 67% and 76.2% of the participants had been affected by a lifetime psychopathological disorder until the moment of assessment. The most prevalent diagnoses were substance abuse including alcohol (52.5–62.7%), ADHD (19.7–28.5%), depression (7.9–14.4%) and anxiety (3.6–12.4%). Substance abuse and ADHD also showed the strongest set of associations with specific risk behaviors, but ADHD emerged as the most discriminant disorder to distinguish between those people at high and low risk of while driving.
Conclusions: The results of the current study suggest that addressing psychopathology explicitly to prevent risky behaviors and recidivism while driving would provide benefits in this area.
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1. Introduction

Driving is a common and routine activity and thus, the capacity for safe driving is taken for granted. Nevertheless, driving is a complex task that uses a great amount of our mental abilities over time. Although traffic accidents have many causes, the fact that human variables are not only important but the most relevant in car accidents is currently not an object of debate. In fact, risky driving behaviors are found to be one of the major causes of traffic accidents [1,2] and this risk remains quite high despite road safety policies and campaigns to increase drivers' awareness [3].

The effect of drugs on traffic accidents have been extensively studied, and there is clear evidence that substance abuse interferes with the sensory-motor and cognitive abilities that are required for safe driving [4]. Driving under the effects of cannabis is associated to the risk of car accidents as reported in a large review including articles with different methodological approaches [6]. Data from a large case–control study that assesses population from six European countries showed that the risk of being severely injured in car accidents is associated with driving under the effects of high concentrations of alcohol [7]. The effects of alcohol and marihuana have also been assessed using a driving simulator paradigm [5]. Driving under the effects of cocaine has also consequences [8]. Besides this, some authors have also addressed the involvement of psychiatric disorders other than drug abuse in car accidents and traffic violations. In this regard, based on a large data base, it has been revealed that substance abusers convicted for having been found driving while intoxicated are likely to

* Corresponding author at: Psychiatry Department, Vall d'Hebron University Hospital, Passeig de la Vall d'Hebron, 119-129, 08035 Barcelona, Spain. Tel.: +34 93 489 42 94, +34 93 489 42 95; fax: +34 93 489 45 87.

E-mail address: svalero@vhebron.net (S. Valero).

have a concomitant psychiatric disorder such as major depressive disorder, anxiety or antisocial personality disorder [9]. In a study carried out through a telephonic interview, Faller et al. reported a prevalence of psychiatric disorders of about 40% in drivers with recent alcohol or drug use, but only a prevalence of 12.9% among the non-substance using drivers; depression, mania, hypomania, post-traumatic stress disorder and antisocial personality were found to be among the most prevalent disorders [10].

One of the psychiatric conditions that has been most extensively studied and has been found to be consistently associated with traffic accidents in the last few years is attention deficit hyperactivity disorder (ADHD). ADHD has its onset in childhood and it is characterized by symptoms of inattention, impulsivity and hyperactivity that often persist throughout the life span [11]. Barkley et al. in 1993 were among the first authors to publish an association between ADHD and road car accidents, finding that people with ADHD had almost four times more risk of car accidents than non-ADHD people [12]. After this information was published, later studies and review articles also pointed out that adolescents and adults with ADHD have higher rates of collision, citations (especially speeding), loss of licenses and other driving incidents compared to drivers without ADHD [13,14], with relative risk of traffic violation in the general population and across meta-analyses, ranging from 1.2 to 1.9 [15,16]. Vaa included both naturalistic and simulator based studies and addressed a large number of issues relative to the risk of having car accidents, such as, the control for exposure or the medical treatment for ADHD that may undermine the validity of the different reports (Vaa et al., 2014). Comorbidities associated with ADHD also contribute to explain the risk for car accidents in this population. In this regard, Richards et al. using self-reported measures of driving and anger, found that participants with ADHD reported more driving-related anger and aggressive responses while driving than their peers without ADHD [17]. In turn, a meta-analysis by Vaa in 2014 informed about the role of childhood conduct disorders and oppositional defiant disorder as comorbidities associated with ADHD in the risk of traffic violations, and suggested that the risk of ADHD-drivers with comorbid ODD, CD and/or other conduct problems is higher than that of ADHD-drivers without these comorbidities [16]. All these studies were focusing on drivers having the diagnosis of ADHD and comparing them with those driving without ADHD, having had or not previous accidents or problems related with their risky driving behavior.

Anxiety and depression are among the most common psychiatric disorders involved in traffic accidents. Studies including samples from the general population that have answered self-reported questionnaires pointed out that drivers with high levels of anxiety are more prone to engage in risky behaviors and dangerous driving [18,19]. Nevertheless, evidence of the association between anxiety and car accidents is inconsistent [20–22]. On another hand, despite the functional impairment of cognitive abilities that characterizes depression, few studies have assessed the association between car accidents and mood disorders. In a large naturalistic study comparing people with self-reported ADHD and depressive disorders, ADHD but not depression was associated to an increased risk for multiple traffic violation and collisions. In contrast, depression but not ADHD appeared to be related with increased risk for self-reported injury after collisions [23]. Additionally, in the real life, major depressive disorders have been also associated with fatal car accidents [24]. On the other hand, using a driving simulator paradigm in a clinical hospital, non-medicated patients with major depressive disorder exhibited significantly slower steering reaction time and experienced more car crashes when compared with a control sample [25]. It is important to notice that medication can be also an important factor accounting for the diverse results found in this field.

A key point when trying to prevent traffic violations and car accidents is recidivism. Educational programs and traffic campaigns are usually aimed to explain the consequences of driving violations and to change attitudes toward driving, and have been shown to have some positive impact in reducing recidivism among driving offenders [26]. Nevertheless, still there is a high rate of recidivism among those who violate traffic laws, such as driving under the effects of drugs abuse or speeding [27–29]. Given the reported evidence of the involvement of psychiatric disorders in driving violations [10,26], it is of interest to further explore their role in the enduring behaviors that lead to driving violations and car accidents.

Most of the studies in this area have serious methodological shortcomings that undermine their validity. For instance, most studies assessing the relationship between psychiatric disorders and traffic accidents rely on self-selected samples recruited specifically to examine the impact of a single psychopathology (i.e., ADHD), and the driving behavior or drug addiction among those who had a driving accident [15,30]. Other studies have assessed psychopathology through a psychological interview, just asking the participants if they currently met the diagnosis for different psychiatric disorders presented in a list [23] or based on the information from a database [30]. Other methodological issues, such as the lack of control of exposure to driving, as reported in the meta-analysis of Vaa in 2014 [16], contribute to undermine the validity of the results. The current study aimed to solve some of the biases, related to the diagnosis and control of comorbidities, and some methodological issues such as the control of exposure to driving. This study included, for the first time, a broad sample of people from the general population who had already lost their driving license due to previous risky behaviors on the road and driving violations, who currently were in the process of recovering their driving license, and who were explored for the full range of psychopathological disorders through a personal interview, based on the DSM-IV criteria. The aim was to assess: a) the prevalence of any psychopathological disorders among the study population, and b) the discriminant