



Editorial

Letter from the Editors



The *Journal of Safety Research* is pleased to publish in this special issue the proceedings of several papers presented at the 4th International Conference on Road Safety and Simulation convened at Roma Tre University in Rome, Italy, October 2013. This conference serves as an interdisciplinary forum for the exchange of ideas, methodologies, research, and applications aimed at improving road safety globally.

Conference proceedings provide the opportunity for research in its formative stages to be shared, allowing our readers to gain early insights in the type of work currently being conducted and for the researchers to receive valuable feedback to help inform ongoing activities. This conference in particular offers an array of research topics not often covered by this journal from researchers practicing in over 11 countries. As is common with publishing conference proceedings, the papers published in this issue did not go through the normal *JSR* review process. Each paper included in this issue did meet the Road Safety and Simulation conference review requirements. They reflect varying degrees of scientific rigor, methodological design, and groundbreaking application.

The proceedings published in this special issue of *JSR* draw from the following road safety research sectors represented at the conference: driving simulation, crash causality, naturalistic driving, and new research methods.

It is our hope that the publication of these important proceedings will stimulate vigorous dialogue, rigorous research, and continuing innovative initiatives and applications, leading, ultimately, to fewer traffic fatalities, injuries, and crashes.

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Acute effects of alcohol on inhibitory control and simulated driving in DUI offenders



Nicholas Van Dyke, Mark T. Fillmore*

University of Kentucky, Department of Psychology, 171 Funkhouser Dr., Lexington, KY 40506-0044, USA

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ABSTRACT

Introduction: The public health costs associated with alcohol-related traffic accidents have prompted considerable research aimed at identifying characteristics of individuals who drive under the influence (DUI) in order to improve treatment and prevention strategies. Survey studies consistently show that DUI offenders self-report higher levels of impulsivity compared to their nonoffending counterparts. However, little is known about how individuals with a DUI history respond under alcohol. Inhibitory control is a behavioral component of impulsivity thought to underlie risky drinking and driving behaviors. **Method:** The present study examined the degree to which DUI drivers display deficits of inhibitory control in response to alcohol and the degree to which alcohol impaired their simulated driving performance. It was hypothesized that DUI offenders would display an increased sensitivity to the acute impairing effects of alcohol on simulated driving performance. Young adult drivers with a history of DUI and a demographically-comparable group of drivers with no history of DUI (controls) were tested following a 0.65 g/kg dose of alcohol and a placebo. Inhibitory control was measured by using a cued go/no-go task. Drivers then completed a driving simulation task that yielded multiple indicators of driving performance, such as within-lane deviation, steering rate, centerline crossings and road edge excursions, and drive speed. **Results:** Results showed that although DUI offenders self-reported greater levels of impulsivity than did controls, no group differences were observed in the degree to which alcohol impaired inhibitory control and driving performance. The findings point to the need to identify other aspects of behavioral dysfunction underlying the self-reported impulsivity among DUI offenders, and to better understand the specific driving situations that might pose greater risk to DUI offenders. **Practical applications:** The systematic study of candidate cognitive deficits in DUI offenders will provide important information on their role in risky driving behavior and decisions to drink and drive. Such information is critical for guiding new interventions for DUI offenders that will move treatment beyond general addiction counseling.

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1. Introduction

Alcohol-related traffic fatalities and injury continue to be a major public health problem. The National Transportation Safety Board (NTSB, 2013) reported that in 2011, approximately 173,000 traffic injuries in the United States were alcohol-related, and alcohol was a factor in one-third of all traffic fatalities. The public health costs associated with alcohol-related traffic accidents have prompted considerable research aimed at identifying characteristics of individuals who drive under the influence (DUI) in efforts to improve treatment and prevention strategies. The vast majority of this research has relied on analyses of driving records, surveys, and personality inventories. Driving records show that DUI offenders commit more moving violations, such as speeding, and are involved in more accidents compared with the general population (Bishop, 2011; Donovan, Marlatt, & Salzberg,

1983; McMillen, Pang, Wells-Parker, & Anderson, 1992). Survey studies of DUI drivers have used self-report inventories to assess levels of impulsivity among DUI offenders (Chalmers, Olenick, & Stein, 1993; Hubicka, Kallmen, Hiltunen, & Bergman, 2010; Ryb, Dischinger, Kufera, & Read, 2006). Broadly defined, impulsivity refers to a pattern of uncontrolled behavior in which the individual is unable to delay gratification and acts without forethought or consideration of potential consequences. Such studies have reliably observed greater self-reported impulsivity among DUI offenders compared with demographically-matched control cases (e.g., Chalmers et al., 1993).

Together, these lines of evidence suggest that DUI drivers can be characterized by patterns of impulsive action and that such impulsivity could contribute to their poor driving behavior. Indeed, the idea that impulsivity could impair driving performance was raised decades ago by Wallgren and Barry (1970) who theorized that alcohol can disrupt driving performance via two distinct behavioral effects of the drug: impaired motor coordination and increased disinhibition. Motor impairing effects of alcohol can reduce driver precision, resulting in greater

* Corresponding author. Tel.: +1 859 257 4728; fax: +1 859 323 1979.
E-mail address: fillmore@uky.edu (M.T. Fillmore).

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