



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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The use of meta-analysis or research synthesis to combine driving simulation or naturalistic study results on driver distraction[☆]

Jeff K. Caird^{a,b,*}, Katherine A. Johnston^a, Chelsea R. Willness^c, Mark Asbridge^d

^a Department of Psychology, University of Calgary, Canada

^b Department of Community Health Sciences, University of Calgary, Canada

^c Edwards School of Business, University of Saskatchewan, Canada

^d Department of Community Health and Epidemiology, Dalhousie University, Canada

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ABSTRACT

Three important and inter-related topics are addressed in this paper. First, the importance of meta-analysis and research synthesis methods to combine studies on traffic safety, in general, and on driver distraction, in particular, is briefly reviewed. Second, naturalistic, epidemiologic, and driving simulation studies on driver distraction are used to illustrate convergent and divergent results that have accumulated thus far in this domain of research. In particular, mobile phone conversation, passenger presence, and text messaging naturalistic studies use meta-analyses and research syntheses to illustrate important patterns of results that are in need of more in-depth study. Third, a number of driver distraction study limitations such as poorly defined dependent variables, lack of methodological detail, and omission of statistical information prevent the integration of many studies into meta-analyses. In addition, the overall quality of road safety studies suffers from these same limitations and suggestions for improvement are made to guide researchers and reviewers. *Practical Applications.* The use of research synthesis and meta-analysis provide comprehensive estimates of the impact of distractions on driving performance, which can be used to guide public policy and future research.

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1. Introduction

This paper examines driver distraction through the lens of meta-analysis and research synthesis, which are analytic methods that quantitatively and qualitatively combine studies to understand the pattern of findings within a particular research area. Ordinarily, observed trends and patterns across studies are accomplished by a review of the literature, but this approach tends to emphasize certain study results and conclusions over others. For instance, a common concern is that the choice of studies to include or exclude is the purview of the reviewer, and the selection process is neither systematic nor unbiased. Literature reviews frequently lack scientific rigor and tend to focus on study rationale and subjective results interpretation.

Meta-analysis statistically combines the results of a complete search of published and unpublished studies so that a “true score” can be derived for relationships among variables of interest, or a “true

effect size” can be estimated. Within psychology, since the early 1980s, the use of meta-analytic methods has continued to increase (e.g., Rosenthal & DiMatteo, 2001) and a number of excellent how-to guides are available (e.g., Lipsey & Wilson, 2001). Within medicine, the use of meta-analysis and research synthesis is fundamental to evidence-based medicine and a number of introductory guides have been produced (e.g., Borenstein, Hedges, Higgins, & Rothstein, 2009; Greenhaigh, 1997). Cochrane Reviews, which often include meta-analytic and synthesis methods, form the backbone of evidence-based examination of important treatment questions in medicine (Higgins & Green, 2008). These reports are organized through the Cochrane Collaboration, an international organization that aids in preparing, disseminating, and maintaining systematic reviews in medicine involving more than 15,000 contributors in over 100 countries. In road safety, collaborations to make available state-of-the-art knowledge on road safety interventions and driver conditions might be advanced through a similar approach and should borrow from the numerous resources available in medicine.

As a step toward completing meta-analysis, research synthesis attempts to thoroughly integrate all studies of a particular type for the purposes of creating generalizations from those results. Unlike meta-analysis, studies that do not necessarily contain effect sizes or odds ratios may be analyzed using a research synthesis approach. The steps

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* Corresponding author at: Department of Psychology, University of Calgary, 2500 University Dr. N.W., Calgary, Alberta T2N 1N4, Canada. Tel.: +1 403 220 8441 (office).

E-mail address: jkcaird@ucalgary.ca (J.K. Caird).

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