Aug 16th, 12:00 AM

An Analysis of Driving Performance Measures Used to Assess the Effects of Medications on Drowsiness, Sedation and Driving Impairment

Ginger S. Watson
University of Iowa, Iowa City

John M. Weiler
University of Iowa, Iowa City

George G. Woodworth
University of Iowa, Iowa City

Julie C. Qidwai
University of Iowa, Iowa City

Susan A. Quinn
University of Iowa, Iowa City

Follow this and additional works at: http://ir.uiowa.edu/drivingassessment


This Event is brought to you for free and open access by the Public Policy Center at Iowa Research Online. It has been accepted for inclusion in Driving Assessment Conference by an authorized administrator of Iowa Research Online. For more information, please contact lib-ir@uiowa.edu.
AN ANALYSIS OF DRIVING PERFORMANCE MEASURES USED TO ASSESS THE EFFECTS OF MEDICATIONS ON DROWSINESS, SEDATION, AND DRIVING IMPAIRMENT

Ginger S. Watson, Ph.D.
Director, Human Factors Laboratory & Senior Research Scientist
National Advanced Driving Simulator
E-mail: g-watson@uiowa.edu

John M. Weiler, M.D.
Professor, Department of Internal Medicine
College of Medicine
E-mail: john-weiler@uiowa.edu

George G. Woodworth, Ph.D.
Professor, Statistics & Actuarial Science
College of Liberal Arts
E-mail: george-woodworth@uiowa.edu

Julie C. Qidwai, B.S.
Staff Research Assistant
National Advanced Driving Simulator
E-mail: julieq@nads-sc.uiowa.edu

Susan A. Quinn, R.N., B.S.N., CCRC
Clinical Research Coordinator
Department of Internal Medicine
E-mail: susan-quinn@uiowa.edu

The University of Iowa
Iowa City, IA USA

Summary: The objective of this paper was to discuss driving scenarios and associated driving performance measures on their ability to demonstrate drowsiness, sedation, and driving impairment. The basis of this paper was a study that utilized a randomized, double-blind, double-dummy, four-treatment, four-period crossover trial in the Iowa Driving Simulator (IDS). Participants were 40 licensed drivers with seasonal allergic rhinitis who were 25 to 44 years of age. Treatments were Fexofenadine, diphenhydramine, alcohol, or placebo, given at weekly intervals before participants drove for 1 hour in the IDS. Measures examined included coherence, amplitude, phase angle, RMS error, following distance and behavior, lane keeping, response to unexpected vehicle intrusion and drowsiness.

Study results show that sedating antihistamines impair driving performance as seriously as alcohol. Statistically significant but small correlations were found between subjective drowsiness and minimum following distance, steering instability, and left-lane excursions but no correlation was greater than 0.21. Drowsiness was a weak predictor of driving impairment. This paper discusses these and other finding with an emphasis on the adequacy of driving scenarios and the sensitivity of driving performance measures analyzed.