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ROBSON FORENSIC PRESENTS

# Human Factors

THE SCIENCE OF PERCEPTION  
AND INTERACTION

Robson Forensic, Inc. Human Factors experts provide scientific answers to questions involving perception, warnings, instructions and conspicuousness. We evaluate if the conditions that resulted in cases or claims were open and obvious as presented to the claimant. We can explain basic capabilities and limitations in a person's ability to see or differentiate between objects, as well as how predictable human expectations about an environment or product were a factor in the happening at issue.

Call us at (800) 813-6736 or visit our website at [www.robsonforensic.com](http://www.robsonforensic.com) for further details or to speak directly with a member of the Robson Forensic Human Factors Group in your area.

## Robson Forensic

Engineers, Architects, Scientists & Fire Investigators

# Human Factors

THE SCIENCE OF PERCEPTION  
AND INTERACTION

## Issues In Human Factors Investigation

- ◆ Did the size, shape, color, heaviness, background, environmental conditions, lighting levels, loudness, etc., rise to levels of reasonable conspicuity?
- ◆ Were common expectations, mental models, behaviors, and attitudes a factor?
- ◆ Were there factors influencing attention including stress, inattention blindness, tunnel vision?
- ◆ Physical and mental capabilities that affect perception and reasoning: memory capacity, knowledge and skill level, experience, familiarity, tendencies, learning and training style.

## Cases Where Human Factors Analysis May Apply

- ◆ Vehicle Crashes: Reaction time, depth perception, adequacy of warnings, road hazards, lighting & visibility.
- ◆ Slips, Trips & Falls: Perception of walking surface variations and hazards, appropriateness of railings and warnings.
- ◆ Construction: Warnings & instructions, obstructed views, design of controls and displays, safe equipment compliance, jobsite safety culture.
- ◆ Sports & Recreation: Speed and safety perception, control, warnings, warranties, coaching and instruction.
- ◆ Products Liability: Adequate instructions and warnings, position of controls, product design, traps.

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In this issue...

[Issues in Human Factors Cases](#)

[Case Examples](#)

[Featured Experts' Bios](#)

## Case Examples

### **Desk Hutch Collapse**

The purchaser of a desk-hutch furniture unit was injured when it suddenly collapsed on the day of its installation. The store delivered and assembled the unit improperly. Supporting brackets necessary for the structural integrity of the unit were left unattached. The first time the new owner opened the hutch doors, the unit fell upon her causing injuries. The manufacturer had placed a warning, requiring that the subject brackets be installed to prevent tipping. He contended that the warning was open and obvious and should have been seen and heeded by the delivery person. Our products engineer determined that the warning was inadequate,

due to location, and that a second warning, in plain view, could have been easily added, to properly warn both the assembler and the owner of the bracket's importance.

### **Fall in Department Store**

A woman in a department store turned and tripped over the low wheels of a roll cart that had been partially buried in a display of hung clothing. An employee had emptied the roll cart and pushed it against the wall rack among the clothing. The store argued the roll cart was open and obvious and should have been seen by the plaintiff in time to avoid it. Our Human Factor's expert showed that the cart was not open and obvious and not likely to be detected by an unsuspecting shopper.

He cited studies of human perception thresholds of low objects and the effect of distracting surroundings such as the display of colorful clothing.

### **Roadway Collision**

While reconfiguring a 2-lane highway, the contractor failed to post reduced speed signs and sharp-turn signage to alert drivers to significantly changed roadway conditions caused by the construction. The plaintiff in this matter was a teenager driving to work. He was well acquainted with the road and not expecting to encounter a newly constructed sharp turn where a gentle curve had been. His driving task was further complicated by the contractor's failure to post new signage as to the

change in roadway configuration, alter the speed limit, completely remove the old centerline and fog line, and remove the rumble strips that ran along the old fog line. Furthermore, the application of the new centerline and fog lines was defective causing them to peel off. As the driver entered the newly configured area, he followed the old centerline and fog line into the oncoming lane and was struck by an oncoming tractor-trailer. Our expert opined the driver's error was caused by the contractor's failure to provide the positive guidance needed by drivers to safely navigate the reconfigured roadway. The contractor should have adequately removed the old roadway markings and shoulder rumble strips, ensured the effective application of the new lane markings and posted new signage as to the change in roadway configurations.

## Feature Experts

### William J. Vigilante Jr., Ph.D.

Dr. Vigilante combines ten years of research in higher education and industry with nearly five years in corporate America at IBM as a human factors engineer. His research into thinking ability and perception and how they relate to risk taking, safety, and hazard analyses is a unique skill set.

This allows him to speak to safety and risk perception, warning adequacy, vision and driving, workplace safety, lighting and aging. Two other specialty areas include recreational and sporting activities where Dr. Vigilante evaluates how human factors effects people's ability to safely interact with recreational vehicles, sporting equipment, swimming pools, and the ski environment; and medication risk and use instructions, where he determines an individual's ability to notice, read and understand medication labeling and advertising.

Dr. Vigilante is a member of the Human Factors and Ergonomics Society, the American Society of Safety Engineers and USA Hockey. He is regularly asked to review research publications and studies to determine their merit for inclusion in scientific journals and professional meetings.

### Ronald D. Schaible, C.S.P., C.I.H., P.E.

As the Director of Global Health and Safety for AMP, Inc., Ron was responsible for occupational health, safety, indoor environmental quality, ergonomics/human factors and training issues. In nearly 23 years in insurance loss control and private industry, he constantly applied his knowledge and experience in environmental and occupational health and safety services to eliminate or minimize risks to people, products, and the environment. He's familiar with all OSHA and numerous EPA regulations, and product warning issues.

Ron was also a college instructor in his field for 20 years, and he's earned eight different certifications and registrations, including Certified Industrial Hygienist (CIH) in comprehensive Practice, Certified Safety Professional (CSP), and Certified Human Factors Professional (CHFP) and Ergonomist. He's a diplomate of the American Academy of Industrial Hygiene, a member of the American Society of Safety Engineers and the American Industrial Hygiene Association.

### Raymond Lee, Ph.D.

The case involves a crash involving a school bus and a minivan. Foggy conditions may have contributed to the accident.

Would reasonably attentive drivers have been able to avoid the crash? Raymond Lee, Ph.D. can help answer such questions. Dr. Lee specializes in meteorology, object visibility and lighting. He's been a research professor at the U.S. Naval Academy for 15 years, and is a six-time winner of National Science Foundation grants. He's been admitted as an expert in these issues nationally, and he has researched and written more than one hundred technical reports for both civil and criminal cases during the past fifteen years.

Dr. Lee is a member of the American Meteorological Society and the Optical Society of America.