



# SAFETY

NEWS

## A Publication of the Human Factors & Ergonomics Society Safety Technical Group

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### Note from the Chair

*Stephen L. Young*

It was great to see all of you who could make it to the HFES Annual Meeting in Minneapolis. It was a very good meeting and I feel obliged to discuss several issues in somewhat greater detail. First, I can tell you that this year's Arnold Small Lecture, by Baruch Fischhoff, was a wonderful presentation on risk issues in the safety domain. If you missed this presentation, I would highly recommend that you consider ordering a copy of the videotape (see details inside this newsletter).

Second, Paul Frantz, Tim Rhoades and I hosted a panel session dealing with a case study of the warning design process. It was received quite well and the topic generated lively discussion. Unfortunately, the session was scheduled for Friday at 8:30 am, so attendance was lower than it might otherwise have been. For those of you who might be interested in learning more about what we discussed, there are two journal articles:

Rhoades, T. P., Frantz, J. P., Young, S. L. and Wisniewski, E. C. (2001). Revisions of labeling for personal watercraft: Part 1—Label development. *Injury Control and Safety Promotion*, 8(2), pp 71-81.

Young, S. L., Frantz, J. P., Rhoades, T. P. and Wisniewski, E. C. (in press). Revisions of labeling for personal watercraft: Part 2—Label evaluation. *Injury Control and Safety Promotion*, 8(4).

You may contact me for reprints if you have difficulty finding a copy of the journal.

Third, at the business meeting, we discussed nominations for future TG officers. The ballots

are enclosed as part of this newsletter, so please vote. We need people to be active in the Society and in this TG, and it looks like we have good nominees to lead the group in the future.

Finally, the Council of Technical Groups (of which the Safety TG is but one member) is making a push for all the TGs to be more relevant and active for members—especially those members who do not attend the annual meeting. We, as a TG, were asked to identify ways to bring value to the members of the Safety TG. At a minimum, we have been asked to maintain an up-to-date web sites that each of our members will want to view once a month (or more).

Additionally, we are to publish high quality newsletters several times between now and our next annual meeting. I'm glad to report that the Safety TG already produces one of the best newsletters of any of the TGs. We have also, over the past two years, revamped the Safety TG web site to improve its content. However, any ideas about how we can provide our membership with greater value, in any way, will be greatly appreciated.

It will be incumbent upon the new leadership of the TG to maintain and expand upon the current focus of the TG and to provide high value to Safety TG members. It is the responsibility of the members of the Safety TG to support our representatives and to provide them with information, helpful ideas, comments, and criticisms.



# Human Factors and Ergonomics Society

## Safety Technical Group

### Safety TG Business Meeting Minutes

The STG Business Meeting was held on Wednesday, October 10, 2001 during the 45th Annual Meeting of the Human Factors and Ergonomics Society. The meeting was held at the Hilton Minneapolis in Minneapolis, Minnesota.

#### Welcome

TG Chair Steve Young called the meeting to order at 4:32 p.m. There were 10 people in attendance.

#### Committee Reports

##### Chair

Steve Young gave the Chair report. New officers need to be elected. A call for nominations was provided in the last Safety News newsletter. No nominations have been received. Steve circulated a nominations form at the Business Meeting to solicit names. Any names received will be listed in the newsletter.

##### Secretary-Treasurer

Steve Young gave the secretary-treasurer's report for Ellen Haas. The membership in the Safety TG is 583. The balance as of 8/30/01 is \$6,758.11.

##### Newsletter Co-Editors/Webmasters/Email Moderator

Elaine Wisniewski provided an update on behalf of herself and the co-editor Jean Schiller. Two newsletters have been published this year. There are approximately 600 people that receive Safety News. The third and final issue of the year is planned for late October 2001/early November 2001. A lot of material for this issue has already been submitted. There will be a page included in the newsletter for members to vote for the new officers.

In addition, the Safety TG website and e-mail group were discussed. The Council of Technical Groups is developing new guidelines for all TG web masters to follow when designing the web sites.

There are approximately 200 people on the e-mail listserve. If anyone is interested in joining the listserve, please contact Elaine at [ewisniewski@appliedsafety.com](mailto:ewisniewski@appliedsafety.com).

##### Program Chairs

Curt Braun gave the Program Chair report on behalf of himself and the co-chair Marc Resnick. Curt reported that the selection process for the Safety sessions went smoothly this year. There were more reviewers than submissions. The submission deadline was postponed two times. There was not a 100% acceptance rate with the submissions. There were 13 Lectures, 3 Posters, and 2 Symposia.

Curt suggested that a future Safety session should be dedicated to a particular safety research topic. A related agenda would then be formulated for researchers to contribute their work on this topic. It would be too difficult to arrange this for the 2002 conference, but should be thought about for the 2003 conference. Steve Young mentioned that at this year's conference there is a Safety Symposium that is dedicated to one topic. This is the PWC Warning Label Development symposium on Friday at 8:30am.

##### Arnold Small Lecture Series Chairs

Mike Kalsher gave an update on the Series on behalf of himself and co-chair Jake Pauls. Baruch Fischhoff's lecture went well today. There was a good attendance. Mike also indicated that Jake will not be able to be a co-chair for much longer, and he will need some additional help. If anyone is interested in being a chair, please volunteer. Mike also announced that videotapes for the past 5 years are available for purchase.

Mike has been trying to get internationally known speakers on the topic of medical devices and medical error for next year's lecture.

#### Adjournment

A motion was made to adjourn, and the meeting was adjourned at approximately 4:50 p.m.

## Vote for Safety TG Officers

Enclosed with this newsletter is a one page ballot (see pp. 5-6). If you are a member of the Safety Technical Group, please fill out the ballot and mail it to:

SAFETY NEWS  
3909 Research Park Drive, Suite 300  
Ann Arbor, Michigan 48108

Please feel free to write in any candidates for any of the officer positions. Keep in mind that only full members of HFES can hold officer positions, with the exception of the Newsletter Editor, Web master, and Email List Server Moderator. If you have any questions about the election process, please contact Steve Young.

## Arnold Small Lecture

The Arnold Small Lecture Series with Baruch Fischhoff was a success. It was highly attended and enjoyed by all attendees. If you were unable to attend you may purchase a videotape of the lecture. Please use the form below to order a video of the most recent lecture and/or previous lectures.

Please note that the videotapes will not be shipped until early December 2001. Also, all orders must be prepaid.

If you have any questions regarding the Lecture Series, please contact the co-chairs, Jake Pauls and Mike Kalsher, using their contact information listed on the back page of this newsletter.

# Order Form for Arnold Small Lecture Videos

Since 1996, videos of the Lecture have been produced and are available for sale, with net proceeds going to the costs of the Lecture such as travel costs for speakers who are not members of HFES (all speakers receive an honorarium and the gratitude of the Safety Technical Group).

Please indicate the videotapes and the quantity of each that you would like to receive below.

<i>Quantity</i>	<i>Year</i>	<i>Speaker</i>	<i>Lecture Title</i>	<i>Unit Cost (U.S.)</i>	<i>Total (U.S.)</i>
	1996	Jake Pauls	"Pathology of Everyday Things," distributed with the 18-minute film, "The Stair Event"	\$50	
	1997	Julian Waller	"Injury Medicine and Ergonomics"	\$40	
	1998	Patricia Waller	"Societal Human Factors: Broadening the Vision"	\$35	
	1999	Peter Hancock	"Custer and the Titanic"	\$40	
	2000	George Peters and Barbara Peters	"New Opportunities: Challenges for Human Factors in the Globalization of Safety, Health and the Environment"	\$40	
	2001	Baruch Fischhoff	"What's Worth Knowing – and Saying – About Risk and Safety?"	\$40	
	--	All 6 Videos	--	\$160	

US shipping included

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Shipping outside US (\$5 per video)

\_\_\_\_\_

**TOTAL**

**\$** \_\_\_\_\_

### Payment:

Orders must be prepaid. Make checks payable to Jake Pauls. Send this order form and payment to:

Jake Pauls  
12507 Winexburg Manor Drive, Suite 201  
Silver Spring, MD 20906-3442.



# Symposium on the Human Factors of Child Safety

Tonya L. Smith-Jackson

## ABSTRACT

The research featured in this symposium will contribute to a fundamental understanding of research problems in child safety and will contribute to the knowledge domain. Leonard (2001) addresses the extent to which adults are aware of the age in which children should ride in the front seat of an automobile, and awareness of seat positioning and booster seat usage. Sweeney (2001) retrospectively examined injury data to determine how child restraint systems are used, the effects of improper use, and determined how care givers learned about child restraint system use. Stevens and Dingus (2001) examined the effects of an educational brochure on risk perception and usage of booster seats among parents with children who should be in a booster seat. Shaver and Wogalter (2001) examined users' awareness of air bags based upon salient information from a new airbag sticker installed in automobile models beginning in 1997. These papers collectively demonstrated that consumers had little awareness of critical safety-related technologies or the proper use of safety-related technologies to protect children.

## INTRODUCTION

The importance of Human Factors research in child safety is beginning to manifest in the research literature. However, child safety research offers unique challenges to Human Factors professionals.

First, the phenomenon of child safety requires an examination of a tightly-coupled work system (typically, a caregiver and a child). In this work system, the caregiver is often in control of final compliance decisions, proper usage, and proper precautions to protect the safety of the child, yet, the behavior of the caregiver is directly impacted by the child. For instance, studies of parent justifications for not using child restraint systems have identified the impact of children's protests when restrained. Specifically, parents' decisions to avoid usage relates to the negative and persistent reactions of the child to the restraint technology.

In that regard, the work system and safety within the work system is highly dependent upon the dynamics of the adult and the child when using a technology designed to prevent or reduce injuries. Thus, the complexity of this work system must be considered when designing devices to enhance safety or when designing approaches to facilitate attitude change and behavioral compliance.

Second, the study of child safety involves a need to understand developmental characteristics of children, and as yet, no real approach to developmental Human Factors has been explored. Typically, developers rely on the opinions of adults to determine the usability and effectiveness of systems designed for children. Fleming, Morrissey, and Kinghorn (1997) identified several weaknesses in usability engineering for older adults (and consequent problems with usability and safety) that stem from

the exclusion of older adults in user-centered design activities. Young children are similarly excluded from product usability and safety, and this exclusion leads to the same difficulties experienced by older users.

Unfortunately, usability of safety devices such as child restraint systems have not made use of the knowledge gains made in child-centered assessment in developmental psychology. Although some preliminary child-centered usability concepts are emerging in human-computer interface design (Klusell & Pousette, 2000), health education (Hillier & Morrongiello, 1998), and risk analysis (Harden, 2000), no systematic usability engineering process and no efficient tools have been developed that are appropriate to use with children.

This symposium presented research centered on the importance of a variety of aspects of child safety. The research papers yielded not only safety-related information, but also methods and approaches to examine child safety issues.

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*Tonya Smith-Jackson is a faculty member at The Grado Department of Industrial and Systems Engineering at Virginia Polytechnic Institute and State University in Blacksburg, Virginia. This symposium was held at the 45th HFES Annual Meeting. For more information regarding the symposium, please contact Tonya at smithjack@vt.edu.*

# Safety Technical Group Officer Elections for 2002-2004

A Call for Nominations was printed in the July 2001 issue of Safety News. An additional opportunity for nominating officers was held at the Business Meeting at the recent conference. Below is a ballot form for members of the Safety TG to use to vote for each officer position. You may write in a candidate if you choose to do so.

Please consider having your undergraduate or graduate students participate in the Safety TG. The newsletter editor/webmaster/email list server moderator position is open to students. All other positions must be filled by Members of HFES.

A description of each position is also provided. If you would like more information about the position, please contact the current officer that holds that position (see p. 12).

Please mail the ballot as soon as possible. The deadline is December 21st. We would like to make the announcement of the new officers at the end of the year. Look for this information on the Safety TG list server and the web site.

annual business meeting and arranging other events; with the newsletter editor regarding timing, content, distribution method, and cost of newsletters; and with other officers to ensure that TG activities are being carried out. The chair is also the TG's liaison to the Council of Technical Groups.

## Program Chair (1 or 2 people)

The program chair is responsible for overseeing the technical review of proposals submitted for the HFES Annual Meeting.

## Secretary-Treasurer (1 person)

The secretary-treasurer is responsible for the TG's finances and recording minutes from the business meetings.

## Newsletter Editor/Webmaster/Email List Server Moderator (1 or 2 people)

The newsletter editor is responsible for producing at least two newsletters per year and distributing them to TG members. The webmaster/email list server moderator is responsible for maintaining the TG website and moderating the email list server.

## Chair (1 person)

The TG chair has overall responsibility to ensure that the group meets its minimum requirements. The chair works with the HFES executive director in scheduling the TG's

# SAFETY TECHNICAL GROUP OFFICER BALLOT

### Chair (choose 1 candidate)

- Curt Braun
- Alison Vredenburgh
- \_\_\_\_\_
- \_\_\_\_\_

### Program Chair(s) (choose up to 2 candidates)

- Jean Schiller
- Elaine Wisniewski
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

### Secretary-Treasurer (choose 1 candidate)

- Brenda Torres
- \_\_\_\_\_
- \_\_\_\_\_

### Newsletter Editor/Web master/Email Moderator (choose up to 2 candidates)

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_



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# Revision of ANSI Lockout/Tagout Standard Adds Design, Warning and Instruction Requirements for Product Manufacturers

*Steven Hall, B.S.E.*

The American National Standards Institute (ANSI) Committee Z244 is in the process of revising its standard for the Control of Hazardous Energy: Lockout/Tagout and Alternative Methods. This revised standard will replace ANSI Z244.1, for Personnel Protection: Lockout/Tagout of Energy Sources Minimum Safety Requirements, which was originally published in 1982, and was reaffirmed without changes in 1987 and 1992. The original ANSI standard served as a primary reference source for Occupational Safety and Health Administration (OSHA) regulation 29 CFR 1910.147, "The control of hazardous energy (lockout/tagout)," which was promulgated in September 1989.

On July 30, 2001, Committee Z244 completed a draft which was released for public comment.

## KEY CHANGES

The proposed standard includes a number of significant changes. Most notably, the proposed standard includes requirements for manufacturers, integrators, modifiers and remanufacturers of machines, equipment and processes. There were no requirements for these parties in the previous edition; previously the standard applied only to employers and employees.

These new requirements include:

- ◆ Providing appropriate warnings and special instructions regarding servicing or maintaining equipment, both on the equipment and in a written manual.
- ◆ Providing a written manual detailing:
  - the location and procedures for using energy isolating devices,
  - procedures for servicing or maintenance that must be performed under partial energization,
  - instructions for safely dealing with malfunctions, jamming, misfeeding and other interruptions of the operation, and
  - installation instructions identifying the location of energy isolating devices.
- ◆ Providing all necessary energy isolating devices:
  - in an accessible and convenient location,
  - with clear markings indicating equipment supplied and type and magnitude of energy,
  - with the ability to be locked or otherwise secured, and
  - preferably as an integral part of the equipment.

- ◆ Providing all special tools or devices needed for service or maintenance with the equipment.
- ◆ Providing a means of dissipating or restraining any stored or residual energy.
- ◆ Providing guarding that protects against the hazard or prevents access until the motion has ceased when machinery run-down or coasting is determined to be a hazard.

Other proposed changes would create more detailed and extensive requirements for users/employers, including a documented risk analysis. Twelve annexes are provided for reference and guidance. Several of these annexes describe alternative methods for specific applications (e.g., printing industry, plastics industry, robotics).

## COMMENTS NEEDED

Because the proposed standard has a broad scope, suggestions and comments from a wide variety of parties may prove valuable to the committee. For example, those with knowledge of a particular industry or process that utilizes unusual alternative protective measures might suggest an annex documenting these measures. Because design requirements are a new addition to the standard, comments from those involved in the design of machines may be especially useful.

## DEADLINE FOR COMMENTS

The 60 day public comment period began with an announcement in ANSI's Standards Action newsletter on August 24, 2001, and ended on October 23, 2001. While the deadline has passed, it is still possible to submit comments to the committee. Those not represented on the committee may suggest changes to the draft.

## OBTAINING DRAFT COPIES

Copies of the draft standard can be ordered from the National Safety Council by calling 1-800-621-7619 or by visiting [www.nsc.org](http://www.nsc.org).

## ADDRESS FOR COMMENTS

National Safety Council  
1121 Spring Lake Drive  
Itasca, IL 60143  
c/o Z244 Secretariat

# On Warning Research and the “Real World”

Marc Green

## Warning Research Validity

I've recently contributed a paper to Occupational Health & Safety Canada (Green and Low, 2001). The editor had asked for an article which discussed the nature of warnings from a “high level” psychological perspective. As often happens when there is a nudge off the normal trajectory, I found myself in places that I had not thought to go. Specifically, I have come to question the value of much of the literature on warning labels and signs.

When I speak of “warning research,” I am referring to basic applied research rather than to field tests of specific warnings in context. The term “basic-applied” may seem an oxymoron, but the usual dichotomy between basic and applied research is inadequate. Basic research investigates fundamental human abilities and mechanisms presumed to operate regardless situation and context.

Applied research, however, comes in two flavors. One occurs when researchers investigate a specific problem. This “applied-applied” work is a usability test and claims to demonstrate no general concepts, although there may be some lessons learned. The second flavor, “basic-applied,” is a hybrid. It often performs studies out of context (like basic research), often in a university with student subjects, but purports to demonstrate general principles about how “real” people would perform in context, (i.e., in an actual real-world situation, like “applied-applied” research). This is the type of warning research literature whose value is questionable.

What's wrong with “basic-applied” warning research? Consider the warning situation from a general psychological perspective. The person who sees/hears the warning (the “warnee”) must decide whether or not to comply. He/she must answer the question, “Do the benefits of complying with the warning outweigh the costs?”<sup>1</sup>

The analysis depends on the warnee's interpretation of the current situation, which is based on a mental model and general knowledge. Moreover, the warnee has a goal or set of goals to be achieved.

Compliance will certainly depend on both the value of the goal and the degree to which compliance would affect their attainment. In addition, the warnee has some assessment of risk, again based on a mental model

**“The term ‘basic-applied’ may seem an oxymoron, but the usual dichotomy between basic and applied research is inadequate.”**

and influenced by the goals; people frequently reason backward, rationalizing risk if the goal is highly desirable.

Lastly, compliance is not all-or-none. A real person will consider alternative actions, alternative strategies and modified goals. There is often a trade-off between degree of compliance and degree of risk.

To create an effective warning, the designer must understand the cost-benefit analysis and hence the warnee's mental model, goals, etc. From this viewpoint, the typical warning research study provides little information. Much of the research is performed with undergraduate students or other uninvolved subjects, and the measured responses are opinions as what they might be done in some hypothetical situation. In a typical study, the investigator might vary color or font size, compare pictures and text, etc. The subject is asked whether or not s/he would comply.

What can be learned from such a study? The subjects have no costs, no benefits and no real goals (other than to make their \$10 dollars or to get out of the Psychology 101 subject pool). There are no alternatives presented and no opportunity for risk compensatory behavior (Green 2001). There is no opportunity for alternative strategies or partial compliance. Moreover, behavior in the world-at-large is affected by the social context, by what other people are doing, and by social norms. This is also missing from most basic-applied studies. Lastly, most experiments are loaded with demand characteristics.

In addition, talk is cheap. The gap between what people say they would do and what they would actually do is huge. A subject might well bend to the demand characteristics of the study and agree to compliance in order to be seen as a responsible citizen or because it costs nothing. The response might be different if it meant actually having to walk around the block in order to comply with a “no trespassing” sign. Moreover, the

## On Warning Research and the “Real World” (cont’d)

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risk literature has repeatedly shown the power of “framing effects,” (i.e., that the way a question is asked can greatly affect the answer).

The predictive value of questionnaire data should always be regarded with skepticism. It may be much easier and cheaper to perform a study that measures only verbal responses in a lab with free/cheap subjects, but is anything really learned? It’s all too reminiscent of the story about the man who lost his keys in the parking lot but looked for them under the street lamp – because that’s where the light was.

A reading of the warning research literature reveals another shortcoming, its insular nature. Authors seldom mention highly relevant basic-applied and applied research that is performed in realistic settings. There is a large literature, for example, on conspicuity and compliance with road signs.

I’ve never seen a warning research paper that mentions the highly useful work of people such as Forbes, Cole, Jenkins or many others in the field. They have a great deal to say about conspicuity and compliance, and much of this research has been done with real drivers on real roads. (Try Cole and Hughes, 1984, 1990 for starters.)

Moreover, given the importance of risk perception in warning compliance, there is also astonishingly little mention of the larger risk and decision-making literatures, Slovic, Fischhoff, Tversky, etc. (Admittedly, however, much of this research also falls prey to the same criticisms applicable to the warning literature.)

The same problems apply in other, apparently less cognitive, areas of warning research. Much of the warning research investigates conspicuity, getting the warnee to notice the admonition. Even this aspect of warning depends greatly on high-level cognitive processes.

The warning research is just a tiny islet in a vast sea of literature on visual attention and conspicuity. Much of this work clearly shows that goals, beliefs, and mental set play a major role in whether or not a person notices. It is clear that the effectiveness of even simple physical attributes such as shape and color depend greatly on the viewer’s mental set, interpretation and expectations in a situation. (This doubtless explains why basic-applied research produces such inconsistent results when examining these properties.)

In many other applied areas where physical conspicuity has long been thought a critical issue, (e.g., motorcycle and bicycle accidents), it has become increasingly clear that the major problem is that drivers simply often fail to notice what is clear and obvious and not how the vehicle appears. The message from this research is clear: the physical contents of the warning are probably less important than the mental contents of the viewer’s head.

In sum, much of the warning literature’s ecological validity must be questioned because it treats people far too simply. It has largely ignored issues such as the goals and mental models and other high-level cognitive constructs that really govern human behavior.

For example, the recent thorough literature review by Rogers et al. (2000)

**“... much of the warning literature’s ecological validity must be questioned because it treats people far too simply.”**

examined independent variables used by warning researchers. It is striking that almost all are physical variables of the warning, color, text, location, etc.

There is no mention of concepts such as risk homeostasis or behavioral compensation<sup>2</sup>. Familiarity and cost of compliance are the only psychological variables.

Of course the studies often employ subjects who have no cost of compliance and, anyway, how can one determine cost of compliance when there is no measure the warnee’s goals and purposes and when alternative and risk-compensatory behaviors are not allowed?

Further, a search of the Psychinfo, Medline, OSH and Inspec databases found no relevant articles using the keywords “warning and (signs or labels) and (goals or motivation).”

Apparently, there is virtually no warning research which has considered the world from the viewer’s mental models and thought processes. This is hardly surprising of engineers, who are trained to deal with physical objects that can be viewed only from the outside. However, it is surprising that psychologists who perform warning research don’t pay much more attention to the deeper issue of goals, beliefs, and mental models.

*Continued on p. 10*

## On Warning Research and the “Real World” (cont’d)

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The limitations of purely engineering approaches have been previously recognized. For example, Summala (1996), in discussing driver risk behavior, wrote “It is obvious at this time that an engineering or skill model of driver behavior and safety was not a sufficient basis of safety work. It should always be recognized that the driver is inclined to react and that this reaction occurs in accordance with his/her motives.”

### Conclusion

Given the shortcomings of out-of-context research on out-of-context subjects, warning design might be better guided by general psychological principles than by the detailed applied-basic research literature. In a situation that is complex, the best guide is often a few very broad and powerful principles. After all, it did not require detailed experimentation to show that people will be more likely to comply if the cost of compliance is reduced. This is no more than Thorndyke’s Negative Law of Effect at work.

Warning design should be much like any other human factors design process, where the first and most important task is to understand the “user.” For example, computer interface creation invariably requires the designer to identify the typical users.

This is critical because the design must fit the users’ mental models, knowledge, goals and tasks. No UI designer would evaluate a system for radiologists by testing it on undergraduate students or by asking them what they might do in some hypothetical situation. Yet, the approach taken by much of the current literature implies that useful information about warning design can be learned in this manner.

Finally, I don’t mean this to be a blanket condemnation of all warning research. Moreover, the limited space here also has forced me into simplification of some complex issues. There is useful research. It is just that I cannot avoid being struck by how little the bulk of the warning-specific research adds to what I already knew from a good background in basic research in perception, information processing and learning.

I must therefore ask the following questions: “What general rules about warning design can be have learned from all these studies that were not deducible from basic research?” and “What can be revealed by studies performed in highly artificial conditions without real understanding of warnee cognition?”

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### Footnotes

- 1 There are exceptions. In cases where the behavior is highly automatic, such as most normal driving, the warnee may not consider risk or costs at all. See Wagenaar (1992), for a discussion.
- 2 This is not meant to be a criticism of the review, which merely reflects the current state of the warning literature.

*Marc Green has a Ph.D. in experimental psychology and has published more than 75 articles and abstracts on perception and human factors. He is currently Co-Principal of Visual Expert - ERGO/GERO Human Factors Science, a forensic and design consultancy in Toronto. He is also an adjunct professor at the University of West Virginia Medical School Ophthalmology Department. He can be reached at vexpert@visualexpert.com*

## FACULTY POSITION OPENING

The Department of Work Environment at the University of Massachusetts Lowell invites applications for a tenure-track faculty position in Occupational Safety and Human Factors, effective September 2002. Requirements include a doctorate in a field related to occupational safety or human factors and commitment to an active, ongoing research program. Areas of specialization of particular interest to the Department include injury epidemiology, the role of human factors in injury prevention, the impact of technological change on work organization and psychosocial risk factors, and worker risk perception.

The successful candidate will join the ergonomics group within an interdisciplinary department of occupational safety and health located in the College of Engineering, University of Massachusetts Lowell. Responsibilities will include teaching at the graduate (and possibly undergraduate) level, supervision of masters and doctoral student research, participation in on-going curriculum refinements, and development of a program of research and/or service.

Interdisciplinary activities are welcomed; other concentrations in the department are industrial hygiene, occupational epidemiology, work environment policy, and cleaner production/pollution prevention.

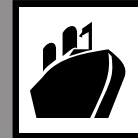
Rank and salary are commensurate with qualifications and experience. Review of applications will commence on December 15, 2001 and continue until a suitable candidate is found. Application, including curriculum vitae, a statement of research and teaching interests, selected representative publications or writing samples, and the names and addresses of three references, should be sent to:

Bryan Buchholz, Ph.D., Associate Professor  
Chair, Safety/Human Factors Search Committee  
Department of Work Environment  
University of Massachusetts Lowell  
One University Avenue  
Lowell, MA 01854

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# CONFERENCES



### **2001: Road Safety Research, Policing, and Education Conference – November 19-20, 2001**

Melbourne, Australia. Irene Thavarajah, Road Safety 2001 Secretariat, Conference Management Office, Monash University, P.O. Box 69, Clayton Victoria 3800; 61 3 9905 1344, fax: +61 3 9905 1343; irene.thavarajah@adm.monash.edu.au, <http://monash.edu.au/oce/roadsafety>

### **26th International Symposium of the International Section for the Prevention of Occupational Risks in the Construction Industry – December 12-14, 2001**

Paris, France. CRAMIF – Secrétariat du Colloque, AISS-BTP, 17-19, place de l'Argonne, F-75019 Paris, France; +33 1 40 05 38 02, fax +33 1 40 05 38 84; construction.issa@cramif.cnamts.fr, <http://www.cramif.fr>.

### **IIE Applied Ergonomics Conference 2002 – March 12-14, 2002**

Baltimore, MD. Institute of Industrial Engineers, 25 Technology Park, Norcross, GA 30092; 800/494-0460, fax 770/441-3295; <http://www.appliedergo.org>.

### **The Ergonomics Society 2002 Annual Conference – April 3-5, 2002**

Cambridge, England. Annual Conference Programme Secretary, the Ergonomics Society, Devonshire House, Devonshire Square, Loughborough, Leicestershire LE11 3DW U.K.; +44 1509 234904, fax +44 1509 235666; [ergosoc@ergonomics.org.uk](mailto:ergosoc@ergonomics.org.uk), <http://www.ergonomics.org.uk>.

### **XVth World Congress on Safety and Health at Work – May 26-31, 2002**

Vienna, Austria. Kongressburo, Adalbert Stifter-Strasse 65, A-1200 Vienna, Austria; +43 1 33111-537, +43 1 33111-469, [safety2002@auva.sozvers.at](mailto:safety2002@auva.sozvers.at), <http://www.safety2002.at>

### **National Safety Council 90th Annual Congress & Expo – October 7-9, 2002**

San Diego, CA. National Safety Council, 1121 Spring Lake Dr., Itasca, IL 60143-3201; 630/285-1121, 630/285-1315; <http://www.nsc.org>

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**Safety  
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