

Guest Editorial Psychology, Marketing and Warnings Research: Bridging the Gap between Consumer Theory and Warning Practice

Michael S. Wogalter and Eli P. Cox III

It is remarkable that although warnings appear on thousands of consumer and industrial products, little empirical research has been conducted (Cox, Wogalter, Stokes, & Murff 1997). It is also remarkable that marketing has contributed so little to what empirical research evaluating product warnings can be found. This is unfortunate, because the marketing discipline has a research tradition, theoretical models, and experimental procedures that could stimulate and advance significantly the state of the art in warnings research.

Over the last century, products, equipment, and environments have become increasingly complex technologically, resulting in many potential hazards not readily apparent to laypeople. In response to this problem, thousands of warnings have been developed to protect workers and consumers from injury, illness, and property damage. The increased presence of warnings has been fueled by several important forces. One has been the public's increased concern about safety and health. An important manifestation of this concern has been the increasingly proactive role of governments and standards organizations around the world in mandating warnings. A second manifestation has been the U. S. judicial system's shift from the theory of negligence to the theory of strict liability, resulting in a reduction in the burden of proof required for plaintiffs in product-liability lawsuits (Madden, 1988). Manufactur-

ers and other firms involved in the sale of products have responded to these forces in various degrees, and warnings are now ubiquitous.

Despite the pervasiveness of warnings, little empirical research has been conducted. Although an annotated bibliography (Miller, Lehto, & Frantz, 1994) dealing with product instructions and warnings contains 785 sources dating from 1941, many of the articles are not empirical and discuss the social and legal environment of warnings, industry standards, or systems for designing warnings. Little empirical research exists prior to the 1970s. For example, Cox et al. (1997) identified only 15 empirical studies, dating from 1977, which addressed the central question of whether the presence of a warning increased the safe use of products.

Empirical research has grown significantly during the 1990s. Most of this activity has taken place in the discipline of human factors, and much of the empirical research has been published in proceedings that have not received widespread distribution. A significant portion of the empirical work has focused on warning characteristics, such as color or location, without relying on an integrating psychological framework. However, warnings research has begun to employ hierarchy-of-effects models where intervening between noticing a warning and following its instructions are measured stages (e. g., comprehension, memory, and attitude change). Some investigations have employed newly developed methodologies (e. g., incidental exposure) or assessed perceptions of risk and hazard. Further development in our understanding of how and why product warnings work must involve the advancement of theory and research methods.

The discipline of marketing has a great deal to offer in filling these gaps. In general, it has a history of studying persuasive communication, much of it in a public policy or consumer-oriented context. In particular, extensive work has been conducted in designing ingredient and nutrition labeling. Additionally, the large body of research utilizing information processing models and associated experimental procedures appears to be readily applicable to warnings research.

What is unclear is why the marketing discipline has not already embraced warnings research. Of the 15 empirical studies found by Cox et al. (1997), the only contribution by the marketing discipline is Schneider's (1977) article in the *Journal of Consumer Research*. The Bettman, Payne, and Staelin (1986) theoretical piece effectively ties information processing theory to warnings research, but surprisingly little empirical research on product warnings has been stimulated by it. An empirical test resulting from their article is found in the *Rand Journal of Economics* (Viscusi, Magat, & Huber, 1986).

Another question is why should researchers in marketing be interested in product warnings? The answer is that success in increasing what we know about product warnings will be expressed in terms of fewer injuries and illnesses of product users and fewer product liability

lawsuits directed toward manufacturers. Such research is consistent with discipline tradition; we have not been concerned exclusively with benefiting marketers, but has also been concerned with those who receive communications as well. The work on nutrition labeling and corrective advertising exemplify this tradition.

This special issue has a twofold purpose. The first purpose is to help bridge the theoretical gap between warnings research and the more mature areas of consumer behavior and psychology. To this end an invited article by Zuckerman and Chaiken and a competitive article by Rousseau, Lamson, and Rogers are presented. The second purpose is to present the state-of-the-art of warnings research to academics and practitioners. Invited articles by Fischhoff, Riley, Kovacs, and Small, and by Laughery, Laughery, Lovvoll, McQuilkin, and Wogalter, and a competitive article by MacKinnon and Lapin, are offered for this purpose.

The heuristic/systematic information processing model has received widespread attention in the fields of psychology and marketing, and has been researched extensively. Zuckerman and Chaiken discuss this model in the context of product warnings, a field where it has not been tested empirically. The authors show how their model can be used to explain published warnings research findings and make suggestions for additional research.

Most of the warnings research dealing with individual differences has focused on the product user's expertise and familiarity with a product. Little attention has been given to demographic factors possibly related to warning design and effectiveness. Rousseau, Lamson, and Rogers describe how aging influences information processing and review the relevant research. The authors indicate how changes in perceptual (e. g., visual acuity and spatial contrast) and cognitive (e. g., processing speed) abilities may influence warning effectiveness. They make recommendations for designing warnings that will be effective for the old and young alike.

Fischhoff, Riley, Kovacs, and Small build upon an extensive body of research concerning the layperson's ability to assess risks accurately. In classic work with Paul Slovic and Sarah Lichtenstein, Fischhoff has uncovered common biases in risk perception. One standard for judging the effectiveness of warnings and other communications of hazard information is that they minimize these biases. With the use of two case studies of hazardous chemicals, the authors present a multiphase approach to developing warnings that involves assessing and prioritizing risks and determining the target audience's prior knowledge. This approach should be standard practice for dealing with risks in warnings applications.

Laughery, Laughery, Lovvoll, McQuilkin, and Wogalter present four experiments evaluating factors that influence a third party's allocation of responsibility for product safety. This experimental task is similar to a jury allocating percentages of responsibility to different parties in-

volved. The research findings have implications for product liability litigation and the role warnings experts may play in educating the jury about issues related to the design of warnings. Because Michael Wogalter (one of the co-editors of this special issue) was also an author of this article, the editorial work and blind review of this manuscript was handled separately by Eli Cox (the other co-editor).

MacKinnon and Lapin present the findings of two experiments examining the effects of advertisement-embedded warnings on memory, intentions, and risk/benefit perceptions of alcoholic beverages. They did not find a boomerang effect, which if present would mean that alcohol would be perceived as having greater benefits when a warning was present. To the contrary, the presence of warnings tended to offset the increases in perceived benefits and reductions in perceived risks brought about by the advertisement alone. This article is suggestive of a stream of research examining the interaction between warning communications and marketing communications for the same product.

Because of space constraints, two competitive articles selected for this special issue will be published in a subsequent issue of *Psychology & Marketing*. Both articles present findings of studies evaluating the impact of the federally mandated warning now on all alcoholic beverage containers in the U. S. Greenfield, Grave, and Kaskutas use survey data collected in the U. S. and Ontario (as a control) to evaluate the enduring impact of the warning on reported behaviors. Their results indicate that there were modest positive effects on drinkers' conversations about alcohol and on several precautionary behaviors. They also conclude that the public trend toward lower concern about the health risks associated with alcohol consumption may have been reduced by the presence of the warning.

Nohre, MacKinnon, Stacy, and Pentz examine the relationship between the characteristics of 12th-grade students and their awareness of, exposure to, memory of, and beliefs about the mandated alcohol warnings. Measures were taken both before and after the warning appeared on alcoholic beverage labels, and changes in the relationships were examined. Although relationships were found between student characteristics and awareness exposure, memory, and beliefs, they were not found to be moderated by the appearance of the warnings.

These two articles provide insight into the impact of a universally appearing warning on beliefs, attitudes, and behaviors. These small effects are probably due at least in part to the more powerful offsetting influences of habit, social norms, and industry advertising.

REFERENCES

- Bettman, J. R. , Payne, J. W. , & Staelin, R. (1986). Cognitive considerations in designing effective labels for presenting risk information. *Journal of Public Policy & Marketing*, 5, 1-28.

- Cox, E. P. III, Wogalter, M. S., Stokes, S. L., & Murff, E. J. T. (1997). Do product warnings increase safe behavior? A meta-analysis. *Journal of Public Policy & Marketing*, 16, 195–204.
- Madden, M. S. (1988). The duty to warn in products liability: Contours and criticism. *Journal of Products Liability*, 11, 103–179.
- Miller, J. M., Lehto, M. R., and Frantz, J. P. (1994). *Warnings & Safety Instructions: Annotated and Indexed*, Ann Arbor, MI: Fuller Technical Publications.
- Schneider, K. C. (1977). Prevention of accidental poisoning through package and label design. *Journal of Consumer Research*, 4, 67–74.
- Viscusi, W. K., Magat, W. A., & Huber, J. (1986). Informational regulation of consumer health risks: An empirical evaluation of hazard warnings. *Rand Journal of Economics*, 17, 351–365.

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Finally, we hope these special issues will generate critical discussion on the current state of the art of warnings, stimulate additional research, and result in improved methods of communicating risk information so as to reduce the extent of personal injury, illness, and property damage.

Correspondence regarding this special issue should be sent to: Eli. P. Cox III, College of Business Administration, University of Texas at Austin, Austin, TX 78712-1178 (epciii@ccwf.cc.utexas.edu).