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Warnings and Disclosures

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Chapter 15: Warnings and Disclosures

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Summary

This chapter reviews nearly six decades of research on warnings and disclosures, including common misperceptions and their importance to public health policy, and offers an answer to the key question, “Do warnings and disclosures really work?” Supporting theory and research applications are discussed.

Introduction

Warnings and disclosures are ubiquitous and a part of everyday life. Nutrition disclosures greet us at breakfast; low tire pressure warnings sound off driving to work; signs saying “danger – do not enter” block construction sites; and skull and crossbones, alcohol warning labels, Drug Facts boxes, and written and graphic visual tobacco warnings appear on packages around the world. Common misperceptions about warnings are that they often are ignored, or they backfire (*boomerang*), with the audience doing exactly the opposite of the proposed behavior change.¹ Statements in disclosures are often derided as containing *legalese*, or *mouse print*, in which vague qualifications, such as “Void where prohibited” and “Use only as directed,” are used with mind-numbing repetitiveness.^{2,3}

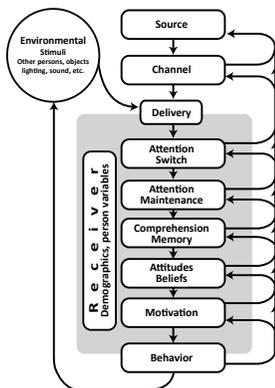
Yet, when taking into account audience characteristics, prior beliefs, message content, and proper delivery modes, warnings and disclosures can be effective communication tools and remedies for consumer and public health policy. For example, the Federal Trade Commission (FTC) has long encouraged the use of clear and conspicuous disclosures to prevent possible deception and unfairness from ad claims.⁴⁻⁶ Specifically, the qualification and disclosure of ambiguous and misleading environmental benefit claims (“Environmentally Safe,” “Clean Energy,” “Carbon Neutral”) have been a priority in cases and guides over the years.⁷ Other examples include encouraging clear and conspicuous disclosures for misleading online ad claims,⁸ and qualifying material connections not expected by consumers between endorsers (including bloggers) and promoted companies.⁹ Likewise, the FDA has advocated warnings and disclosures to benefit consumers and public health. This includes the use of black box warnings for prescription drugs with potentially serious risks and side effects,¹⁰ the future inclusion of graphic visual warnings on tobacco packages with text warnings,¹¹ and Nutrition Facts and Drug Facts information.

Information disclosures represent potentially helpful statements that can clarify, deflate, or reduce misleading impressions from ad, package, or other claims in the marketplace.^{2, 12, 13} Such statements can include (1) an *affirmative disclosure*, in which a marketer is *required* to disclose certain information¹⁴ or (2) a disclosure that is more voluntary in nature. The affirmative (required) disclosure can be negative, triggered, or mandated. Examples of negative disclosures include corrective advertising, in which the advertiser is required to correct misleading impressions likely to linger in the minds of consumers (e.g., the FTC Listerine case).^{15, 16} Other negative disclosures include warnings, defined as “a special class of disclosures for the purpose of alerting consumers to certain risks or harms from a product or service.”¹² Affirmative disclosures are sometimes triggered (e.g., if one mentions “cholesterol,” they must disclose saturated fat levels)⁶ or mandated for an entire industry (e.g., tobacco package warnings). In other instances, disclosures are more voluntary in nature, such as current front-of-package nutrition symbols (e.g., traffic lights) sponsored by U.K. grocery store chains.¹⁷

What does the research evidence say about warnings and disclosures?

Warning research. Research has shown that warnings can communicate benefits and risks to consumers successfully, but only if they are appropriately designed for the target audience, accounting for initial beliefs, message content, message modality, and source and receiver effects. McGuire’s steps in information processing (exposure, perception (attention), comprehension, agreement (credibility, attitude change), retention, retrieval, decision making (intentions), and action (behavior)) provide a key organizing framework for research evidence about warning effects.¹⁸ These output steps have been expanded by McGuire in his Communication-Persuasion Matrix also include input variables (source, message, channel, receiver, destination).¹⁹ These are further refined by Wogalter in his Communication – Human Information Processing (C-HIP) Model presented in the following Figure.²⁰

Communication-human information processing (C-HIP) model



Source: Wogalter, M. 2006. Communication-Human Information Processing (C-HIP) Model. In Wogalter, M., ed., Handbook of Warnings. Lawrence Erlbaum Associates, 51-61.

For example, several reviews of alcohol warning label effects are organized around these input and output variables.²¹⁻²³ Regarding source effects, the words *Government Warning* are found to improve alcohol warning detection times.²⁴ For channel and delivery, audio-only and audio-visual formats significantly increased alcohol warning recall compared to video-only formats.²⁵ National and state field surveys have shown positive effects of the alcohol warning labels on attention.^{26,27} Experimentation has found that visual aids (icons, color, pictorial elements)²⁸ and enhanced conspicuity (size and contrast)²⁹ both improve noticeability and recall of the warnings. Alcohol warnings are noticed more when they contain fewer characters per inch, occupy a larger area, and are more isolated.³⁰ Although frequent drinkers are likely to be aware of the text-based alcohol warnings, they perceive these warnings as significantly less believable and less favorable than occasional or nonusers.³¹

Six months following the appearance of the warning label, alcohol consumption for pregnant, lighter (non-risk) drinkers declined by a small, yet significant, amount.³² In the case of tobacco warnings, the more graphic the pictorial warning depiction on tobacco packages, the greater are smoker intentions to quit.³³

Although alcohol warning labels and graphic visual tobacco warnings have received substantial attention,³³⁻³⁶ many warning areas have not, and behavior compliance often is not measured. Such behavioral measures are encouraged (e.g., using accident data³⁷), yet there is a need to have adequate controls, proper warning design, and exposure evidence to help gauge the impact of warnings on behavior. Perhaps the best method to evaluate the effectiveness of warnings research is with meta analyses integrating findings across empirical studies. In a meta analysis of 15 warning studies for 79 experimental conditions with controls, warnings increased safe behavior for both non-student and student subjects.³⁸ This conclusion held despite considerable variance in the absolute level of compliance and a few studies displaying boomerang effects. Others have explored moderator effects in meta analyses of warning effectiveness, across a broader array of communication variables. A meta analysis of moderator effects for more than 44 empirical studies found that (1) enhanced vividness, having on-product warnings, and less product familiarity increased warning attention; (2) no moderators influenced warning comprehension; (3) evaluating shopping (vs. convenience) goods increased risk perceptions; and (4) *greater* product familiarity and higher compliance costs increased warning compliance.³⁹ Recently, a meta analysis of 60 health communication studies (with 584 experimental conditions) revealed that *message tactics* (e.g., using specific cases, social consequences, other referencing, prevention focus) and *audience characteristics* (e.g., being female, high involvement) significantly influenced health intentions.⁴⁰ Additional reviews offer valuable summaries of warnings and risk communication research.^{41, 42}

Disclosure research. Disclosure effects research is not as prolific and, arguably, in desperate need for a meta-analysis. However, *dual modality* disclosures, in which video disclosures are accompanied by an audio voice-over, achieve higher levels of message recall than print-only disclosures⁴³⁻⁴⁶ or audio-only disclosures.⁴⁷ Improving disclosure *conspicuity* (size – 11 pt. vs. 8pt.font; contrast – white vs. dark background) enhances recall of disclosure messages.^{2,45} Shorter disclosures (10 words or less) are comprehended better than longer disclosures.⁴⁶ *Distractors*, such as background noise and ad clutter, tend to reduce disclosure awareness. Distinctive *peripheral cues* (e.g., color, celebrities, music) can interfere with viewers' processing of message disclosures — especially if the cue is *unrelated* to the message.^{45,49} Yet, when related to the message, distinctive cues actually can draw attention into the message arguments.^{49,50} For disclosure *content*, general advisories and claims (e.g., “read the label,” “consult your doctor,” “healthy,” “environmentally friendly”) tend not to be comprehended as well as more specific information.^{36,43,47,48,51-54} However, lengthy disclosures should not be used to increase specificity. Finally, ability levels (age, education, literacy, knowledge) should be considered in the design and content of disclosures, especially for senior citizens and children (“Some assembly required” vs. “You have to put this together”).

Experimental research has found that evaluative disclosures (e.g., characterizing the per-serving level of the nutrient to be “high” as determined by the FDA) can be effective in reducing misperceptions and inaccurate generalizations from nutrition claims (e.g., “No Cholesterol” and “1/3 Less Salt”) when related nutrients are at high levels.^{51,52} Yet, when the product is perceived to be “good for you” (e.g., soup), the effect of disclosing high sodium content depends on nutrition knowledge levels.⁵² When products are viewed as less nutritious (e.g., margarine), the disclosures work regardless of knowledge levels.⁵¹ Based on processing research, the FTC developed its “Clear and Conspicuous Standard” (CCS) in 1970 for effectively presenting disclosures in TV ads and for strengthening disclosure remedies in deception and unfairness cases. These elements include (1) dual modality, (2) sufficient size, (3) background contrast, (4) single color background, (5) sufficient duration, (6) no distracting sounds, (7) immediately following claims and (8) consider the audience (e.g., children). Content analysis of the adherence of televised ad disclosures to the FTC’s CCS found that 25% of prime time TV ads in 1990 contained disclosures, yet none had all of the CCS elements.⁵⁵ In 2002, 67% of TV ads contained disclosures, yet adherence had either declined or remained unchanged since 1990 for most of the CCS elements.¹³

Theoretical support. Almost 60 years of research and theory development has been conducted on the primary mechanism and context for warnings: fear appeals. This research has had three primary independent variables: fear, perceived threat, and perceived efficacy.⁵⁶⁻⁵⁸ Typically, researchers manipulate

fear appeal (or warning) strength and assess its immediate impact on evoked fear.^{33, 35} Perceived threat has two components: perceived threat severity and perceived threat susceptibility. Perceived efficacy consists of perceived response efficacy (i.e., the belief that the recommended response works in reducing the perceived threat) and perceived self-efficacy (i.e., the belief about one's ability to perform the recommended response).⁵⁸ Unfortunately, the efficacy elements are often neglected, yet can serve as key drivers of preventive effectiveness for consumers.

Early theoretical work proposed an inverted-U relationship between fear intensity and persuasiveness.^{59, 60} However, this has not received consistent support.⁵⁸ Indeed, considerable evidence suggests a positive linear relationship, with stronger fear-arousing conditions producing greater message acceptance.⁶¹⁻⁶⁵ In a meta-analysis of more than 100 fear appeal articles, Witte and Allen⁵⁸ conclude that "the stronger the fear aroused by a fear appeal, the more persuasive it is" (p. 601). Other strategies, such as offering a solution to the warning to help objective processing (e.g., 1-800-QUIT-NOW), are at the heart of the Parallel Response Model⁶³ and the Health Belief Model.⁶⁶ An evaluation of the warning's impact on *all* Protection Motivation Theory (PMT) elements (i.e., evoked fear, perceived threat (severity, susceptibility), and perceived efficacy (response efficacy, self-efficacy))^{56-58, 67} is preferable in gauging effectiveness of warning outcomes.

Accounting for initial opinions and prior involvement of the target audience is essential in evaluating effects of warnings and fear appeals. For example, the use of strong graphic visual warnings may be needed to counteract some smokers' biased and entrenched initial opinions about smoking and quitting.^{33, 35, 49, 68} As supporting theory, the Elaboration Likelihood Model (ELM) accounts for elements that affect the persuasiveness of warnings, including the target audience's initial opinion, motivation, ability, and opportunity to process warning information, message cogency, and other peripheral processing cues.^{49, 69}

Most disclosure research has focused on regulatory, public health, or media-related questions, without supporting theory. However, in Andrews et al.,⁵¹ Spreading Activation Theory⁷⁰ is used to demonstrate how concepts that are primed (e.g., a "No Cholesterol" claim) might spread to an expanding set of nodes in a memory network (e.g., "Low Fat" inferences) or to fewer nodes due to disclosure information (e.g., "Contains 14 grams of fat per serving – an amount determined to be high by the FDA"). Clearly, however, there is room for greater theoretical development in disclosure research.

What general practical advice about warnings and disclosures can the evidence support?

What belongs in a warning or disclosure? This important question can be answered by following a series of steps in developing warning/disclosure content proposed by Fischhoff et al.⁷¹ First, determine from experts what information is most critical to understanding how a risk is created and communicated (i.e., “What Matters”?). Second, assess consumers’ current beliefs regarding those facts (i.e., their “mental models”). Third, design messages focused on the critical gaps between what consumers know and what they need to know. Fourth, consumer testing should be used to evaluate the effectiveness of those messages in closing the gaps. Fifth, develop and evaluate a delivery mechanism capable (e.g., message channels and media) of drawing actual consumers’ interest.

Matching warnings and disclosures with audience processing objectives. Once content is set, the warning or disclosure should be matched with the target audience’s appropriate stage(s) in information processing (e.g., exposure? awareness? comprehension? behavior? all of these?). Wilkie¹⁴ illustrates these options in his landslide warning example in “Welcome to Mount Hazard in FTC National Park.” Options might range from the more cognitive (e.g., a “Danger – Landslides” sign; print literature with statistics; trail hazard signs; PSAs on safety measures) to the more behavioral (e.g., signing a release paper with a “cooling off” period; blocking trails).

Factors influencing availability and processing of warnings and disclosures. Even if content and communication objectives are correctly matched, certain audience characteristics, organization, and format issues can affect the availability and processing of warnings and disclosures.⁷² Effectiveness is enhanced when warning or disclosure frequency is increased, is dramatic or sensational, is immediate to the risk, is personally relevant, and when risk immunity is reduced. It also helps to reduce the number of alternatives to process, have sufficient processing time, provide proper framing (e.g., per trip vs. lifetime), format (e.g., symbols, color, type size), organization, and offer an expected hierarchy of warning information. The following hierarchy is suggested based on the natural order for which consumers are likely to use warning information: (1) What is the product? (2) What are its benefits and risks, (3) How should it be used? (4) What risks are there in use? (5) How can these risks be avoided? (6) What should be done if the product is not properly used?⁷³

Unintended consequences: why do consumers fail to attend to warnings? Several errors by designers can lead to an inability of consumers to attend to warnings. As noted by Stewart and Martin,⁷⁴ these include (1) inadequate measures of attention or recall (e.g., warning recall is not the same as message recall), (2) warning information that is not personally relevant, (3) consumers

may be already familiar with information, (4) consumers may be distracted from the information, and (5) consumers may be desensitized after repeated exposures (especially with false alarms, incorrect warnings, being more extreme than necessary, no immediate harm). Also, trust of the warning source is important in ensuring attention (e.g., countering teen reactance).

Cautions and vulnerable populations. Finally, in addition to making sure that the warnings and disclosures are clear and conspicuous, and in the right media channels, caution is advised when focusing on vulnerable populations. When appealing to seniors, children, and non-native speakers, literacy and learning deficits are likely to reduce exposure, recall, comprehension, and coping strategies when presented with warning and disclosure information.⁷⁵ Yet, warnings and disclosures often are not delivered in a vacuum. Entire integrated communication efforts help,²⁰ as found in the delivery of prescription drug warning information (e.g., black box information, patient inserts, labeling, medication guides, pharmacy leaflets, and direct-to-consumer ads).

The evaluation of warning and disclosure communication

Evaluating marketing communications, such as warnings and disclosures, usually involves (1) focus groups (copy and rough stage development), (2) copy testing (pretests), and (3) tracking (post-tests).⁷⁶ Four major study designs are possible: (1) quasi-experiments in the field (full-scale evaluation), (2) experiments in the field (field tests), (3) quasi-experiments in the lab (audience subgroup tests without random assignment), and (4) experiments in the lab (random assignment in controlled copy tests).⁷⁷

No budget. In this challenging scenario, tests of warnings and disclosures may be limited to the use of student subjects in academic environments or clinical patients affected by the communication. Although students may respond to protection motivation or elaboration likelihood measures that assess warnings or disclosures, such samples may lack external validity and generalizability.⁷⁸ For example, a lack of direct experience with the product and its warnings may lead to highly inconsistent correlations of product warning attitudes with actual behavior.⁷⁹ Usually, focus groups in quasi-experiment studies in the lab can offer insights into the warning and disclosure stimuli, but cannot be used for definitive cause and effect conclusions.^{78,80} Other creative possibilities include the tracking of reactions to specific company warnings and disclosures on search engines that compile thousands of blog sites (e.g., www.blogpulse.com). Yet, this also can be problematic due to the convenience nature of the sample and viewpoints.

Modest budget. Here, both focus groups (or cognitive interviews in pretesting), as well as controlled experiments are possible that randomly assign respondents to test (warning) and control (no warning) groups using covariates of major demographic variables.^{33,35-36} With adequate confound checks (i.e.,

measuring what the warnings should not influence),⁸¹ use of attention filters,⁸² and target audience screening, online experiments can be run to help not only with internal validity, but generalizability issues as well.

Serious budget. One *gold standard* for evaluating public health initiatives is that of the National Youth Anti-Drug Media Campaign, which spent upwards of \$100 to \$200 million yearly since 1998 and used focus groups,⁸³ copy tests with controls,^{76,84} and longitudinal tracking of attitudes, intentions and behaviors.⁸⁵ Although the impact of the campaign has been debated over the years,^{77,86} including the need for an initial baseline tracking measure, it nonetheless provides an example of the full range of evaluation tools from focus groups to copy tests to tracking. A serious budget would allow such a comprehensive effort in the evaluation of warnings and disclosures used as part of major public health programs.

Conclusions

Warnings and disclosures are ubiquitous and a part of everyday life. Common misperceptions about warnings and disclosures are that they often are ignored due to their design (e.g., *mouse print, legalese*) or can backfire. Moreover, warnings and disclosures cannot compensate for product design flaws, and the effects of warnings and disclosures may be temporary when not reinforced. However, this review of nearly six decades of research evidence shows that when accounting for audience characteristics, prior beliefs, message content, and proper delivery modes, warnings and disclosures can indeed be effective communication tools and remedies for consumer and public health policy.

Additional resources

1. Andrews, J.C. and Netemeyer, R.G. (1996). Alcohol warning label effects: Socialization, addiction, and public policy issues. In R. P. Hill (Ed.), *Marketing and Consumer Research in the Public Interest*, Thousand Oaks, CA: Sage, 153-175. This chapter reviews alcohol warning label research, then offers theoretical explanations for resistance to alcohol warning labels by at-risk groups and concludes by examining the alcohol socialization process, models of addiction, and public policy alternatives.
2. Argo, J.J. and Main, K. J. (2004). Meta-analyses of the effectiveness of warning labels. *Journal of Public Policy & Marketing*, 23 (2), 193-208. A meta-analysis of over 44 empirical warning studies examines their impact across five dimensions of effectiveness: attention, reading and comprehension, recall, judgments, and behavioral compliance.
3. Bettman, J. R., Payne, J. W., and Staelin, R. (1986). Cognitive considerations in designing effective labels for presenting risk information. *Journal of Public Policy & Marketing*, 5, 1-28. This thorough review presents how people process risk information, offers general guidelines for designing warning labels, and gives specific examples of these guidelines for cleaning agent and drain opener products.
4. Cox, E.P., Wogalter, M.S., Stokes, S.L., and Murff, E.J.T. (1997). Do product warnings increase safe behavior? A meta-analysis. *Journal of Public Policy & Marketing*, 16 (2), 195-204. A meta analysis of 15 studies for 79 experimental conditions shows that (1) warnings increase safe behavior and (2) this increase occurs for both student and non-student subjects.

5. Fischhoff, B., Riley, D., Kovacs, D. C., and Small, M. (1998). What information belongs in a warning? A mental models approach. *Psychology & Marketing*, 15, 663-686. A step-by-step approach is described for determining the information content of warnings, including understanding risk estimates, risk processes, and methods to reduce risk.
6. Hoy, M. G., and Andrews, J.C. (2004). Adherence of prime-time televised advertising disclosures to the "clear and conspicuous" standard: 1990 versus 2002. *Journal of Public Policy & Marketing*, 23 (2), 170-182. In a content analysis of over 1600 prime-time TV commercials in 2002, over 2/3 contained disclosures, yet adherence to most of the FTC's clear and conspicuous elements for the disclosures had either declined or remained unchanged compared to 1990.
7. Keller, P. A., and Lehmann, D. R. (2008). Designing effective health communications: A meta-analysis. *Journal of Public Policy & Marketing*, 27(2), 117-130. A meta-analysis of 60 health communication studies indicates that message tactics and individual characteristics interact to determine health intentions.
8. Kees, J., Burton, S., Andrews, J.C., and Kozup, J. (2010). Understanding how graphic pictorial warnings work on cigarette packaging. *Journal of Public Policy & Marketing*, 29 (2), 265-276. A between-subjects, controlled experiment with over 500 smokers indicates that stronger (versus moderate or less) graphic visual warnings strengthen smokers' intentions to quit and that evoked fear fully mediates the effect of the graphic visual warning on intentions to quit.
9. Morris, L.A., Mazis, M.B. and Barofsky, I. (Eds.) (1980). *Banbury Report 6: Product Labeling and Health Risks*. Cold Spring Harbor, NY: Cold Spring Harbor Laboratory. This edited volume provides one of the first compilations of readings on product warning labels and health risks based on a conference held at the Banbury Center at Cold Spring Harbor, NY in 1980.
10. Stewart, D. W. and Martin, I. M. (1994). Intended and unintended consequences of warning messages: A review and synthesis of empirical research. *Journal of Public Policy & Marketing*, 13, 1-19. The authors first review the diverse literature on warnings, and then discuss their potential ineffectiveness due to frequent use, reactive behavior, and poor message design, primarily due to a lack of reliance on empirical research.
11. Witte, K. and Allen, M. (2000). A meta-analysis of fear appeals: Implications for effective public health campaigns. *Health Education & Behavior*, 27 (5), 591-615. Fear appeal theory is first reviewed and a meta-analysis of more than 100 fear appeal studies is conducted showing that strong fear appeals and high efficacy messages produce the greatest behavior changes.
12. Wogalter, M.S., DeJoy, D.M. and Laughery, K.R. (Eds.) (1999). *Warnings and Risk Communication*. London: Taylor & Francis. This edited volume offers an earlier review of the warnings and risk communication literature, organized by stages of information processing and concludes with a discussion of practical and legal aspects of warnings.

Endnotes

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