



THE LANGUAGE OF SAFETY

A Dive into the Framework of Risk Communication

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“Beware! To touch these wires is instant death. Anyone found doing so will be prosecuted.”

– Sign at Railroad Station

“If you are seated in an exit aisle and are unable to read this, please ask a flight attendant to reseal you.”

– Airlines Safety Booklet

“Remember: Objects in mirror are actually behind you.”

– Bike Helmet Mirror

When warning labels miss the mark, it can provide a good laugh, but there are often serious consequences at stake when these precautionary statements do not function in the intended manner. One of the goals of warning labels or safety manu-

als is to deliver important hazard information to consumers. When a product-related injury happens, the warning systems are often evaluated on their accuracy, adequacy and appropriateness in communication. Analyzing warning labels in a communication framework can help manufacturers understand how people interpret safety information and potentially improve the effectiveness of their risk communication.

GRICE'S MAXIMS

Grice's Maxims stands as one of the most influential works in the study of meaning and communication. These encapsulate the assumptions people hold in communication and illustrate how the interpretation of an utterance hinges not solely on the explicit meaning of what has been said, but also on the implicit meaning of what can be

inferred. The maxims can be divided into four main categories: Quantity, Manner, Relevance and Quality.

MAXIM OF QUANTITY

The main ideas of the Maxim of Quantity are 1) do not be under-informative and 2) do not be over-informative, both of which play a role in evaluating the adequacy of warning labels.

Consider the scenario where Bob has been to France and Russia, and someone asks him what countries he has visited. If Bob responds with only “France,” despite being technically true, this response is inappropriate because it can mislead the listener into assuming that Bob hasn't visited any other country besides France. Likewise, consumers typically assume that the manufacturer will provide all necessary product

information, thus, any missing information can lead to wrong conclusions and, consequently, possible injuries. For example, while it is true that ingesting lead is harmful, a label stating, “Harmful if swallowed,” could be inferred to mean “Safe to touch or inhale.” A label stating “contains peanuts” could be interpreted as “contains no other allergens such as almonds.” The absence of phrases like “may contain allergens” or “may contain traces of nuts” could suggest to the consumers that the manufacturer has thoroughly tested and ascertained the absence of other allergens. It is important to note that consumers interpret labels using not only the information presented but also the information that is missing.

The second part of the maxim is relevant to cases with open and obvious hazards. For example, a kitchen knife can cause cuts and lacerations, yet knives don’t typically come with warnings because a reasonable user can infer the hazard from the sharp blade or knowledge of knife usage. Since safety information is already inherently available to the consumer, the manufacturers don’t need to be over-informative by putting a warning label on knives.

Typically, following the American National Standards Institute’s (ANSI) Z535 recommendation, a comprehensive label would include 1) a signal word with the corresponding color, 2) a description of the potential hazard, 3) possible consequences of non-compliance, and 4) instructions to prevent or respond to the hazard. For example, a product with an electrical hazard may have a warning label that reads: (1) DANGER! (2) Hazardous voltage. (3) Contact will cause burn or electrical shock. (4) Turn off and lock out system power before servicing. Including all these components helps people better understand the causal relationship between their actions and the possible outcomes, thereby increasing compliance with the warning.

For example, a warning label that only says, “do not use this product on hot surfaces,” leaves consumers to speculate on their own what would happen if they do not comply. A consumer may think, “perhaps the heat will reduce the life of the product,” and consequently dismiss the warning, as the product is cheap enough that the individual can easily afford another one. Since the consequence of non-compliance is perceived to be minimal, the consumer proceeds to use the product on a grill, causing an explosion. The consumer could argue that the lack of information has contributed to the decision to ignore the warning. On the other hand, the presence of too many warnings or excessive content on a warning can lead to information overload or inefficient information processing. Ultimately,

the decision of what to include and what to omit should be carefully considered in light of many factors, such as the characteristics of the audience and the context of product use. In some cases, a simple “Sharp blades” warning may be sufficient because most people can infer the danger (cuts and injuries) and appropriate precautions (wearing guards or avoiding contact). In other cases, minimally including all ANSI-suggested information is necessary. Manufacturers may want to study and understand their target population to determine how much information is the right amount of information.

MAXIM OF MANNER

The Maxim of Manner is concerned with how to say what needs to be said: be brief, be orderly, avoid ambiguity and avoid obscurity of expression. This is especially important in risk communication, as people often spend limited time studying warning labels. Keeping the warning message concise and using simple words can improve comprehensibility, thereby contributing to compliance.

The more information packed in a sentence, the higher the risk of misinterpretation. For example, a 2013 research study by Wolf et al. reported that many people misinterpreted the warning “You should avoid prolonged or excessive exposure to direct or artificial sunlight while taking this medication” as “do not leave medicine in the sun.” Since the size of a prescription bottle is small, this warning can be hard to read. Coupled with the redundancy use of adjectives, consumers may simply scan for a few keywords, leading to misinterpretation. When replaced by a simplified warning (“limit your time in the sun”), the rate of correct interpretation jumped from 73% to 93%.

Word choice and sentence structure are also important. “May cause cancer” is likely to be easier for an average consumer to understand than “May contain carcinogen.” A phrase like “Toxic by inhalation and if swallowed” is comprehensible but not as effective as “toxic if inhaled or swallowed” or “toxic by inhalation or ingestion” because the use of similar linguistic structures (both nouns or both verbs) can speed up sentence processing.

MAXIM OF RELATION

The Maxim of Relation pertains to relevance. Some products include information such as product standards and certifications in the warning section with no space or line break. While important, such information is not directly relevant to the hazard(s) and is better displayed elsewhere to avoid confusion.

The maxim of relation can also come into play when considering the location of the warning label. On large machines or equip-

ment, warning labels are typically placed close to their respective hazards. Users are more likely to comply when they perceive that the warning is relevant to their task at hand than when the warning is general.

MAXIM OF QUALITY

The Maxim of Quality states that the information communicated should be accurate and truthful. In recent years, there has been an increase in the number of lawsuits over false advertising or misleading labels, such as products advertised to have 30mg of protein when they actually contain only 15mg or snacks labeled as gluten-free when containing gluten. Such misrepresentation is in violation of the Maxim of Quality and is potentially harmful to the consumer.

This maxim also suggests not to communicate what you lack evidence for. A product may not be advertised as being the safest tool if no testing or comparative analysis has been done with other comparable products on the market. A manufacturer who has only evaluated their product’s choking hazards on children aged 2 or 5 may want to refrain from stating that the toy is safe for children between ages 3 and 8.

CONCLUSION

A warning that uses an ambiguous word does not always mean it is not helpful at all, and a comprehensive warning that contains all recommended information does not necessarily mean it is effective in motivating people to comply. The warning message should be evaluated in context, as a whole, and in consideration of other factors such as the user’s needs, the time the user has to process the information, the cost of compliance, and so on. Communication in general, and risk communication in particular, is a complex process that involves the interaction of the explicit message with many hidden elements like the assumptions, beliefs, and prior knowledge of both parties. Effective risk communication starts with effective communication, and using a communication framework like Grice’s Maxim can be helpful in evaluating safety information.



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