

Safety Beliefs about Consumer Products

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This study examined people's safety perceptions concerning consumer products. Participants (n=129) were asked about their overall beliefs concerning safety of consumer products sold in the U.S. Beliefs regarding government and industry policies concerning safety were also collected. Results showed that participants gave ratings indicating believing that consumer products sold in the U.S. are safe. People tended to trust U.S. government's policies towards product safety. However, participants' responses indicate skepticism about manufacturers' motivations. Implications for HF/E research in risk communication are discussed.

INTRODUCTION

Variables that influence warning effectiveness have been a focus of consideration in Human Factors and Ergonomics (HF/E) research (Laughery, 2006; Lesch, 2006; Wogalter, 2006a). Research has examined warning design factors such as size, color, signal word, and pictorials, as well as nondesign factors such as the characteristics of the target audience, tasks involved and the environment.

Although a substantial body of research has been published examining factors that influence warning effectiveness, there has been relatively little research on people's overall beliefs regarding the safety or hazard of products that they may have or use. Beliefs refer to an individual's knowledge that is accepted as true regardless of actual truth (Riley, 2006; Wogalter, Dejoy, & Laughery, 1999).

Research (Godfrey & Laughery, 1984; Goldhaber & deTurck, 1988; Lesch, 2006; Wogalter, 2006a; Wogalter, Brelsford, Desaulniers, & Laughery, 1991) indicates that people's perceived hazard and familiarity of consumer products affects warning effectiveness. If consumers believe a product is hazardous, they are more likely to look for and read warnings (Lesch, 2006; Wogalter, 2006b). On the other hand, if they do not believe the product is hazardous, then they may not consider the warnings. Familiarity beliefs are similar. Persons familiar with a product might assume that they know the product (or a similar one) well enough that they do not need to read the warnings (Goldhaber & deTurck, 1988; Godfrey & Laughery, 1984; Wogalter et al., 1991).

In other words, people's pre-existing overall beliefs about products may influence whether a warning will effectively communicate hazard information. In summarizing past research on the topic, Riley (2006)

notes that beliefs play an important role in decision making and altering behavior.

Besides people's experience and frequency of use of products, other factors such as seeing it being used, seeing or hearing advertising or experiencing other similar products could result in believing to be familiar with a product (Riley, 2006). Considerable research shows that perceived hazard is inversely related to product familiarity (Godfrey et al., 1983; Goldhaber & DeTurck, 1988, 1989; Otsubo, 1988; Riley, 2006; Wogalter et al., 1991). If people believe a product is relatively familiar and safe, then they may not look for or read the warnings (Wogalter, 2006b). This implies that a product-user's beliefs and perceptions regarding a given product may influence whether a warning will be processed or not (Lesch, 2006).

The purpose of the present study was to examine people's beliefs and attitudes regarding consumer products sold in the U.S. Initially, participants were asked to indicate their general belief about safety toward U.S. consumer products, followed by making judgments about several specific statements concerning consumer products and the U.S. government's and industries' roles in safety.

METHOD

Participants

A total of 129 individuals (51 males, 78 females) participated. Average age was 30 years ($SD = 15.1$). Samples from two population pools were collected: 40% were undergraduate students from North Carolina State University ($M = 23$ years; $SD = 5.2$), and 60% were non-student adult volunteers from central North Carolina ($M = 40$ years; $SD = 15.8$).

Materials and Procedure

The questions were taken from a larger questionnaire concerning various beliefs about safety and consumer products. Participants were initially asked to make a judgment about how safe they believed consumer products to be in general in the U.S. by making an overall rating. A 9-point scale was provided with the even numbered scale points labeled with the following anchors: (0) not at all safe; (2) somewhat safe; (4) safe; (6) very safe; and (8) extremely safe.

Second, participants were presented with 11 statements relating to various aspects of consumer products. The questions concerned safety perceptions about consumer products sold in the U.S. and the role and activities of the U.S. Government and product manufacturers. The statements are listed in Table 1. Participants were asked to rate how much they agree with each of the statements by giving a rating on a 9-point scale with the even numbered scale points labeled with the following anchors: (0) definitely do not agree; (2) do not agree; (4) somewhat agree; (6) agree; and (8) definitely agree. Two orders of the statements were used; one was a randomized order and the other was the reverse of the randomized order.

RESULTS

Overall Perception of Safety of U.S. Consumer Products

On average, participants rated U.S. consumer products as having a mean rating between "safe" and "very safe" ($M = 5.2$, $SD = 1.4$).

Agreement with Statements Concerning Safety of U.S. Consumer Products

A one-way repeated measures ANOVA revealed that there was a significant main effect of statement, $F(10, 1280) = 43.11$, $p < .0001$. *Table 1* shows the mean ratings (and standard deviations) for agreement with the 11 statements regarding various aspects of consumer products. The statements in the table are ordered from high to low mean ratings. The statements that garnered the highest levels of agreement were: (a) the government will sometimes recall or even ban products that are dangerous ($M = 5.83$); (b) companies are motivated more by profit than safety ($M = 5.81$); and (c) most products that I buy are safe ($M = 5.57$). The lowest agreement ratings were given to the statement that (k) lawsuits should not be necessary because there are already specific rules preventing the sale of dangerous

products ($M = 2.64$). Other low ratings were for the statements: (j) I read the labels and warnings for most every product that I buy ($M = 3.81$), and (i) companies and industries largely police themselves regarding safety of products ($M = 3.88$).

For analysis of age group, a median split at 27 years was used to divide the sample by age into older and younger adults. Age group was the between subjects variable and Statements variable was the within subjects factor. A 2 (age group: younger vs. older) X 11 (statement) mixed model analysis of variance revealed that there was no main effect for age groups or interaction ($p > .05$). The main effect of Statement indicated that at least some of the different statements had significantly different mean ratings, $F(10, 1320) = 42.56$, $MSe = 2.89$, $p < .0001$. Tukey's Honestly Significant Difference (HSD) test at $p = .05$ was .64. This value can be used to compare means of Table 1. Any mean difference greater than this value is statistically significant. Another mixed model ANOVA involving students vs. nonstudents was conducted. The results were similar to the ANOVA using age group, probably because students vs. nonstudents had overlapping membership with the older vs. younger groups.

Table 1

Mean (SDs) Agreement with Statements Relating to Safety of Consumer Products

	Statement	Mean (SD)
(a)	The government will sometimes recall or even ban products that are dangerous.	5.83 (1.7)
(b)	Companies are motivated more by profit than safety.	5.81 (1.8)
(c)	Most products that I buy are safe.	5.57 (1.5)
(d)	Safety is of greater concern and importance for children's products than adult products.	5.26 (2.4)
(e)	Products are generally safer in the U.S. than in other countries.	5.19 (1.9)
(f)	The U.S. Government has specific regulations to ensure most products are safe.	5.12 (1.5)
(g)	Most products sold in the U.S. are safe.	4.64 (1.7)
(h)	The warnings for most products are complete and accurate.	4.43 (1.8)
(i)	Companies and industries largely police themselves regarding safety of products.	3.88 (1.9)
(j)	I read the labels and warnings for most every product that I buy.	3.81 (2.1)
(k)	Lawsuits should not be necessary because there are already specific rules preventing dangerous products.	2.64 (2.1)

Pearson's Product Moment Correlation

Coefficients were used on the data of the 11 statements. *Table 2* shows the intercorrelation matrix. Most of the correlations are in the positive direction. Five of the items are highly and positively intercorrelated. These were: (c) "most products that I buy are safe"; (e) "products are generally safer in the U.S. than in other countries"; (f) "the U.S. Government has specific regulations to ensure most products are safe"; (g) "most products sold in the U.S. are safe"; and (h) "the warnings for most products are complete and accurate."

Table 2

Correlation Coefficients Agreement Ratings to Statements

	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
(a)	.16	.22*	.13	.16	.27*	.19*	.32*	.16	.04	.03
(b)		.09	.12	.06	.01	-.05	-.00	-.04	.03	.07
(c)			.11	.40*	.46*	.53*	.37*	.26*	.20*	.11
(d)				.09	.15	-.01	.21*	.31*	-.02	.07
(e)					.28*	.50*	.34*	.16	.04	.15
(f)						.34*	.35*	.28*	.26*	.21*
(g)							.45*	.23*	.08	.12
(h)								.31*	.21*	.03
(i)									-.02	.08
(j)										.01

* $p < .05$; letters correspond to the statements in Table 1.

DISCUSSION

The results show that participants believe that consumer products sold in the U.S. are generally safe. This was indicated by a mean rating between safe and very safe to a question about U.S. consumer products in general. Also, this overall belief about product safety was shown most notably in the following three statements, which received relatively high agreement ratings: (c) "most products that I buy are safe," (e) "products are generally safer in the U.S. than in other countries," and (g) "most products sold in the U.S. are safe." All of three had mean ratings positioned between somewhat agree and agree.

The statements also indicated participants' beliefs that the U.S. government plays a role in consumer product safety. This was revealed in ratings of the statements: (b) "the government will sometimes recall or even ban products that are dangerous" and (f) "the U.S. government has specific regulations to ensure most products are safe" with the mean ratings for both statements close to the "agree." The participants' ratings

acknowledge that government is involved with consumer product safety through regulating, recalling, and banning dangerous products. However, the belief that "the government has specific regulations in place to ensure most products are safe" suggests that consumers are not completely informed of the government's and industries' roles in safety. In fact, there are relatively few specific regulations for many kinds of consumer products, and as a consequence, industries usually need to police themselves regarding product safety. For example, the Dietary Supplement Health and Education Act (DSHEA) of 1994 (FDA, 1994) legislation was passed by the U.S. Congress which effectively bars the U.S. FDA from regulating food supplements (with some exceptions), and thus this entire industry is largely unregulated by the U.S. government. Likewise, the U.S. Consumer Product Safety Commission (CPSC) is supportive of voluntary standards but most standards are not required by law. Manufacturers are consequently responsible for making sure their products are safe for consumers. In addition, while people appear to believe that government agencies are actively involved in inspecting and testing products, the reality is that these agencies lack the resources to do the job (*Consumer Reports*, 2010; Harris, 2011).

On the other hand, the statement (i) "companies and industries largely police themselves regarding safety of products" was given relatively low ratings of agreement. It suggests some awareness that companies tend not to do a good job at this policing role and/or suggests the belief that government does the policing job. It is notable that the second highest rated statement is (b) "companies are motivated more by profit than safety." While this statement may or may not be true, the rather high mean rating suggests that people are somewhat skeptical about industries' commitment to safety relative to profit. This belief is consistent with the relatively low ratings of agreement to the statement that (k) "lawsuits should not be necessary because there are already specific rules preventing dangerous products." This low rating suggests some support for product litigation proceedings in the U.S. However, the low rating of agreement might also be partly due to the complexity of the statement itself.

Additionally there were some other notable results in the statement ratings. One was the belief that (d) "safety is of greater concern and importance for children's products than adults' products." The high rating of agreement for this statement was expected because people realize that children are more vulnerable than adults.

Another set of statements were product warning related. For the statement (h) "warnings for most products are complete and accurate," there was a mean rating between somewhat agree and agree. This finding suggests that people believe that manufacturers are generally producing good documentation. This could be an issue if it is found that a particular product's documentation is incomplete or inaccurate. Poor or absent warnings could result in injury. The (j) statement "I read the labels and warnings for most every product that I buy" was also rated between do not agree and somewhat agree. This finding supports research indicating that people usually do not read all of the labels and owners manuals of products that they buy (e.g., Mehlenbacher, Wogalter, & Laughery, 2002). Related to this is the literature on perceived product hazard, which shows that people are less apt to read product manuals that they believe are safe (Godfrey, Allender, Laughery, & Smith, 1983; Wogalter, Barlow, & Murphy, 1995; Wogalter, Brelsford, Desaulniers, & Laughery, 1991).

The results indicate that people generally believe that the products that they buy in the U.S are safe. They also have positive beliefs about governmental actions related to the safety of consumer products. This is a positive result for the U.S. marketplace. There is the potential problem, however, if people believe that a product is safer than it actually is. Underestimating the hazard could result in people doing dangerous behaviors (Wogalter, 2006b). Dejoy (1999) notes in his literature review that attitudes and beliefs can have powerful effects on whether a warning will be effective. Thus, if people believe a product is relatively safe then they may not look for or read a warning in order to use the product safely (Dejoy, 1997). In fact, each year millions of people are injured while using products due to improper use (Lesch, 2006; NEISS, 2011). To minimize the probability of accidents and injuries, hazard communications must be improved. There is a need

to educate consumers on their role in product safety. Many consumers believe that the U.S. government closely monitors product safety, so consumers need to be informed about the limitations of government agencies in testing and monitoring products.

An important function of warnings is to provide information and to appropriately influence risk perception (Lesch, 2006). Better quality information can empower consumers to make better quality decisions.

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