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Emphasizing Non-Obvious Hazards Using Multi-Frame Pictorials and Color on Allocation of Blame

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Abstract

This study examined allocations of blame for injuries sustained from the consumption of a product with a non-obvious hazard. Participants were given product-use scenarios that described a girl whose age was manipulated to be from 18 months to 16 years and who suffered serious brain damage after choking on a marshmallow made available to her by her mother. Supplementary information intended to be either positive or detrimental to the manufacturer and its safety practices was either present or absent from the scenario. When present and positive, the manufacturer put a warning on the product about the non-obvious hazard. The warning was manipulated by having color or not and a multi-frame or single-frame pictorial. Results replicated findings reported initially by Kalsher et al. (1999). When supplementary information was positive or not provided, participants directed more blame toward the parents of the young victim and less to the manufacturer. The opposite pattern was shown when negative supplementary information about the manufacturer and its safety practices was provided, suggesting that people perceived the manufacturer as irresponsible in their practices.

Introduction

There has been a growing interest among safety researchers in the processes by which people assign blame for injuries sustained during the use of or exposure to consumer products. Recent studies show that characteristics of the victim and circumstances of the situation shape the way in which people allocate blame for injuries. For example, the amount of blame assigned to victims has been shown to increase linearly with the victim's age (Kalsher, Wogalter, & Williams, 1999; Laughery, Lovvoll, & McQuilkin, 1996). Blame for injuries is also influenced by the attributions that one makes for the injury. When people believe that an injury stems from characteristics of the injured person (i.e., an internal attribution), they attribute most of the blame to that person, but when they believe that the injury stems from factors external to the injured person (i.e., an external attribution), they attribute more blame to the product manufacturer (Phoenix, Kalsher, & Champagne, 1997). The product safety policies of the manufacturer also influence blame allocations. Kalsher, Phoenix, Wogalter, and Braun (1998) found that participants attributed significantly more blame to the manufacturer when information was presented that placed the product safety policies and practices of the manufacturer in a negative light than when it placed such policies in a positive light.

The attribution of blame for injuries sustained from the use of consumer products in which the hazards are hidden or unknown may warrant special attention. When the hazards of a product are not well known or not easily recognized, consumers may not take proper precautions when using or consuming the product. As a result, their chances of being seriously injured increase. Typically, if individuals get injured using products with non-obvious hidden hazards, others are likely to blame them for their misfortune (Kalsher et al., 1999). However, if data regarding the hazardous nature of the product are made available to others, assignment of blame may depend on the circumstances of the situation and the manufacturer's actions and policies. Support for this position comes from a recent study by Kalsher et al. (1999). They created scenarios in which a girl of varying ages was severely brain-damaged as a result of choking on marshmallows, and provided a set of "relevant" facts (or did not) about the marshmallow manufacturer that portrayed the company in a positive or negative light. In the negative condition, the manufacturer was aware of data indicating the hazards of marshmallows, but did not provide a warning to consumers. In the positive condition, the manufacturer took action to warn the public about the hazards and provided a warning on their packaging. Results showed that the amount of blame attributed to the manufacturer versus the victim and her parents varied across the "relevant facts" conditions. When no information was provided about the hazards of marshmallows, participants tended to blame the victim and her parents for the injury. However, blame was shifted away from the victim and parents and toward the manufacturer in the negative information condition. Providing positive information about the manufacturer (including a warning) increased the blame placed on parents relative to others. Kalsher et al. (1999) also found that blame allocations varied with the victim's age. Responsibility assigned to the victim was a positive linear function of the victim's age, whereas responsibility

assigned to the parents was a negative linear function of the victim's age.

The purpose of the present study is to replicate and expand upon the results of Kalsher et al. (1999). Their study was one of the first to examine the effects of product safety policies on blame for injuries from a non-obvious hazard. If the results are replicated, it will strengthen confidence in these findings. Also, Kalsher et al. (1999) did not examine how different features of a product warning may affect reactions to injuries from non-obvious hazards. In the present study, four different warnings are presented in the positive frame condition. The relative effectiveness of the different warnings are also examined.

We used the same scenario approach used by Kalsher et al. (1999) in which a girl (of varying ages) is severely brain-damaged as a result of choking on marshmallows.[1] We hypothesized that blame allocated to different parties (e.g., victim, her parents, manufacturer) would vary as a function of the victim's age and information provided about the product safety policies of the manufacturer. Specifically, we expected that blame allocated to the child would increase linearly with her age, whereas blame to her parents would decrease linearly with age (*Hypothesis 1*). In addition, we expected that providing unfavorable information about the company' safety policies would shift blame toward the company, whereas providing favorable information would shift blame toward the victim's parents and the child victim (*Hypotheses 2*).

Method

Participants and Procedure

A total of 95 undergraduate students (mean age = 18.0 years, SD = .46) at a private university in the northeast participated. Seventy-five percent of the sample was male. The materials and procedures in this study were similar to those used by Kalsher et al. (1999). After they read and signed a consent form, participants were asked to complete a consumer product survey. The survey contained items that assessed participants' experience with the product (marshmallows), their perceptions concerning the hazards associated with handling and consuming it, and the likelihood of being injured by the product. These items were measured on 7-point Likert-type scales. Participants were than asked to read a fictitious product-use scenario in which a young girl named Amy Lyons chokes on marshmallows given to her by her mother. Despite efforts by her parents to dislodge the obstruction, it is not removed until the arrival of paramedics on the scene. The extended period of oxygen deprivation results in permanent brain damage. Upset by the incident, Amy's parents take legal action against the company.

Several versions of the scenario were created to represent our two experimental manipulations. First, the victim was depicted as being one of four ages: (a) as a 1 ½ year-old, (b) a 4-year-old, (c) an 8-year-old, or (d) a 16-year-old. Second, supplementary information about the manufacturer's product safety practices was either provided following the scenario or it was not. When present, the information cast the manufacturer and its practices in either a favorable or unfavorable light (positive vs. negative framing, respectively). Exact versions of the scenario and supplemental information can be found in Kalsher et al. (1999). The information in the negative framing condition indicated that the manufacturer did *not* provide a warning on its marshmallow packages, despite the fact that many articles highlighting the choking hazards associated with certain types of food have appeared in established medical journals. Further, it was mentioned that internal company documents revealed that the manufacturer intended to market their product heavily to young children (e.g., sponsoring certain Saturday morning children's TV shows), despite their awareness of statistics showing that nearly 90% of food-related choking deaths occur in children under the age of 4.

Information in the positive framing condition indicated that the manufacturer, aware of the same facts presented in the negative condition, provided a warning to consumers to highlight the potential hazards of their product. A copy of the product warning used by the company was included in the materials provided to participants in the positive-frame condition. When the warning was present, it was accompanied by either a single-frame pictograph depicting a person choking or a multiple-frame (dynamic) pictograph that depicted a choking sequence. In addition, the pictographs were either printed in black and white (no color) or in color. For the multi-frame warning, color was used to depict changes that occur in people's faces during a choking episode: a progression from flesh tone in the first frame, to red in the second frame, to a purplish tone in the third (and final) frame. For the single-frame warning, the victim's face was red, identical to the second frame in the multi-frame color condition. The pictographs used in this study were selected from a series of choking pictographs evaluated by Kalsher, Brantley, Wogalter, & Wolff (in press).

Post-scenario survey. After they had read the scenario and the supplementary information (if it was present), participants were asked to allocate responsibility for the injury (in percentage terms, summing to 100%) to each of several entities, including: (1) Amy Lyons (the victim), (2) Amy's parents, (3) the manufacturer, (4) the grocery chain whose stores sold the

[1] Evidence that marshmallows pose a special hazard to children is reviewed by Kalsher et al. (1999).

marshmallows, and (5) the paramedics who treated Amy. Participants who received the warning were also asked to complete several additional items to assess whether they had noticed it and how effective they felt it would be in getting people to exercise caution when consuming the product. Finally, items requesting basic demographic information were included.

Results

Risk perceptions

Prior to conducting our main analyses, we assessed the extent to which participants perceived the product (marshmallows) to be hazardous. Confirming our expectation, and consistent with past research (Kalsher et al., 1999), participants perceived low risk associated with eating marshmallows. The mean hazard rating was 1.44 (on a scale from 0 = no risk to 6 = high risk) and 75% of participants indicated that they would give marshmallows to their children to eat (65% indicated they would give them to someone else's children to eat).

Allocation of blame

Allocation of blame was analyzed using a 5 (Source of Blame) X 4 (Age of Victim) X 3 (Supplementary Information) mixed factor analysis of variance design. Source of blame was a within subjects factor, while age of victim and supplemental information were between subjects factors. The means for this analysis are presented in Table 1. A main effect was found for source of blame, $F(4, 332) = 102.14$, $p < .001$, $eta^2 = .55$. Post-hoc pairwise comparisons using modified Bonferoni procedures revealed that parents were held significantly ($p < .05$) more responsible ($M = 55.18$) than all other parties; that the blame assigned to the victim ($M = 21.49$) and the manufacturer ($M = 19.93$) was statistically equivalent and significantly greater than that assigned the store ($M = 1.41$) and the paramedics ($M = 1.22$).

Hypothesis 1 was supported by the presence of a significant Source of Blame X Age of Victim interaction, $F(12, 332) = 13.73$, $p < .001$, $eta^2 = .33$. Simple main effect tests revealed that the amount of blame allocated to the victim, $F(3, 83) = 29.14$, $p < .01$, and to the victim's parents, $F(3, 83) = 16.69$, $p < .01$, varied with the victim's age, whereas blame assigned to other parties was constant across age. Allocation of blame to the victim showed a strong positive linear relation with the victim's age. Blame was significantly higher for the 16 year old victim than all other ages, and higher for the 8 year old than the 18 month old ($p < .05$ using modified Bonferoni procedures). Allocation of blame to the victim's parents showed a strong negative linear relation with the victim's age. Parents were assigned less blame in the 16-year-old condition than in the other three age conditions. Parents were also blamed less when the victim was eight than when she was 18 months ($ps < .05$ using modified Bonferoni procedures). In sum, as the age of the victim increased, blame was shifted toward the victim and away from the parents.

Table 1. Mean Responsibility Ratings (Percentages) by Source of Blame, Type of Supplemental Information, and Age of Victim.

	Age of Victim (years)				
Source of Blame	**1 ½**	**4**	**8**	**16**	**Mean**
Positive Information					
Amy (Victim)	4.44	8.89	11.88	85.00	27.55
Amy's Parents	80.00	73.78	65.63	11.00	57.60
Manufacturer	11.67	15.11	17.50	2.00	11.57
Store	2.22	0.56	1.25	1.00	1.26
Paramedics	1.67	1.67	0.00	1.00	1.08
No Information (Control)					
Amy (Victim)	2.14	17.50	22.22	58.89	25.19
Amy's Parents	85.00	67.50	49.22	16.89	54.65
Manufacturer	12.14	13.30	20.55	15.00	15.26
Store	0.00	.0.00	3.89	2.78	1.67
Paramedics	0.71	1.67	4.11	0.89	1.85
Negative Information					
Amy (Victim)	2.50	9.56	11.67	23.14	11.72
Amy's Parents	66.25	57.11	54.44	35.29	53.27
Manufacturer	30.63	30.00	32.22	39.00	32.96
Store	0.63	2.22	1.67	0.71	1.31
Paramedics	0.00	1.11	0.00	1.86	0.74

Hypothesis 2 was supported by the presence of a significant Source of Blame X Supplemental Information interaction, $F(8, 332) = 3.77$, $p < .01$, $eta^2 = .08$. Simple main effect tests revealed that the valence of the relevant facts significantly affected allocation of blame to the manufacturer, $F(2, 83) = 7.06$, $p < .001$, and to the victim, $F(2, 83) = 5.88$, $p < .01$. Bonferoni mean comparisons (presented in Table 2) showed that for the manufacturer, blame was significantly higher in the negative frame condition then in the control (or non-supplemental) and positive frame conditions, $p < .01$. For the victim, blame was significantly lower in the negative condition than in the control or positive conditions, $p < .01$. In sum, the negative frame information shifted more blame to the manufacturer, and less to the victim.

Additional analyses revealed that gender, age, education, and number of children did not moderate the significant effects reported above. Nor were these effects moderated by having choked in the past or having observed someone else choking.

Table 2. Mean Responsibility Ratings (Percentages) by Type of Information and Source of Blame.

	Supplemental Information		
	None	**Neg**	**Pos**
Victim	25.19_a	11.72_b	27.55_a
Parents	54.65_a	53.27_a	57.60_a
Manufacturer	15.26_a	32.96_b	11.57_a
Store	1.67_a	1.31_a	1.26_a
Paramedics	1.85_a	$.74_a$	1.08_a

Note: Means with different subscripts within a row are significantly different.

Effects of Warning

The effects of type of warning on detection and perceived effectiveness of the warning were tested in the positive information condition using a 2 (black and white vs. color) X 2 (single vs. multiple frames) factorial design. A significant interaction term was found for detection, i.e., whether or not participants reported seeing the warning, F (1,27) = 5.65, $p < .05$. Post-hoc analysis showed that the conspicuity of warning was particularly low in the black and white, single frame condition. Only 25% (2 of 8) of participants reported that they saw the warning in the black and white, single frame condition, compared to greater than 75% in all other conditions. Pairwise comparisons revealed that the black and white single frame condition was significantly different from all other conditions, $ps < .05$. For perceived effectiveness, only one significant effect was found: participants who received a color warning rated it as more effective than those who received a black and white warning, $t(20) = 2.06$, $p = .05$. Neither color nor the number of frames affected the blame attributed to the various parties in the positive frame condition.

Discussion

These results provide further evidence that the way in which people allocate blame for consumer product injuries due to non-obvious hazards is affected by the way in which details of the situation are presented. When potential hazards are not obvious and a product is generally believed to be harmless, people may tend to assign manufacturers relatively lower blame, and instead assign the majority of the blame elsewhere. Consistent with previous research, blame in this case was assigned primarily to the parents of the young victim or to the older victim herself. In general, the percentage of blame affixed to victim increased linearly with age, supporting previous research in this area (e.g., Laughery et al., 1996; Resnick & Jacko, 1998).

The effects of framing condition on blame allocations support the findings of Kalsher et al. (1999). Providing participants with information that the manufacturer did not act on knowledge that the product is potentially harmful significantly increased the responsibility placed on the manufacturer, suggesting that people perceived the manufacturer as reckless or irresponsible in their practices. However, knowledge that the manufacturer did the right thing by taking steps to warn consumers about the hazards of its product had an opposite trend, shifting blame away from the manufacturer and toward the parents. It is likely that participants perceived the company as trying to promote safety by communicating the peculiar "hidden" hazards associated with marshmallows.

Exploratory analyses regarding the effectiveness of different types of warnings indicated that simple warnings – e.g., black and white, single frame warnings – may not be as noticeable and effective as color and multi-frame warning labels. Manufacturers may need to pay special attention to the salience of warnings placed on products with non-obvious hazards because consumers are less likely to inspect packaging carefully.

In conclusion, these results generally support previous research in this area, but point to a need for additional studies that focus on consumer products that contain non-obvious hazards. These findings may also provide the basis for persuading manufacturers that safety pays. Specifically, they show that when companies are perceived as making a "good faith" attempt to look out for the safety of their customers, their customers, in return, may be less likely to hold them responsible when injuries do occur.

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