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Explaining the "Identifiable Victim Effect"

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Abstract

It is widely believed that people are willing to expend greater resources to save the lives of identified victims than to save equal numbers of unidentified or statistical victims. There are many possible causes of this disparity which have not been enumerated previously or tested empirically. We discuss four possible causes of the "identifiable victim effect" and present the results of two studies which indicate that the most important cause of the disparity in treatment of identifiable and statistical lives is that, for identifiable victims, a high proportion of those at risk can be saved.

Key words: value of life, identifiable victims

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> "There is a distinction between an individual life and a statistical life. Let a 6-year-old girl with brown hair need thousands of dollars for an operation that will prolong her life until Christmas, and the post office will be swamped with nickels and dimes to save her. But let it be reported that without a sales tax the hospital facilities of Massachusetts will deteriorate and cause a barely perceptible increase in preventable deaths—not many will drop a tear or reach for their checkbooks." (Schelling, 1968)

> "The death of a single Russion soldier is a tragedy. A million deaths is a statistic." Joseph Stalin (quoted in Nisbett and Ross, 1980:43)

In late 1987, eighteen-month old Jessica McClure spent 58 hours trapped in a well, and Americans responded with sympathy, a tremendous rescue effort, and money. The McClures received over $700,000 in donations for "baby Jessica" in the months after her rescue, and eventually a popular television movie, "Everybody's Baby: The Rescue of Jessica McClure," was made about the incident (People Weekly, November 2, 1987; April 16, 1990; Variety, May 31, 1989). At the time, there was no question but that everything possible should and would be done to rescue the child; cost was no object. If similar resources were spent on preventative health care for children, hundreds of lives could be saved. Yet it is difficult to raise money for efforts directed at saving such "statistical" victims.

The story of "baby Jessica" is simply one example of the "identifiable victim effect:" society is willing to spend far more money to save the lives of identifiable victims than to save statistical victims. This has been remarked upon in treatises on public policy (Gore, 1992), in scholarly works (Schelling, 1968; Calabresi and Bobbitt, 1978; Viscusi, 1992; Whipple, 1992), the medical literature (Redelmeier and Tversky, 1990) and the popular press (Toufexis, 1993).

The identifiable victim effect plays a role in many important policy issues. Recently, it has received special prominence in the national debate over funding priorities for health care, where expensive measures are often taken for identified individuals, but funding for preventative care seems to be lacking. For example, a recent effort to separate conjoined twins, whose probability of surviving the operation was estimated to be less than 1%, was used in some media to highlight the discrepancies between extravagant health care funding for "last-ditch efforts … to save the few" and modest funding for basic and preventative care that would benefit the many (Toufexis, 1993). In debates over the North American Free Trade Agreement, opponents could identify specific individuals who would lose their jobs if the agreement was approved, whereas proponents could refer only to the additional "statistical" jobs that would presumably result (Goodman, 1993). Identifiable victims need not be human: in 1988 a multi-national effort spent millions to rescue three grey whales trapped under the Arctic ice cap, while at the same time the Japanese whaling industry was spending millions to locate and harvest whales (Linden, 1988).

Identifiable victims seem to produce a greater empathic response, accompanied by greater willingness to make personal sacrifices to provide aid. One might think, therefore, that the large literature on empathy, altruism, and helping behavior would provide clues about why identifiable victims are treated differently from statistical victims. However, the literature on helping behavior focuses almost exclusively on the factors that cause people to aid identified victims (see, e.g., Latané and Darley, 1970, or Piliavin et al., 1981), and much of this literature looks at factors, such as the number of potential aiders and the costs of providing aid, that are not obviously relevant to the problem of why identifiable and statistical victims are treated differently. Likewise, the literature on empathy and altruism has been concerned primarily with the question of whether "true"—that is selfless—empathy actually exists (see, e.g., Cialdini et al., 1987, and Batson et al., 1991), which again seems to have little relevance to the question of why identifiable and statistical victims produce such a different response. We have not seen any explicit treatment of the identifiable victim effect in either literature.

In those literatures where it has been discussed, the distinction between identifiable and statistical victims is typically treated as a simple dichotomy, and the frequency with which it is mentioned reinforces this view. However, the simplicity of the distinction is deceptive: in practice, there are several differences between identifiable and statistical victims, any one of which could account for their differential treatment.

Our goal in this paper is to gain a better understanding of the psychological underpinnings of the identifiable victim effect. We do not attempt to explain the effect at a deeper level—e.g., to explain at an evolutionary level how or why humans have come to respond more strongly to identifiable than to statistical victims. Based on discussions with col-

leagues and a combing of the literature, we came up with four factors that differ between statistical and identifiable victims that could potentially account for their differential treatment. Although we do find that one of these factors appears to be an important cause of the effect, it is possible that other factors we have not identified also play a role.

In what follows, we first discuss these four differences between identifiable and statistical victims which may be responsible for the effect. We then discuss the normative status of the effect in relation to each of the four possible causes. Finally, we present findings from two studies designed to test the four possible causes and to determine whether, if supported, they are consciously endorsed.

1. Potential causes of the identifiable victim effect

1.1. Vividness

When an identifiable person is at risk of death, the media tell us a lot about them, and we may come to feel that we know them[1]. Research on "vividness" has shown that specific, concrete examples have far greater influence on what people think and how they behave than more comprehensive but pallid statistical information (Nisbett and Ross, 1980). Situations with identifiable victims are often characterized by all the major factors that convey vividness: the stories are very emotional (victims featured in the media are often particularly sympathetic, helpless, or blameless), we see visual images of the victim in newspapers and on television, and we see the events unfold in real-time—without the emotional distance provided by a historical perspective. For example, we see the picture of the small girl who is trapped in the well, interviews with her tearful parents on television, and live coverage of the desperate attempt to rescue her. These vivid details may result in a perceived familiarity with the victim, making it seem more important to undertake extraordinary measures to save that person. As Schelling (1968) expresses it, "the more we know, the more we care."

Indeed, many public relations and marketing tactics seem to be premised on the view that the vividness of an identifiable victim will enhance the public's desire to "do something" about the problem. For example, the "poster child" for MS fund raising, and the pictures and life stories that accompany requests for money to prevent malnutrition point to a widespread belief that concrete details increase the public's concern. Likewise, arguments for and against the proposed "three strikes and you're out" federal sentencing policy rely on vividness to create sympathy for their position: arguments for implementing such a system discuss specific victims of violent crimes who would not have been victimized had the "three strikes" policy been in place (Skelton, 1993), whereas arguments against the policy focus on relatively harmless three-time offenders who would face lifetime incarceration (Egan, 1994).

1.2. Certainty and uncertainty

A second distinction between identifiable and statistical victims is that identifiable deaths are usually certain to occur if action is not taken, whereas statistical deaths, by definition, are probabilistic. Since they are certain to occur if action is not taken, the subjective importance of identifiable deaths may be enhanced by the "certainty effect"—the tendency to place disproportionate weight on outcomes that are certain relative to those that are uncertain but likely (Kahneman and Tversky, 1979). In addition, there is compelling evidence that people are typically risk-seeking for losses (Kahneman and Tversky, 1979; Tversky and Kahneman, 1981, 1986; Cohen, Jaffrey, and Said, 1987). Risk-seeking for losses implies that a certain loss is seen as worse than an uncertain loss with the same expected value. For example, most people prefer a 50 : 50 chance of losing $100 or losing nothing to a certain loss of $50. Risk-seeking for losses has been demonstrated for non-monetary losses as well: in one well-known study (Tversky and Kahneman, 1981), subjects were given two identical scenarios in which lives were at risk and were asked to choose between two treatment options. In one case, the scenarios were worded in terms of lives saved (gains), and in the other they were worded in terms of lives lost (losses). Consistent with the prediction that people are risk-seeking for losses, most subjects in the lives lost condition chose the riskier treatment option. Risk-seeking for losses implies that the number of certain (identifiable) fatalities that is deemed "equivalent" to uncertain (statistical) fatalities is less than the expected number of statistical deaths. Both the certainty effect and risk seeking for losses, therefore, may contribute to the tendency to treat identifiable (and thus certain) victims as more worthy of attention than statistical victims.

1.3. Proportion of the reference group that can be saved

Public perceptions of risk are responsive to the distribution of risk among the population as well as to the absolute level of risk (Slovic, Fischhoff, and Lichtenstein, 1980). In general people are more concerned about risks that are concentrated within a geographic region or population than about those that are dispersed (National Research Council, 1989). This concern with the concentration of risk may help to explain the identifiable victim effect: identifiable victims represent highly concentrated distributions of risk within a specific reference group. In effect, identifiable victims become their own reference group, creating a situation where *n* out of *n* people will die if action is not taken. For example, if 120 people are likely to die in a plane crash this year, these are only 120 people out *of the millions who fly*. Once a plane carrying 120 passengers crashes with all aboard lost, however, these are 120 fatalities out of the 120 *on board the plane*.

There is considerable evidence that, holding the number of victims constant, people's concern increases as the applicable reference group shifts. For example, people are less tolerant of the risks of vaccination when there is a smaller "risk group" for vaccine side effects, even when members of that risk group could not be identified *a priori* (Ritov and Baron, 1990). Similarly, economic studies of the "value of life" have found that the value

of avoiding death or injury increases as the baseline probability of death or injury increases (Weinstein, Shepard, and Pliskin, 1980; Viscusi and Evans, 1990; Horowitz and Carson, 1993). Willingness to pay for small reductions in risk can be extrapolated to calculate a value of life. For example, the value of life can be calculated as 10 times the willingness to pay to avoid a 10% chance of death, or as 100 times the willingness to pay to avoid a 1% chance of death. The willingness to pay to avoid a 10% chance of death is greater than ten times the willingness to pay to avoid a 1% chance of death, resulting in a higher overall value of life when the baseline risk is high. Since a high proportion of the reference group at risk implies a high probability of fatality, or high baseline risk, for each member of the risk group (e.g., if 25 out of 100 will die the baseline risk for each member of the reference group is 0.25, but if 25 out of 50,000 will die, the baseline risk for each member of the reference group is 0.0005), these findings are consistent with an increase in concern about fatalities when the reference group is small relative to the number at risk.

According to the proportion of the reference group at risk explanation, there is not a strict dichotomy between identifiable and statistical lives. Instead, identifiable victims lie at one end of a continuum running from low probability risks spread over the entire population (statistical deaths) to certain death for every member of the population (identifiable deaths).

1.4. Ex post *versus* ex ante *evaluation*

Identifiable victims are actual people who are very likely to die or be injured, whereas statistical victims are, as the term implies, simply statistics. In other words, with identifiable victims, both they and we know, at the time we have to decide what to do, that they are likely to die as the result of a preventable or addressable cause. The decision about rescuing an identifiable victim, or the evaluation of the value of rescuing the victim, is usually made *ex post*, or after, the occurrence of some risk-producing event. In contrast, the evaluation of the value of addressing risks to statistical victims is usually made *ex ante*, or before the risk-producing event has occurred. (Weinstein, Shepard, and Pliskin, 1980). The *ex post*/*ex ante* distinction appears to be the identifiable victim effect itself, after other factors that covary closely with the identifiable/statistical discrepancy—i.e., vividness, certainty, and the proportion of the reference group at risk—have been eliminated.

Ex post evaluation makes it more difficult to apply cost-benefit principles in deciding what to do, and instead makes issues of responsibility and blame salient. Once a victim has been identified *ex post*, people can no longer "withdraw to a naked statistical analysis of the cost-effectiveness of the effort," whereas people have few reservations about doing so *ex ante* (Gillette and Hopkins, 1988). In addition, peoples' perceptions and judgments of "risk" depend in part on the saliency of blame (Douglas, 1992). The possibility for the recognition of responsibility, and thus the attribution of blame, is clear in the *ex post* case and almost absent in the *ex ante* case.

2. Normative status of the identifiable victim effect

Scholars are divided about the identifiable victim effect's normative status. Emphasis on saving identifiable victims has been deplored as irrational (MacLean, 1986; Whipple, 1992), and praised as humanizing (Glover, 1977; Calabresi and Bobbitt, 1978; Gibbard, 1986; Gillette and Hopkins, 1988). For example, MacLean (1986) argues that activities undertaken to rescue identifiable victims, when compared to the efforts spent to reduce statistical risks, "defy economic or even risk-minimizing sense," whereas Gibbard (1986) asserts that it is immoral not to act when identifiable lives can be saved. Although the normative status of the effect may not be important for individual decision making, it is extremely important when identifiable victims are used to justify or defend specific policy decisions. How should the sympathy we feel for identifiable victims affect public policy?

The normative defensibility of the effect depends, in part, on its cause. For example, since people generally obtain more information about, and see more vivid descriptions of, identifiable victims than statistical victims, identified victims may be seen as more familiar. Although people might reasonably respond in a more emotional fashion to familiar or vivid victims, it is less reasonable to endorse a *policy* that gives higher priority to more familiar victims, all else held equal, than to less familiar victims. This view would amount to allowing media coverage to determine aid allocation.

The normative status of the effect of certainty lies in a grey area. Although many people display an analogous pattern of behavior when deciding between certain and uncertain monetary losses, it is not clear whether risk seeking for losses is a principle that people do, or should, consciously endorse or, if so, whether that the same principle should apply to decisions involving lives. Indeed, it is always possible to reframe a decision involving tradeoffs between numbers of deaths as one involving saving lives.

There may be normative arguments for being concerned with the distribution as well as the absolute magnitude of potential harm. MacLean (1986) believes that we should "distribute risks of death equally or in proportion to the distribution of expected benefits." Along similar lines, several moral philosophers argue that "fairness" or equity is a critical factor both in defining justice and in evaluating risks (Rawls, 1971, 1993; Shrader-Frechette, 1991; Raynor, 1992), a view which is especially cogent in light of the environmental justice movement, and the claim that the risks of hazardous waste disposal and pollution are borne disproportionately by minorities and by the poor (Bullard, 1993; Cushman, 1994).

However, in other situations taking the risk distribution into account seems less defensible. Given that reference group size is often a matter of framing—a reference group of arbitrary size can be specified for virtually any hazard—a blanket endorsement of a policy that treats fatalities differently based on what proportion of the reference group they compose is normatively dubious. For example, it probably makes no sense to treat a disease that kills 100% of the 10% of the population susceptible to it differently from one that kills 10% of the 100% of the population susceptible to it. However, some reference groups may be more normatively defensible than others. Thus, even after careful consideration, one might be more upset about a disease that kills an entire family or people in

a small geographic area than one that kills a similar number of victims from around the country.

The normative status of the distinction between *ex post* and *ex ante* evaluation of risks is also ambiguous. Although *ex post* evaluation of identifiable victims may bring into play powerful emotions that do not apply to statistical victims, it is not clear what role those reactions should play in making policy decisions.

These four possible causes of the identifiable victim effect are, it seems, differentially defensible. Thus shedding light on which, if any, of these causes are responsible for the effect will also help to determine its normative status. In addition, it is not clear whether the identifiable victim effect is the result of a reasoned response, or if it is a gut-level, instinctive response. Whatever the cause of the identifiable victim effect, it would be interesting to ascertain whether people embrace it as a principle of decision making. That is, do we value identifiable lives more than statistical lives unconsciously and possibly unintentionally, or do we continue to value identifiable lives more after reflection? The answer to this question may also reflect on the normative status of the effect.

3. The studies

Our first goal was to determine which of these four potential causes, if any, contribute to the identifiable victim effect. In both studies, subjects read risk and accident scenarios in which each cause was either present or absent, and then rated the importance of saving the victim(s)[2]. In the first study we had a second goal: to determine if people continue to distinguish between identifiable and statistical victims when faced with an explicit choice between saving identifiable versus statistical lives. To address this question, we included two judgment conditions: rating and direct comparisons.

3.1. Study 1

Method. To test the various explanations for the identifiable victim effect, and to determine whether, if supported, they are consciously endorsed, we developed sets of scenarios in which the four causal factors were manipulated. We asked subjects to judge the importance of reducing risks in each, by having them either rate or compare the scenarios.

To investigate whether the identifiable victim effect is unconscious, or whether it persists in the face of obvious comparisons of identifiable and statistical victims, we tested subjects in two conditions. In the *rating* condition, subjects saw the scenarios in random order, with scenarios related to the same explanation separated by other questions. They rated the importance of eliminating risks in each scenario (compared to other risks for which the government has responsibility) on a one-to-five scale, where 1 was "not deserving of attention," and 5 was "one of the most important." In the *direct comparison* condition, subjects read the scenarios designed to test a single explanation together, and chose the situation in which it was more important to eliminate the risk. "Equally important" was given as an option. The direct comparison version makes it clear to subjects that

the same number of lives could be saved in each case, and makes the manipulation highly salient. Given this salience, we can assume that any choice other than indifference is the result of a conscious judgment on the part of subjects about the importance of the distinction. In the rating condition, on the other hand, subjects were unaware of what was special about the scenarios they viewed. For example, those who were exposed to a victim described in detail to increase vividness were not aware that there was another condition in which details were not provided. Thus, they would have a much harder time avoiding a gut-level response, even if they believed that normatively it should not affect their judgments.

If a particular effect operates unconsciously and unintentionally, differences caused by the manipulation should be evident in the rating condition but not in the direct comparison condition. Alternatively, if the asymmetry is consciously endorsed, we would expect it to be equally strong in both the rating and the comparison groups, or possibly even stronger in the latter.

To test whether vividness increases the apparent importance of undertaking a rescue attempt, we presented two scenarios involving a traffic accident in which a victim was injured and required immediate, possibly expensive, medical help. The two scenarios are presented in the first panel of Table 1. The two situations are identical except that in one case no information about the victim was provided, and in the other case we provided a brief description of the victim. If vividness is a critical factor in making decisions about life-saving actions, subjects should rate it as more important to save the vividly described victim than the anonymous victim.

Testing the effect of uncertainty is complicated by the fact that (at least) two types of uncertainty might be relevant—uncertainty about whether a specific individual will become a victim, and uncertainty about whether that individual, once a victim, will die. In this first study, the effect of certainty versus uncertainty was examined with two scenarios in which the expected number of fatalities from a contaminated food source was held constant (at ten), but in one case the deaths are certain to occur if action is not taken, and in one case they are probabilistic. In the probabilistic case, the scenario explicitly stated that fewer or more than ten may die. These scenarios are shown in Table 2. If people are risk seeking when it comes to deaths, we would expect most subjects to find it more important to prevent the ten certain deaths than to prevent the ten probabilistic deaths.

To test whether the proportion of the risk group that can be saved affects subjects' preferences for risk-reducing projects, we developed two scenarios involving traffic fatalities and different at-risk populations. Table 3 presents these two scenarios. In both, "exactly" 25 lives could be saved by a new safety program, but the number of people specified as being at risk was 50,000 in one case and 25 in the other. According to the proportion-of-the-reference-group hypothesis, the problem should be seen as more severe as the percentage of the reference group at risk increases, so that saving 25 out of 25 at risk will be considered more important than saving 25 out of 50,000.

Finally, to test whether people believe that *ex post* decisions to save lives are more important than *ex ante* decisions to protect them, we developed two parallel scenarios where one individual was at risk from a pesticide being field-tested (see Table 4). The scenarios differed only in whether action could be taken before or after the pesticide had

Table 1. Scenarios testing the effect of vividness.

Study 1

[Anonymous] There has been a traffic accident on a remote section of the highway, and a person has been seriously injured. This person requires a helicopter rescue and immediate medical treatment to save his life.

[Vivid] There has been a traffic accident on a remote section of the highway, and a young secretary has been seriously injured. The secretary was traveling by herself, on her way to spend the weekend with her parents. She requires a helicopter rescue and immediate medical treatment to save her life.

Study 2

The 1994 earthquake in Southern California caused approximately 34 deaths, thousands of injuries, over a billion dollars of structural damage to buildings, and seriously damaged six of the major freeways in the region. Two days after the earthquake, rescue workers discovered a victim trapped in a collapsed parking garage located very near Highway 17. The news story reproduced below describes the rescue efforts that were undertaken at the time.

Example of news story with a "described" victim

Rescue Workers Find Quake Survivor
Efforts to remove survivor underway

Los Angeles, Calif. Jan. 15. Rescue workers were losing hope. It's not possible, not in that wreckage. There couldn't be anyone alive in there.

A few still hoped. Perhaps, they thought, as they probed the wreckage of the municipal parking garage at the 23rd Ave. exit of Highway 17 with high-tech survivor, and are working as quickly as possible to sort through the rubble to reach him.

Don Grisom, the attendant at the parking garage, remembers waving to Bob Wright as he went to his car shortly before 3 pm. Then the earthquake struck and the garage collapsed. Mr. Grisom was able to run to safety, but saw Mr. Wright just getting into his car as the building began to come down. Mr. Wright, 42, is a local high school teacher and basketball coach. His wife, Mary, has not left the equipment, perhaps someone could have survived the collapse.

Finally, just after 6 am, a worker using a special fiber optic camera to search parts of the garage that are currently inaccessible spotted a hand moving in the window of a car. Someone was alive in that mountain of rubble—imprisoned in a tomb of concrete, but alive nonetheless. Scene since she heard her husband might be trapped inside. She is ecstatic that he has been found, but is very concerned. "It's frightening," she says, "But Bob is strong and has an incredible zest for life. I know he will hold on for me and for Jimmy [the couple's 3 year old son]. I am hoping and praying for him, and I'm sure he is going to be OK."

While rescue workers are cautiously optimistic, the survivor appears to be pinned in his car, underneath tons of concrete and

Search of the partially collapsed parking structure began yesterday afternoon, after a parking attendant, who miraculously escaped the collapsing garage during the earthquake, remembered seeing a man walk into the garage to pick up his car at about 3 pm, minutes before the quake hit.

Workers and paramedics have made voice contact with the steel rubble, and in a particularly unstable section of the collapsed structure. Before full-scale extraction measures can begin, parts of the building must be stabilized. City engineers are on the site directing the stabilizing work, but are unsure how long it will be before they will be able to remove the survivor. However, rescuers are also working to create an access route so paramedics can reach the survivor quickly and attend to any critical injuries.

Table 1. (Continued)

What isn't in this news story is a controversy over the effect of nearby freeway traffic on the parking structure. Highway 17 was not damaged by the earthquake, and was a primary alternative route for all traffic traveling from the south into downtown Los Angeles. Consequently, the highway was carrying much more traffic than usual. The highway passes directly adjacent to the parking garage, and many engineers were concerned that vibrations from the traffic on the highway could cause more damage to the parking garage, further endangering the trapped victim. These engineers suggested shutting down the highway until the victim could be extracted from the collapsed garage. However, the highway was estimated to be carrying about 230,000 cars per day, all of which would be diverted onto surface streets if it were shut down. This would add an average of an hour an a half to commuting time into downtown. Keeping the highway open would not endanger the rescuers, but could produce further structural shifting, with risks to the trapped victim. If you had been in the position of having to make a decision about the freeway, how strongly would you have supported closing the freeway?

been applied. In the *ex post* case the individual had been exposed and had to be located; in the *ex ante* case the individual was about to be exposed, unless she could be located first. The *ex post*/*ex ante* distinction suggests that the former scenario will be judged more important.

Table 2. Scenarios testing the effect of certainty and uncertainty.

Study 1

[Uncertain] A major food distributor has just discovered that its newly introduced yogurt can cause death to individuals who are allergic to its new ingredient. Approximately 1% of the general population is allergic to this particular ingredient, but the existence of the allergy is not well known. The yogurt has been distributed to a large number of retailers, and sold to about 1000 different consumers. Each consumer therefore has a 1% chance of becoming ill and dying from the yogurt, and the best estimate is that 10 people will die, but more or fewer may die depending on the prevalence of the allergy. These people can be saved if all the consumers are located and treated.

[Certain] A major food distributor has just discovered that a small number (10 containers) of the yogurts it distributed yesterday were contaminated, and that the contamination will result in the death of anyone who has eaten the yogurt, unless an antidote drug is administered. The yogurt was distributed to a large number of retailers, and has since been sold to approximately 1000 consumers. 10 deaths will result unless the consumers are located and the antidote drug administered. If all the consumers are located and the antidote is administered, no one will be harmed.

Study 2

On average, about 100 children under the age of 4 die each year from suffocation associated with thin-layer plastic (bags and wrappings) in the United States. Over the past 10 years, annual deaths have ranged from [92 to 110] [34 to 168]. Most of these deaths are associated with plastic bags used by dry cleaners and with plastic wrapping from toy packages. Some scientists have suggested that replacing plastic with paper wrappings for these purposes would virtually eliminate the problem of children suffocating on plastic wrap. Legislation has been introduced that will require all dry cleaners and toy manufacturers in the U.S. to begin packaging with paper rather than plastic in 1996, with complete phase-out of plastic by the year 2000. Think about other legislation concerned with safety that is being, or could be, considered, from legislation you don't care at all about to legislation you care very much about. Relative to other legislation, what priority would you place on having this legislation passed and implemented?

Table 3. Scenarios testing the effect of the proportion of the reference group that can be saved.

Study 1
[Large reference group] Approximately 50,000 people die every year in traffic accidents in the United States. A new program has been proposed that will save exactly 25 of these 50,000 lives every year.
[Small reference group] 25 people die every year in traffic accidents on a specific highway interchange. A new program has been proposed that will eliminate the risks at this interchange. If the program is undertaken, it is expected that there will be no further fatalities at this interchange.
Study 2
At an intersection in downtown Pittsburgh, there are several automobile-pedestrian accidents every year, and in each of the past three years 2 pedestrians have been killed at that intersection. These pedestrian accidents account for [2 of 4 people who died in accidents at that intersection] [2 of 112 people who died in auto-related accidents in southwestern Pennsylvania] [2 of 1700 people who died in auto-related accidents in Pennsylvania] last year. To reduce the risks to pedestrians, city engineers have proposed installing automobile barriers between the sidewalks and the streets surrounding this intersection, and building a pedestrian overpass. Although expensive, they believe these measures will eliminate the possibility of future pedestrian accidents at the intersection. At the same time, there are many other useful traffic safety and improvement projects proposed both for the city and for the state, and there is not enough funding to implement them all. Relative to other automobile and traffic safety projects you know about or can imagine, what priority do you think should be given to funding this project?

These scenarios may seem, in isolation, to be artificial and unrealistic. This is in part because real-world identifiable victims are often characterized by several of these distinctions, so it is extremely difficult to manipulate them independently in a complete factorial design.

The existence of any one of the four factors implies the existance of at least one other factor. For example, if a victim is certain, that victim also composes a large proportion of the reference group (in this case, certain victims automatically become their own reference group, and in fact, compose 100% of the reference group). However, when a large portion of the reference group is at risk, those victims do not have to be certain victims. For example, everyone in a population could be susceptible to a specific disease, but the probability that the disease will kill a susceptible individual might be quite low.

Figure 1 illustrates the relationships between the four factors, where arrows represent logical implication. For example, the arrow from *certain* to *high proportion of reference group* indicates that a certain victim also represents a high proportion of the reference group. However, there is no arrow from *high proportion* to *certain*, so victims who comprise a high proportion of the reference group are not necessarily certain victims.

The complex relationships between these four possible causes make it impossible to develop scenarios in which all four causes are varied independently. For example, if factor A is necessary for factor B, the combination of B, not A, is logically impossible. However, no one factor is both necessary and sufficient for any other factor, and thus no two of these factors are perfectly confounded. This makes it possible to examine the effect of each cause independently, with the other three held constant, as we did in these two studies.

Table 4. Scenarios testing the effect of *ex post* and *ex ante* evaluation.

Study 1
[*Ex post*] The EPA has approved a field test of a new pesticide and it has been applied to a wheat field. It has just been discovered that someone from a nearby community was exposed to toxic levels of the pesticide during the application and that if they are not treated quickly, they will die. Locating this individual will require immediate door-to-door search of the local community.
[*Ex ante*] The EPA has approved a field test of a new pesticide and is about to apply it to a wheat field. It has just been discovered that someone from a nearby community is camping near the field and will soon be exposed to toxic levels of the pesticide, such that they will die from the exposure. To prevent this exposure will require conducting a thorough search of the nearby area.
Study 2
Park rangers for the California Department of Parks have just closed a small area in the remote Sierra Nevada to camping and hiking, due to the discovery of strong toxic chemicals in a fresh-water spring located near an abandoned mine. Campers in that region are required to sign in and sign out with park officials, so all campers are now being warned to steer clear of this abandoned mine. However, in checking the filed hiking plans of visitors currently in the general area, they discover that a hiker already on the trail has plans to camp in the now-closed area near the abandoned mine. They suspect he intends to use water from the springs for cooking and drinking. According to the hiker's plans, he [will enter the contaminated area tomorrow] [entered the contaminated area yesterday]. Rangers have the option of asking the local search and rescue team to go after the hiker to [prevent him from drinking the contaminated water and send him to camp elsewhere] [see if he used the contaminated water and if so, bring him out to seek medical attention]. However, if they send the search and rescue team after the hiker, they will be unavailable for other emergencies which may arise. Consider the seriousness of other problems you know about or can imagine that the search and rescue team may be called on to handle. Relative to these other emergencies, what priority would you place on sending the search and rescue team after the hiker?

Subjects. The questionnaire was administered to 70 undergraduates at Carnegie Mellon University, 30 visitors to a mall in south suburban Boston, and 27 visitors (mainly students) to the University of Pittsburgh and Carnegie Mellon University student centers. Forty-one respondents received the direct comparison questionnaire, and 86 received the rating version. We tested approximately twice as many subjects in the rating condition because the statistical power of the planned between-subjects comparisons is lower than

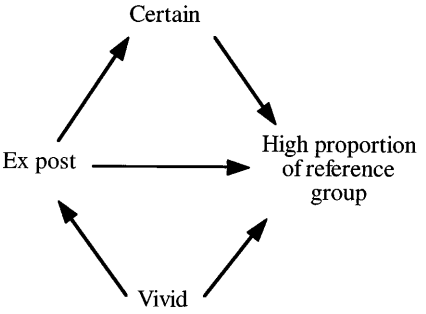

Figure 1. Logical relationships between the four possible causes. Arrows represent implication.

the within-subject comparisons of the direct comparison condition. All subjects received all versions of each scenario, with scenarios designed to test the same cause separated by other questions.

Results. Despite the heterogeneity of the three sample populations, there were no significant differences in their responses, and no order effects, so the data were aggregated. The results for both the rating and the direct comparison conditions are summarized in Table 5. This table lists the number of respondents rating or choosing each scenario as more important. For each of the four possible causes, the first column of data shows the number (fraction in parentheses) of subjects whose responses are consistent with the explanation being tested. For example, if the vividness of the victim is a cause of the identifiable victim effect, subjects should say it is more important to take action when the victim is vividly described. The first column of data shows the number of subjects who ranked the scenarios in an order consistent with this explanation. The second column of data shows the number answering in the direction inconsistent with the explanation, and the third column shows the number who rated the two programs as equally important, or who chose "equally important" in the direct comparison version. The final column indicates whether there is a significant difference between the number of subjects responding in the pre-

Table 5. Number of subjects rating each scenario as more important: Study 1.

	Vivid	Anonymous	Equally important	Significance
Vividness				
Ratings	8 (.06)	13 (.15)	64 (.79)	NS
Direct Comparison	4 (.10)	1 (.03)	35 (.88)	NS
	Certain	Uncertain	Equally important	Significance
Certainty and uncertainty				
Ratings	26 (.30)	6 (.07)	54 (.63)	<0.005
Direct Comparison	11 (.29)	8 (.21)	19 (.50)	NS
	Smaller reference group	Larger reference group	Equally important	Significance
Proportion of the reference group				
Ratings	44 (.51)	13 (.15)	29 (.34)	<0.001
Direct Comparison	21 (.51)	3 (.07)	17 (.41)	<0.001
	Ex post	Ex ante	Equally important	Significance
Ex post/ex ante				
Ratings	12 (.14)	24 (.28)	50 (.58)	(1)
Direct Comparison	7 (.17)	9 (.22)	25 (.61)	NS

Numbers in parentheses show the fraction of respondents answering in each order.
(1) $p < 0.05$, significant in opposite direction from prediction.

dicted direction and the number responding in the opposite direction. To determine significance, the number of subjects responding in the predicted direction was compared with the number responding in the opposite direction using a sign test.

The modal response to most of the scenarios was to rate the two situations as equivalent. That is, for questions testing each possible explanation, subjects felt it was equally important to save lives in the two scenarios. However, the responses of those subjects expressing a preference are quite interesting.

Subjects did not rate the familiar victim as more important than the anonymous victim, either in rating or direct comparison, contrary to the result that might be expected if vividness is a primary determinant of the effect. There is no significant difference between the responses in the rating and direct comparison conditions ($\chi^2(2) = 4.49$, $p \approx 0.11$).

The rating task showed people to be significantly more concerned about certain than about uncertain deaths, but the direct comparison task did not. In this case, the difference between respondents in the direct comparison and the rating versions is marginally significant ($\chi^2(2) = 5.47$, $p < 0.1$).

Subjects are significantly more concerned with saving lives when they represent a large portion of the reference group. In fact, for the proportion-of-the-reference-group questions, the modal response was to rate saving 25 out of 25 casualties as more important than saving 25 out of 50,000. This was the case in both the rating and the direct comparison versions, and further, there is no significant difference in the responses from the two conditions ($\chi^2(2) = 1.8$, $p \approx 0.4$).

Finally, subjects in the rating condition felt it was more important to take action *ex ante* (preventative measures) than to take action *ex post* (remedial measures). This is the opposite of the result that is expected if the *ex post/ex ante* distinction is a cause of the identifiable victim effect. However, the effect of this distinction was not significant in the direct comparison condition. Note, however, that there is no significant difference between the responses in the rating and direct comparison conditions ($\chi^2(2) = 0.60$, $p \approx 0.7$).

Discussion. The results of this experiment provide support for two possible causes of the identifiable victim effect: the certainty effect and the proportion-of-the-reference group hypothesis. Furthermore, the differences between responses in the rating and direct comparison conditions indicate that the effect of certainty appears unintended, whereas the percentage reduction in risk is something that subjects consciously take into account.

We found no support for the hypothesis that the vividness with which a victim is described increases subjects' desire to save that victim. Apparently simply knowing that "a person" is definitely at risk and can be saved by taking action is enough to engender our concern.

Finally, the hypothesis that the distinction between *ex post* and *ex ante* action is critical was not supported by our results. To the degree that subjects care about this distinction, they appear to believe that preventative actions are more important than remedial actions.

The lack of response to the vividness manipulation is not easily explained, unless there was something specific about the "vivid" victim that made her unsympathetic. However, in retrospect, there may be alternative explanations for some of our other results. The questions testing the certainty hypothesis are acknowledged to be highly unlikely, al-

though the two scenarios are similarly implausibile, so this alone would not be enough to produce the effect found. However, a food distributor can be blamed for a contamination problem much more easily than for allergic reactions. The saliency of blame may have contributed to the perceived importance of saving the more certain victims. The scenarios testing the proportion of the reference group hypothesis describe two programs, each of which is estimated to save 25 lives. The program saving 25 out of 25 might naturally be seen as more effective than that saving 25 out of 50,000, or more believable, or more cost-effective. These reactions would result in subjects rating saving 25 out of 25 lives as more important than saving 25 out of 50,000 lives. Finally, in the scenarios testing the difference between *ex post* and *ex ante* action, the *ex ante* decision could be simply not to apply the pesticide to the field. The existence of an easy and costless solution to prevent the risk *ex ante* may account for the direction of the effect.

3.2. Study 2

Given the somewhat surprising results obtained from the first study—the failure to find a vividness effect and the strong effect of reference group size—we designed a second study to test further the same four possible causes of the identifiable victim effect. Again we used a variety of different scenarios, manipulating the vividness of the victim description, the degree of uncertainty about the risks, the proportion of the reference group at risk, and whether the proposed action takes place before or after the risks are realized.

Method. Given the weak response to the various manipulations in Study 1, our first goal was to validate the identifiable victim effect itself by comparing subjects' reactions to an obvious example of an identifiable versus statistical fatality, where the identifiable case demonstrates most or all of the four characteristics and the statistical case demonstrates none. We developed two scenarios involving lead poisoning in children, presented in Table 6. In both cases action could be taken that had a 0.1% chance of saving a life. In the identifiable case the victim was a child who was hospitalized with acute lead poisoning,

Table 6. Scenarios testing the effect of identifiable and statistical victims.

Study 2
[Identifiable] Suppose that you are a hospital administrator running a large metropolitan hospital under tight budget constraints. A young child has been brought in with acute lead poisoning, and is unlikely to live. His physician has suggested trying new, untested treatment that might help. However, the treatment is experimental, very expensive, and is estimated to have only a 0.1% chance of saving the child's life. Assume that you decide not to approve the treatment, and that the child dies. How personally responsible would you feel?
[Statistical] Suppose that you are a hospital administrator running a large metropolitan hospital under tight budget constraints. A local community group has requested that the hospital provide free lead level screening tests to all children in the community. Comprehensive lead screening of all children would be very expensive, the experience with lead levels in the community suggest there is only a 0.1% chance any child will be exposed to fatal levels of lead under current circumstances. Assume that you decide not to institute the lead-level screening program, and later in the year a child dies from acute lead poisoning. How personally responsible would you feel?

and certain to die unless a new, experimental treatment is used (and likely to die even with the treatment). So the victim is described (vivid), comprises 100% of the reference group, is certain die without treatment, and has already experienced the risk. In the statistical case the proposed action is preventative (community-wide lead screening tests), and the victim is an anonymous child, comprising a small proportion of the reference group (all children in the community), who is not certain to be exposed or die from the risk, and who has not yet experienced the risk. In both scenarios subjects were asked to assume that they did not take action (did not approve the treatment or did not fund a testing program) and a child died. They were asked to rate how responsible they would feel, on a one to seven scale. Since the victim in the identifiable scenario possesses all of the characteristics we hypothsize may cause the identifiable victim effect, we predicted that subjects will feel more responsible for that death than for the death of one anonymous child in the community.

To test the vividness hypothesis more thoroughly we developed a set of scenarios which include a variety of specific victims, and different levels of description. In this scenario a victim is trapped in a collapsed structure after an earthquake and rescue efforts are underway. Subjects read a realistic news story describing the situation, where the victim is presented either (1) generically, as "a man" or "a woman," (2) with a description including the sex, age, occupation, marital status, and quotes about the victim from friends or relatives, or (3) with the same description and a picture. After reading about the victim, subjects were asked how strongly they would support (on a one to seven scale) a very expensive action (closing a nearby freeway) to reduce risks marginally to the trapped victim. Two generic and eight specific victims were created, half male and half female. The ages and occupations of the victims were randomly selected using the base rates of the ages and occupations of U.S. citizens. Using a variety of victims should reduce the possibility that subjects are simply responding to a very sympathetic (or unsympathetic) victim. The second panel of Table 1 presents the scenario and an example of one of the victim descriptions. If the vividness of the description matters, subjects should be more willing to close the freeway for the victims who are described, or described and pictured, than for generic victims. Subjects were also asked to indicate how much they cared about what happened to the trapped victim.

Uncertainty about expected fatalities can come from two sources: uncertainty about who will be a victim, and uncertainty about how likely any given victim is to die. In Study 1, we attempted to manipulate only the second type of uncertainty. In Study 2, we combined these two types of uncertainty and presented a range of possible fatalities. The uncertainty scenarios involved young children suffocating on thin-layer plastic wrap and bags. The scenarios are shown in Table 2. Subjects were told that the average number of deaths from suffocation for children under the age of 4 is 100 per year, with a range of 92 to 110 (low variance case) or 34 to 168 (high variance case). They were asked to indicate how strongly they would support legislation requiring the phasing out of thin-layer plastic in packaging and drycleaning. While in neither of these scenarios are fatalities certain, if people are more concerned about "certain" fatalities, they should be more concerned about the fatalities in the low variance case, which are "less uncertain," than in the high variance case. To test whether the possibility of zero fatalities carries any special signifi-

cance, we ran a second uncertainty study where the expected number of deaths was 20, and the uncertainty ranged from 15 to 25, or from 0 to 40.

To test the effect of the proportion of the reference group that can be saved, we again used a scenario involving traffic fatalities. These scenarios are presented in Table 3. To reduce any ambiguity about the locations of the fatalities, and the type and efficacy of the risk-reducing actions, we described a specific type and location of accident (pedestrian fatalities at a single intersection in downtown Pittsburgh), as well as the proposed actions to eliminate those risks (installing auto barriers and a pedestrian overpass). Only the size of the reference group was varied (2 of 4, 112, or 1700), and subjects were asked to indicate what priority they would assign to the proposed project on a one–to–ten scale.

Finally, the *ex post*/*ex ante* distinction was tested with a more believable scenario than in the earlier study (see Table 4). A camper in the remote mountains either has been exposed to dangerously contaminated water and is in need of immediate help (*ex post*), or is about to be exposed and in need of warning (*ex ante*)[3]. Subjects were asked to rate the importance of rescuing this victim.

Subjects. The questionnaire was administered to 121 adult visitors to the Pittsburgh International Airport. All subjects answered only one question from each set of scenarios: that is, one question designed to test each of the hypothesized causes. Questions related to each hypothesis were randomized over 24 different versions of the survey. The second question involving uncertainty was answered by 100 adult visitors to the airport.

Results. To reduce variance caused by inter-subject heterogeneity in average concern for victims and in use of the scales, we normalized each subject's responses by subtracting from each concern rating the weighted average of all that subject's concern ratings. Table 7 shows the mean normalized rating for each question. The last column indicates whether the difference in mean ratings reaches statistical significance, by either a t-test or an F-test, as appropriate. As shown in the table, most of the questions did not yield significantly different mean ratings.

Subjects feel significantly more responsible for the specific, identifiable victim in the medical (lead-level) questions who dies because s/he doesn't get treatment than for the anonymous victim who dies because the county-wide lead screening program is not approved. This is simply the identifiable victim effect itself, demonstrated in an experimental setting.

We again observed an unexpected effect of vividness, even though we stengthened the vividness manipulation and took pains to ensure that victim described was statistically representative. Although in Study 1 subjects were more concerned about the anonymous victim, in this study subjects stated that they cared the most when a verbal description of the victim was provided and slightly less when the victim was described simply as "a man" or "a woman," although the difference did not approach statistical significance. However, surprisingly, subjects cared least when the a picture of the victim was included along with the description. No consistent effect was observed of vividness on willingness to support the risk-reduction project.

Table 7. Mean rating for each scenario in Study 2.

	n	Mean rating	Significance
Identifiable/Statistical			
Identifiable	54	−1.61	$p < .005$
Statistical	60	−2.40	[t(112)]
Vividness–support project			
no description	38	1.12	NS
description	41	.61	[F(2,111)]
description with picture	35	1.03	
Vividness–care about victim			
no description	38	.44	NS
description	41	.64	[F(2,111)]
description with picture	35	.17	
Certainty and uncertainty			
low variance (92–110)	58	.70	NS
high variance (34–168)	55	1.12	[t(112)]
low variance (15–25)	49	5.90	NS
high variance (0–40)	51	5.23	[t(98)]
Proportion of the reference group			
large (2 of 4)	39	.66	$p < .06$
medium (2 of 112)	35	.19	[F(2,111)]
small (2 of 1700)	40	−.25	
Ex ante/ex post			
ex ante	59	.74	NS
ex post	55	1.09	[t(112)]

In a slight departure from our earlier results, Study 2 failed to find significant differences in the importance ratings for the questions testing the effect of different levels of uncertainty.

Consistent with the results of Study 1, however, subjects place significantly higher priority on a project that is estimated to save two lives if those lives represent a high proportion of the reference group (2 out of 4), than on that identical project if those same two lives represent only a small proportion of the reference group (2 out of 1700). Although this effect is significant only at the .06 level (two-tailed test), the ANOVA is conservative because it does not take account of the ordering of means, which is as-predicted.

Finally, we did not find a significant effect for the *ex post*/*ex ante* distinction.

Discussion. The results of this experiment provide additional support for one possible cause of the identifiable victim effect: the proportion of the reference group at risk appears to be an important factor affecting subjects' support for risk-reducing actions.

As in Study 1, these results do not support the hypotheses that more vivid descriptions increase subjects' concern for, or desire to save, that victim, that people care more about more certain than less certain fatalities, or that *ex post* victims are more important than *ex*

ante victims. The uncertainty finding is a slight departure from the results of Study 1, where certain risks were judged more important than uncertain risks, although only in the rating condition.

4. General discussion

Although there have been numerous references to the identifiable victim effect, this study is, to the best of our knowledge, the first to examine the effect systematically. Despite the superficial simplicity of the distinction between identifiable and statistical lives, we noted that there are actually several differences between them that could account for their differential treatment.

One major surprise to emerge from the studies is that vividness does not appear to have an effect on subjects' willingness to support risk–reducing actions. When we have spoken to friends and colleagues about this project, many propose vividness as the explanation for the identifiable victim effect. We should note, however, that our research is not the first to obtain weak vividness effects (Taylor and Thompson, 1982).

Based on our research, of course, we cannot conclude that all vividly described victims will be seen as no more important than anonymous victims in terms of decision making. Certainly it would be possible to create scenarios with a particularly compelling or sympathetic victim, or a vivid scenario, in which subjects would express a preference for saving the "familiar" victim. Our experiment attempted to see if more detailed information about the victim would, by itself, cause the identifiable victim effect. The questions of what information about a victim increases our sympathy, and of what, if any, information will make us care more about one identified victim than about another identified victim are interesting issues discussed in the literature on helping behavior (see, e.g., Piliavin, Rodin and Piliavin, 1969), but not addressed by our study.

When victims are identified it is clear exactly how many people will die, but when victims are statistical it is always possible that more or fewer will die. In our first study, subjects felt avoiding certain fatalities was more important than avoiding uncertain fatalities when they were not able to compare scenarios directly. However, subjects judged certain and probabilistic deaths as equally important when they compared the two situations directly. Thus, the judgment that it is more important to address certain risks than to address probabilistic risks appears to be an unconscious one. Our second study found no significant difference between the reaction to high or low variance distributions when the expected number of deaths is held constant.

Our findings suggest that the major cause of the identifiable victim effect is the relative size of the reference group compared to the number of people at risk. Identified victims constitute their own reference group, 100% of whom will die if steps are not taken to save them. Further, the response to the relative size of the reference group is consistent even under conditions where subjects explicitly contrasted scenarios which clearly differed only in the fraction of those at risk who can be saved. Thus consideration of the proportion of those at risk who can be saved appears to be a factor subjects would endorse for making decisions about risk-reducing activities.

The *ex post*/*ex ante* results are somewhat less surprising on reflection. It appears that once we know an individual is definitely at risk, there is no difference in the importance of taking action after the risk is realized or before the risk has occurred: in fact, there is a slight preference for preventative action. Conventional wisdom suggests this result, as we often hear "an ounce of prevention is worth a pound of cure." Perhaps the *ex post*/*ex ante* distinction is simply a short-hand way for referring to the multitude of emotional and ethical issues that come into play once a victim has been identified; isolated from those issues, it does not appear to produce the identifiable victim effect.

In combination, these results point to the somewhat surprising conclusion that the identifiable victim effect, per se, may be wholly attributable to the effect of the relative size of the reference group. We wonder whether the identifiable victim effect could more accurately (but less elegantly) be labeled the "percentage of reference group saved effect."

If the identifiable victim effect is, in fact, largely due to the relationship between identifiability and the size of the reference group, this raises significant questions about the normative status of the effect and the role it should play in policy decisions, because the normative arguments for a reference group effect are tenuous. The reference group is often largely a matter of framing, and it is difficult to defend a distinction between a situation where there is a group of 10 randomly distributed "vaccine sensitive" people who are at risk of death from a flu vaccine, but who cannot be identified beforehand, and a situation in which 10 random people will be killed by the same vaccine.

Most policy decisions about risk involve statistical fatalities, while most private decisions involve identifiable fatalities. The normative status of the effect is not necessarily relevant to private decisions—no one would declare it irrational for parents to go to all extremes to save the life of their child. However, it is relevant to public policy decisions—we can legitimately ask whether it makes sense for society to go to extremes to save one identified life when those resources could be spent more productively to save a larger number of statistical lives. As Keeney (1995) notes, there is no right or wrong answer. He suggests that we may want to assign different economic values to identified and statistical lives. But which of these values should form the basis for policy decisions? Allowing risk policies to vary depending on whether the victims are identified or statistical may create incentives for advocates of one policy to play up the identifiable victims that could be saved under that policy, while pointing out that we don't know who will be saved under another. However, Viscusi (1992) points out that if we assign a higher value to saving any identified victim than to saving a statistical victim, then perhaps we need to rethink how we value statistical victims, since at some point all victims are identified.

Questions about whether and how identifiable and statistical victims should be considered differently in policy decisions are not easily answered. However, given the arbitrariness of the reference group that applies to a specific risk, it seems inadvisable to recommend reference group size as an input into public policy except, perhaps, when the group is defined geographically or by a sensitive demographic characteristic.

Why did the plight of young Jessica McClure engender such sympathies and such a strong response? Certainly she represented a very sympathetic victim, and the media coverage of the event ensured that we knew a great deal about her. It would seem heartless to suggest that she not be saved, or that a cost-benefit analysis be conducted before rescue

efforts could commence. However, our study points to two other factors that may have been the most important in producing the powerful response: she was certain to die if not removed from the well, and she comprised 100% of the risk group.

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Notes

1. Although the identifiable victim effect may apply to many less severe, impacts, our focus in this paper is on fatal victims.
2. Scenario studies of this type have several limitations. First, the manipulated factors will almost inevitably interact with the specific content of the scenarios, raising questions about external validity (see Shotland, 1983). Second, subjects rate their own level of concern, raising the issue of self-presentation and the accuracy of introspection.
3. We thank an anonymous reviewer for suggesting this scenario.

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