Risk Perception and Victim Perception: The Judgment of HIV Cases

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ABSTRACT

There is a vast literature confirming that reactions to different risks are strongly affected by characteristics other than scientific risk estimates; most of this research has concentrated on mapping people's representations of sets of widely varying dangers (e.g. diseases, natural disasters, accidents). This study explored a potentially vital component of risk that cannot be studied by eliciting general reactions to many hazards: the extent to which *who* is at risk contributes to perceptions and judgments of a risk. While it may be preferable to assume that misfortunes affect the population uniformly, of course the truth is not so egalitarian. Thus, for both theoretical and policy reasons, it is worth exploring psychometrically representations of a particular risk as it affects different people. Using multidimensional scaling and hierarchical cluster analysis, we constructed models of respondents' representations of a disease assumed to be particularly affected by victim perception: Human Immunodeficiency Virus (HIV). Subjects rated the similarity of all possible pairs among 16 scenarios involving HIV infection; the scenarios contained information about both the victim and the method of contraction. A set of attribute scales as well as political/demographic information allowed us both to interpret the structures and to predict individual differences. The results confirmed that reactions to HIV infection are greatly affected by reactions to the victim. In particular, the perceived distastefulness and riskiness of the method of infection loomed larger than did either the overall likability of the victim or the general riskiness of the victim's behavior. Further, the salience of the most statistically influential dimension, 'deservedness', depended significantly on demographic and political characteristics of the respondents, suggesting that the relationship between personal values and risk perception is in part mediated by victim perception. Implications for risk perception work and public policy are discussed.

KEY WORDS   risk perception; victim perception; HIV/AIDS

How a particular danger is perceived is a complex psychological process that is determined only in part by scientific estimates of frequency and severity. While 'objective' risk is an important component of fear and concern, it is not the only important component. People fear a hazard more, for example, the more it is perceived as being uncontrollable and involuntary (Slovic *et al.*, 1980, 1984a). The degree of concern surrounding risks from the environment, technology, and disease has social as well as personal

implications, because subjective risk perception helps determine both what public policies will be implemented and what preventive measures people will take in their everyday lives.

Most research on the components of risk perception (e.g. Slovic *et al.*, 1980, 1984a; Johnson and Tversky, 1984) has concentrated on specific factors of hazards that may moderate or exacerbate concern. For example, a risk may affect many people at once or individuals one at a time. Or a risk may develop slowly or suddenly. In other words, the hazard itself contains factors that distinguish it from other hazards and that also affect judgment of it and reaction to it. One additional component of risk perception is missing from this approach, however. While for both scientific and policy reasons we may prefer to assume that hazards are defined solely by their particular components and not by whom they affect, in actuality this assumption is often inaccurate. For instance, there is evidence that environmental dangers are more likely to occur near (and thus differentially affect) minority races (Bullard, 1993). Many diseases are more specifically harmful to particular genders (e.g. breast cancer), races (e.g. sickle-cell anemia, diabetes), and ages (e.g. cancer) than are others. Risks can affect groups differently, and who is susceptible to a particular danger in fact may affect how we react to that danger. Reactions to the Human Immunodeficiency Virus (HIV) (and the disease it causes, Autoimmune Deficiency Syndrome (AIDS)), are at least anecdotally assumed to be greatly affected by the groups the virus especially affects. Media reports on HIV and AIDS often emphasize the types of people at risk and furthermore assume that judgments of the risk are driven by reactions to those most likely to contract it. Most viewpoints about HIV draw similar conclusions:

> By striking hardest at the outcasts of society—gay men, intravenous drug users, prostitutes, and impoverished blacks and Hispanics—AIDS brutally shoved to the fore uncomfortable questions about sex, sex education, homosexuality, and minorities (*U.S. News and World Report*, 17 June, 1991).

In other words, the implication is that perception of HIV is largely driven by social and political issues evoked by the people at greatest risk.

There is some experimental evidence that concern for HIV victims depends on the risk group to which the victims belong. For instance, in their replication of the classic 'Asian disease' problem (Tversky and Kahneman, 1981) using AIDS, Levin and Chapman (1990) found that people were less sensitive to loss frames when the victims of the disease were from less socially desirable groups such as homosexuals and intravenous drug users than when they were from more socially desirable groups such as hemophiliacs. This result helps confirm what the popular press suggests; an important key to judgments of HIV is not the level of risk of potential victims *per se*, because hemophiliacs are at statistically as high a risk as other high-risk groups. Rather, concern about HIV appears to be a combination of the riskiness of the groups involved, their social standing, and a third component, the likability of the particular individuals at risk. For example, individuals such as Magic Johnson, who appear to have engaged in high-risk behavior but who are well liked, may inspire more concern and sympathy than do other victims of the disease. While they could exert important influences on judgments about HIV and other risks, these hypothesized effects of the characteristics of risk victims on risk perception have not been explicitly explored psychometrically.

PERCEPTION OF RISKS

Using factor analyses of feature ratings (e.g. Brun, 1992; Slovic *et al.*, 1980, 1984a; Slovic, 1987), as well as multidimensional scaling of similarity ratings (Johnson and Tversky, 1984; Slovic *et al.*, 1984b), many studies have examined how features of risks (e.g. if the risk is catastrophic, well known to science, voluntary, and so on) correlate with fear. The goal of this research paradigm was to

understand people's concern for hazards; although people often are quite adept at predicting risk fatality rates, their fear of those risks (and even their judgments when asked how 'risky' the risks are) do not always coincide, causing much consternation among policy makers and other concerned with risk perception and communication (Slovic *et al.*, 1980).

In many factor analytic studies, Slovic and his colleagues (e.g., Slovic *et al.*, 1980, 1984a; see Slovic, 1987, for a review) showed that people view risks in terms of how 'dreadful' (catastrophic, involuntary, uncontrollable, etc.) and how 'unknown' (not observable, new, the effect is delayed, etc.) the risks are. Some experiments also revealed a third factor, length of exposure (Slovic *et al.*, 1984b). A later study using only natural hazards (including AIDS) found a 'novelty' factor as well (Brun, 1992). It makes sense that people's views of complex hazards such as nuclear waste and automobile accidents should turn out to be multidimensional, but what is interesting about these findings is that *concern* about the risks correlated with the factors. More dreadful and unknown risks invoke more concern, above and beyond their scientific frequency and severity. A few of the components of 'dread risk,' the most influential factor (Slovic *et al.*, 1980, 1984a; Slovic, 1987), are victim-oriented: voluntary, equitable, and doesn't affect me. In other words, people dread risks more when they perceive victims of the risk as not inviting the risk, as unfairly being subjected to the risk, and as being similar to the perceiver. These features might differentiate not only between risks that separate risk groups along these lines (e.g. HIV versus automobile accidents), but also among victims within a risk class (e.g. homosexual versus blood transfusion HIV victims).

SIGNAL POTENTIAL AND GROUPS AT RISK

People's notions of risk probably derive both from their personal perceptions of danger and from societal aspects and impacts of the risk. From a sociological perspective, risk perception may play a role in maintaining the status quo, keeping people in line, and otherwise communicating and reflecting societal norms (Heimer, 1988). Indeed, as Slovic (1987) notes, hazards do not exist in a vacuum; a particular hazard event may 'signal' that important, far-reaching (and perhaps harmful) events are to come. Thus, some events (such as nuclear reactor accidents, for example) that may be far less costly in terms of lives than are other risks can nevertheless result in extensive legislation, re-evaluation of existing energy policies, increased political activism, and so on (Slovic, 1987). Further, the risks with the highest 'signal potential' often are those that are highly unknown and dreaded; in other words, the dimensions which drive fear may have their basis in sociological and political implications and attitudes. In fact, there is evidence that concern about risks is highly correlated with one's 'world view'; if the presence of the risk confirms a larger fear about how the world is progressing, for example, then one is more likely to be very concerned about the risk (Slovic, 1993, 1994).

Different world views might produce different reactions to a risk. There is evidence, for instance, that attitudes about risks can divide significantly along racial and gender lines. Flynn *et al.*, (1994) found that white males were less concerned about a wide variety of risks (including AIDS) than were white females and minorities of both gender. It is worth noting that the white males in Flynn *et al.*'s sample were also politically more conservative than were the other groups, and that their reactions to risk along many dimensions (e.g. trust in leaders to manage the risk fairly, belief that they have control over the risk) also differed from that of the other respondents. Thus, Flynn *et al.*'s results suggest that reactions to risks can be systematically politically driven. We might expect to see similar effects in a scaling of HIV cases; reaction to HIV cases should differ not only by the demographics of the case (i.e. the social and political nature of the particular risk event) but also by the demographics of the perceiver. Using SINDSCAL (Pruzansky, 1975), a program that scales subjects as well as stimuli, we can test this hypothesis.

ATTRIBUTION AND STIGMA THEORIES OF VICTIM PERCEPTION

Social psychology has addressed at length issues such as the attribution of blame to victims (e.g. Lerner, 1970; Stokols and Schopler, 1973; Godfrey and Lowe, 1985; Triplet and Sugarman, 1987) and the stigma of disease (e.g. Herek and Glunt, 1993; Pryor and Reeder, 1993). Although it is not prudent to present a review of this vast literature here, it is worth exploring the ways in which the research addresses the issue of victim perception, and to explore the predictions the theories might make about the representation of HIV.

Attribution theorists have devoted much research to the relationship between who a person is and how they behave. A robust finding, commonly termed the 'fundamental attribution error' (Ross, 1977), is that behaviors tend to be overattributed to the person as opposed to the situation. In other words, how a person acts looms very large in the perception of the person, even for single actions that may have many situational determinants. Further, victims often are perceived as having brought their misfortune on themselves (by passively accepting their fate, for example), even when the cues for this attribution are quite subtle (Stokols and Schopler, 1973; Godfrey and Lowe, 1975). Unlike previous work that suggested a uniform devaluation of victims (in service to the need to believe in a just world (Lerner, 1970)), this work finds that any victim will be devalued who does not dramatically indicate that the risk has not been 'asked for'. Also, victims of disease may be judged more negatively if they are from a less socially sanctioned group, even if this membership does not bear on the contraction of the disease. So, a disease striking a homosexual is perceived to be more voluntary than the same disease striking a heterosexual, even if the disease is unrelated to sexual preference (Triplet and Sugarman, 1987).

For HIV risk, the attribution literature suggests two interactions between victim and risk. First, particular HIV cases will be viewed as less tragic if the victims are perceived as not having adequately resisted the disease (a hypothesis that also makes sense in the context of the risk perception literature). Further, resistance to the disease may need to be quite dramatic to mediate distaste for the victims, meaning that most HIV victims may be blamed for their plight and thus viewed negatively. Second, regardless of riskiness of behavior, HIV among homosexuals will be viewed as less troubling and more deserved than will HIV among other groups, especially for respondents who otherwise exhibit negative feelings about homosexuals.

Research on the 'stigma' of HIV infection (Herek and Glunt, 1993; Pryor and Reeder, 1993) suggests a rather different relationship between perceptions of a disease and its victims, but makes similar predictions to attribution theory. In this domain, HIV is viewed as being stigmatizing for the victim. Thus, anyone contracting HIV becomes automatically devalued, although the devaluation is stronger for some groups than for others, presumably both because those groups are already stigmatized and because the method by which they contracted the disease is considered more stigmatizing than are other methods.

Note that this research paradigm, like attributional research, concentrates on general classes of people: homosexuals, hemophiliacs, and so on. Thus, there may be a confound in their research designs and theories between attitudes toward the individual victim and attitudes toward the group to which the victim belongs. Undoubtedly, these attitudes are correlated, but need not be equivalent; even people with highly stereotyped views of certain groups seem to easily make exceptions for particular instances (Rothbart and Park, 1986). In order to test to what extent simply having HIV, having HIV and being from a stigmatized group, having HIV and being an unattractive individual, and/or having HIV from participating in less socially sanctioned activities all contribute to negative attitudes towards the victim, our stimuli vary on all of these dimensions. Some victims in our scenarios have HIV but come from less stigmatized groups (e.g. Arthur Ashe), some belong to a stigmatized group but presumably are attractive as people (e.g. Robert Reed, the father on the *Brady Bunch* television series), some do not come from stigmatized groups but presumably are unattractive people (e.g. an armed

robber who contracted the disease from his wife), and some are attractive and do not come from stigmatized groups, but participated in less socially sanctioned activities (e.g. Magic Johnson). See the Appendix for a complete list of the scenarios used in this study.

LIMITATIONS OF PREVIOUS RESEARCH METHODOLOGY

While the factor-analytic approach to risk perception (e.g. Slovic, 1987), research on attribution, stigma, as well as other research on reactions to HIV (e.g. Linville *et al.*, 1993) provide useful information, they probably can only reveal people's conscious, expressed attitudes toward HIV victims. In factor-analytic studies, subjects rate a set of hazards on many transparent features; these feature ratings then are collapsed into factors. Likewise, attributional (e.g. Triplet and Sugarman, 1987) and stigma (e.g. Herek and Glunt, 1993; Pryor and Reeder, 1993) methodologies traditionally have subjects provide data on a number of scales obviously designed to measure attitudes. For perception of HIV, social norms are so omnipresent that the answers to such questions probably cannot provide information beyond people's notions of their own representations of HIV (or their reactions to the experimenters' notions).

SIMILARITY RATINGS, MULTIDIMENSIONAL SCALING, AND HIERARCHICAL CLUSTERING

Similarity ratings (i.e. having subjects rate the similarity of pairs of stimuli) are especially useful for uncovering people's models of a concept, because the methodology provides no information about how a subject is expected to classify the stimuli. Other types of ratings, such as 'voluntariness' or 'deservedness', may simply be too value-laden in a context such as HIV infection to be trusted to provide information about what the subjects themselves find personally important about the concept.

To provide a complete account of subjects' similarity ratings for risks, it is a good idea to use a couple of psychometric methods (Arabie and Maschmeyer, 1988; Johnson and Tversky, 1984). In particular, two methods provide different and potentially useful models of similarity data: multidimensional scaling and hierarchical clustering. We utilize both methods in this study, to provide information about how subjects represent HIV scenarios. A scenario in this study includes information both about the HIV victim (e.g. race, sex), and about method of contraction (e.g. homosexual sex, blood transfusion). In order to present the necessary information as naturally as possible, scenarios are worded like brief press clippings. For instance, here are two scenarios from the study (see the Appendix for a complete list of the scenarios):

> Magic Johnson, 34, contracts HIV. He states that he was infected from numerous heterosexual contacts.
> Anthony Richards, a 63-year-old white man, dies of AIDS in prison, where he was serving a sentence for armed robbery. He contracted the virus from his wife of many years.

While these stimuli naturally do not provide the complexity of information one has for a close friend or relative, they are complete enough to capture key elements that might be both easily available to strangers (via the media, for example), and theoretically likely to affect judgments.

Multidimensional scaling (using the INDSCAL model (Carroll and Chang, 1970)) of these HIV scenarios reveals what features, or dimensions, subjects use when they distinguish among HIV cases. Thus, the method allows for a psychometric test of whether certain aspects of an HIV scenario (e.g. likability of the victim, riskiness of the victim's behavior, the demographic groups to which the victim

belongs) are important components of HIV perception. Further, the SINDSCAL algorithm (Pruzansky, 1975) provides individual difference information on the relative salience of the dimensions. In other words, this method allows for testing not only perceptions of the HIV/AIDS scenarios, but also the degree to which these perceptions differ by the demographics (e.g. race, gender) of the subject rating the scenarios. Hierarchical clustering also provides a representation of HIV, but the representation reveals which scenarios are viewed as being particularly similar and dissimilar to each other. Thus, the cluster analysis reveals how people *classify* HIV scenarios (by aspects of the victim, the method of contraction, and so on).

RESEARCH OVERVIEW

In this study, subjects rated the similarity of pairs among a set of sixteen scenarios involving HIV victims (see the Appendix for the sixteen scenarios, as well as abbreviations used in subsequent exhibits). The victims varied in personal likability (e.g. Magic Johnson versus an unknown armed robber), race, gender, age, fame (some are actual people, some manufactured for the experiment), and method of contraction. Care was taken that method of contraction was not completely confounded with likability of the victim; for instance, the two victims who contracted the disease from their spouses are Mary Fisher (a presumably likable, well-known housewife) and the aforementioned bank robber. Likewise, although Magic Johnson's method of contracting the disease may not be well liked, he undoubtedly is beloved as a person. Thus, the results will indicate to what extent the person versus the method of contraction drives perception of HIV cases. One of the scenario victims contracted HIV without knowing how; she was added to the stimulus set to test reactions to HIV victims in the absence of contraction information (i.e. to test whether contracting HIV in and of itself was negatively implicating for the victim). Subjects first made similarity judgments among the scenarios, and then rated the scenarios on a set of ten scales (see Exhibit 1) which measured directly such features as deservedness, voluntariness, and likability of the victims. These scales not only provided information about subjects' attitudes towards the vignettes, but also aided in interpreting the results of the scaling and cluster analysis (see Method section for more details).

METHOD

Subjects and procedure

Sixty-five undergraduates (36 males, 29 females) made dissimilarity judgments of the 120 pairs of the 16 scenarios. The pairs were presented in a modified Ross (1934) order. Ten pairs were repeated in reverse order as a check on intrasubject consistency; two subjects with consistency levels below 0.85 were eliminated from the analyses. Dissimilarity ratings were made on a nine-point scale with 1 representing high similarity and 9 representing high dissimilarity. Before starting the pairwise dissimilarity rating task, subjects were given a list of the set of 16 scenarios, asked to read them carefully, and to consider 'all of the ways in which they are similar and dissimilar'.

Following the similarity rating task, subjects rated each scenario on ten 9-point Likert scales designed to assess specific perceptions about the actors depicted in the scenarios, and the behaviors and circumstances that led to their contracting HIV infection. Next, subjects rated the level of risk of the person's behavior in the scenarios—"the chance that a person engaging in the same behavior as the person in the scenario would contract HIV." These ratings were on a scale ranging from "Lowest Risk—no more than 1 in one million" to "Very High Risk—at least 1 in 10," with four intermediate scale points representing equal log spacing of the corresponding likelihoods, i.e., 1 in 100, 1 in 1000, 1 in 10,000, and 1 in 100,000. Finally, subjects completed several background and attitude measures; these

included questions about religious affiliation and attendance at religious services, political party affiliation, and items designed to measure homophobia, religiosity, and attitudes towards various types of sexual activities and drug usage. All subjects completed the entire questionnaire in less than one hour.

Analyses

The three-way, two-mode (i.e. scenarios × scenario × subjects) matrix of dissimilarity judgments was used as input to SINDSCAL (Pruzanksy, 1975). Besides providing a multidimensional scaling of stimuli, this technique estimates associated dimension salience or importance weights that in turn can be used to investigate individual differences questions. Solutions were computed in one through six dimensions and the resulting goodness-of-fit statistics (e.g. variance accounted for) were used as a partial basis for deciding upon the dimensionality of the solution. The dissimilarities matrices were also aggregated (i.e. averaged) across subjects to form a single two-way matrix that we used as input to a hierarchical cluster analysis (Johnson, 1967) employing the 'maximum diameter' criterion. We hoped that the results of this analysis would provide complementary insights beyond the MDS results about the structure underlying subjects' perceptions of the scenarios.

RESULTS

Results are presented by dependent variable and method (e.g. factor analysis of rating scales, multidimensional scaling of similarity ratings, cluster analysis of similarity ratings, discriminant analysis of clusters and rating scales). Scenarios are referred to in the text either by their name (for well-known victims) or some salient classification (e.g. 'the robber', 'the date rape victim'). In the interest of clarify, many particular discussion points are reported with their corresponding results. A general integrative discussion follows.

Unidimensional scales

The primary purpose of the rating scales (listed in Exhibit 1) was to assist in identifying the dimensions arising from the multidimensional scaling of the scenarios, and to help substantively discriminate among clusters in the cluster analysis. However, the unidimensional scales constructed from these ratings, and the structure of the intercorrelations among these scales, provide interesting information both about subjects' reported attitudes toward the scenarios and about their usage of the scales we selected.

Factor analysis

Mean ratings on the ten unidimensional attribute scales were intercorrelated and factored using the principal axis method with square multiple correlations as initial communality estimates. A four-factor solution was suggested by a plot of the eigenvalues against factor number, i.e. a scree plot. An oblique rotation (promax) of the four factors provided a solution that was readily interpretable. The rotated factor pattern matrix is shown in Exhibit 1. Scales loading highly on the first factor concerned the perceived riskiness and distastefulness of the behaviors or lifestyles that led to HIV infection. The second factor was marked by variables related to how tragic and deserved the HIV infection was, given the actor's behavior and the circumstances leading to that infection. Also, a scale tapping subjects' beliefs that the persons in the scenarios 'contracted HIV (in)voluntarily' had a high loading on this factor. Subjects' judgments about the similarity between themselves and the actors, along with their

Exhibit 1. Factor analysis of ratings

Rating scale	Factor 1	Factor 2	Factor 3	Factor 4
'The person behaved in a risky manner'	*0.54*	0.00	−0.02	0.03
'People similar to this person are likely to contract HIV'	*0.48*	0.00	0.04	0.01
'I find the person distasteful'	*0.40*	−0.12	−0.05	−0.07
'It is tragic that this person contracted HIV'	0.04	*0.46*	−0.01	0.05
'The person contracted HIV involuntarily'	−0.06	*0.42*	−0.02	−0.09
'The person deserved to contract HIV'	0.05	*−0.45*	−0.03	0.00
'This person is similar to me'	−0.07	−0.05	*0.38*	−0.02
'I could contract HIV the same way'	0.04	0.03	*0.34*	−0.01
'The person is famous'	0.30	−0.05	−0.05	*0.48*
'The person is likable'	−0.04	0.06	0.05	*0.47*

Correlations among factors

	Factor 1	Factor 2	Factor 3	Factor 4
Factor 1	1.0	0.52	0.51	−0.18
Factor 2		1.0	0.01	−0.28
Factor 3			1.0	−0.31
Factor 4				1.0

assessments of the likelihood that they could contract HIV in the same fashion as the actors, defined the third factor. Thus, this factor seemed to tap the extent to which subjects empathized with the actor. Finally, scales measuring the likability and fame of the stimulus persons marked the fourth and last factor. The correlation between these two scales probably resulted from the fact that most of the public figures described in the scenarios were likeable, e.g. Magic Johnson, Arthur Ashe, Liberace, and Robert Reed. The intercorrelations among these four factors are presented in the bottom panel of Exhibit 1. The famousness scale also provided a measure of whether subjects actually were familiar with the victims we expected, *a priori*, to be well known. As expected, Magic Johnson, Arthur Ashe, Liberace, and Robert Reed were rated most famous (means of 8.68, 8.51, 8.00, and 8.55, respectively). The victims who became well known after they contracted HIV (e.g. Ryan White) were rated as moderately famous (means 3.12 to 6.55), and the fictitious victims were rated as not famous (means in the 1.0 to 2.0 range).

Mean attribute scale ratings
Although the factor analysis reveals several distinct constructs underlying the unidimensional scales, it is useful to explore differences in scale usage both within and among factors. Mean ratings of the scenarios on several of the scales (one or two for each of the four factors) and displayed in Exhibit 2.

Riskiness and Distastefulness Judgments of riskiness and distastefulness were quite similar ($r = 0.90$). Nevertheless, there are enough differences on these (and the other scales) to confirm that subjects made sharp distinctions in using these scales and that neither positive nor negative 'halo effects' were a problem.

While many behaviors that carry a high risk of HIV infection are also distasteful, they do not appear to be distasteful solely because of their risk level. For instance, the heart surgeon and nurse are located toward the middle of the Riskiness scale, but low on Distastefulness. Also, Magic Johnson's behavior
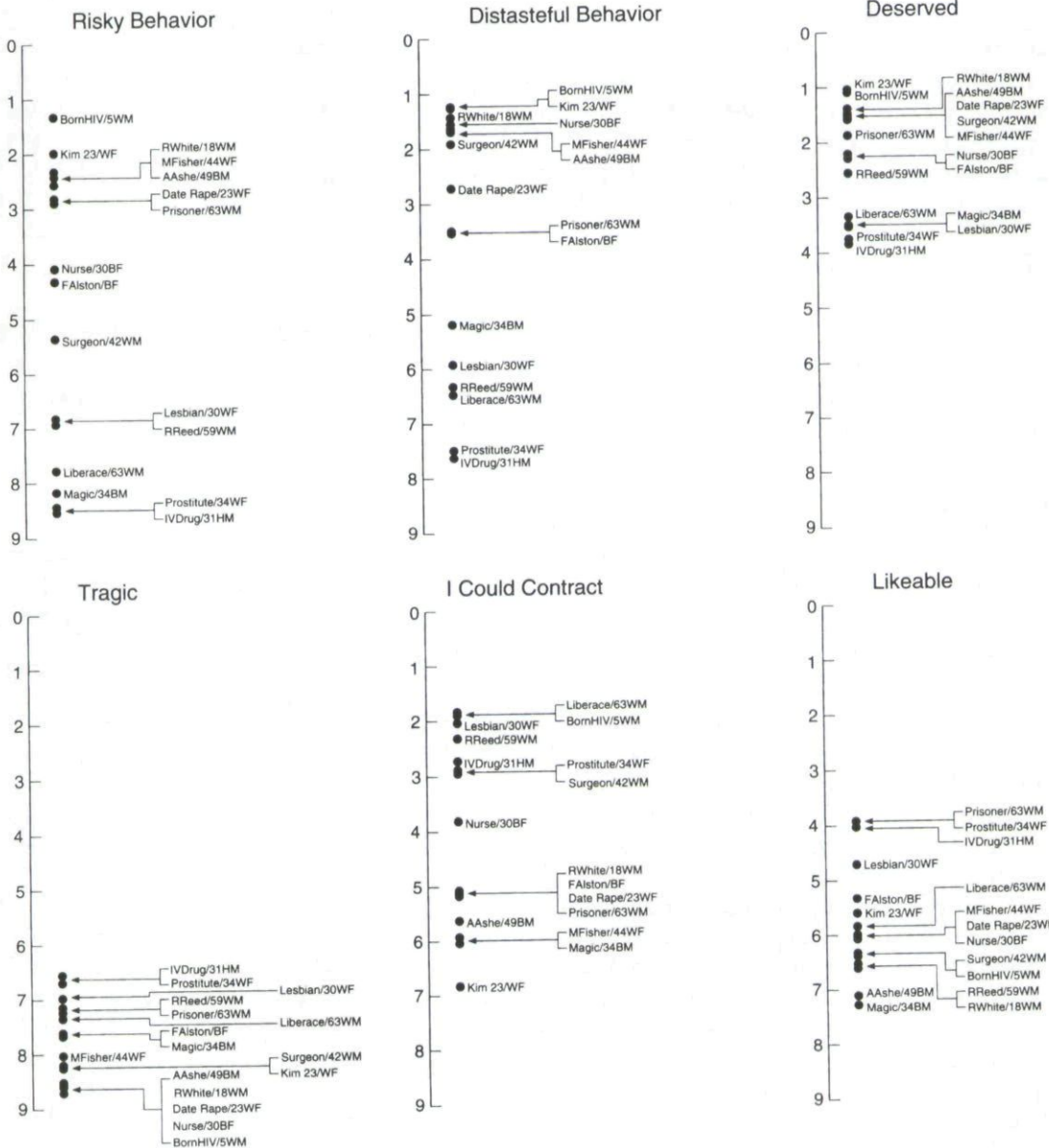
Exhibit 2. Mean scenario values on selected ratings scales

was judged as very risky, but he was located relatively low on the Distasteful scale. For some of the scenarios, the link between Risky and Distasteful judgments seems unnaturally high; although the victim of date rape, prisoner, and woman with unknown source of infection may have for some other reason appeared distasteful to the subjects, there is nothing in the scenario descriptions to suggest that these victims engaged in risky behavior leading to their infection (and thus to explain their relatively high 'risky' ratings).

Tragedy and deservedness   Although respondents judged some actors' behaviors to be risky and distasteful, they were more generous in their judgments of both the extent to which the actor *deserved* contracting HIV (mean ratings all >4) and the *tragedy* of these infections (mean ratings all >6.5). But again, the prostitute, the drug user, and the homosexuals were rated relatively negative, i.e. more deserving and less tragic. The two stimuli whose deservedness and tragic ratings were inconsistent (i.e. not highly negatively related) were Magic Johnson, with highly deserved but median tragedy, and the prisoner, with median deservedness but low tragedy. Thus, while behavior leading to infection usually drove overall judgments, subjects did distinguish between negative evaluations of the infection method and negative evaluations of overall character.

Could contract HIV in a similar way   The modes of transmission seen as most personally likely by these college students were infection by a dentist (Kimberly Bergalis), unsafe heterosexual intercourse with a non-spouse (Magic Johnson), and intercourse with a spouse (Mary Fisher), ordered from most to least likely. Contraction via homosexual encounters, intravenous drug use, prostitution, and administering health care to HIV patients were seen as relatively unlikely.

Likability   Despite their high scores on negative scales such as 'distasteful', Magic Johnson was rated the most likeable of all, and Robert Reed was ranked fourth most likeable. As expected from their positions on the other scales, the prostitute, the prisoner, the drug user, and the lesbian were ranked as least likeable. Likability was not simply a function of similarity; the correlation between mean ratings of likability and ratings on the 'Similar to Me' scale was only 0.27 ($p>0.10$).

Risk estimates   Subjects estimated the odds 'that a person engaging in the same behavior as the person in the clipping would contract HIV'. Each point along the six-point scale represented a range of specified odds, with '1: Lowest Risk' corresponding to 'no more than 1 in one million', up to '6: Very High Risk', corresponding to 'at least 1 in ten'. Mean ratings on this scale are shown in Exhibit 3; as the exhibit shows, the ratings corresponded closely to the 'riskiness' attitude scale ($r = 0.90$). Homosexual relations (Liberace, Robert Reed), prostitution, and intravenous drug use were rated as most risky, with female homosexual behavior and illicit heterosexual behavior (Magic Johnson) at the next riskiest level. All remaining behaviors were rated as substantially less risky (approximately 1 in 12,000 and lower). By and large, the risk estimates seem inflated; this may be a function of the particular scale, which had an especially high upper anchor. Estimates for lesbian behavior were higher than might be expected given the low incidence of HIV infection among female homosexuals in the population, and estimates for Ryan White were lower than might be expected given the prevalence of HIV infection among hemophiliacs in the population.

Contracting HIV infection from dental treatment (Kimberly Bergalis) was seen as very unlikely, with odds of about 1 in 500,000. Nevertheless, when asked to rate the chances that 'I could contract HIV in the same way as the person in the clipping' (see Exhibit 2), the scenario involving dental treatment was rated highest. A similar inconsistency emerged for Magic Johnson, who was rated as risky and distasteful, but whose method of contraction was judged likely by these subjects (who might be expected to avoid a risk they judged so negatively). This pattern of results suggests that risk estimates, broadly defined, are exceptionally sensitive to the wording of the question(s) used to assess risk; the correlation between these two measures was moderately but reliably negative ($r = -0.49$). A more personal perspective (measured by the 'I could contract ...' scale) resulted in estimates that evidently reflected the probability of the behavior (e.g. going to the dentist, engaging in heterosexual sex) instead of either the probability of infection from that behavior or judgments of the attractiveness or danger of that behavior.
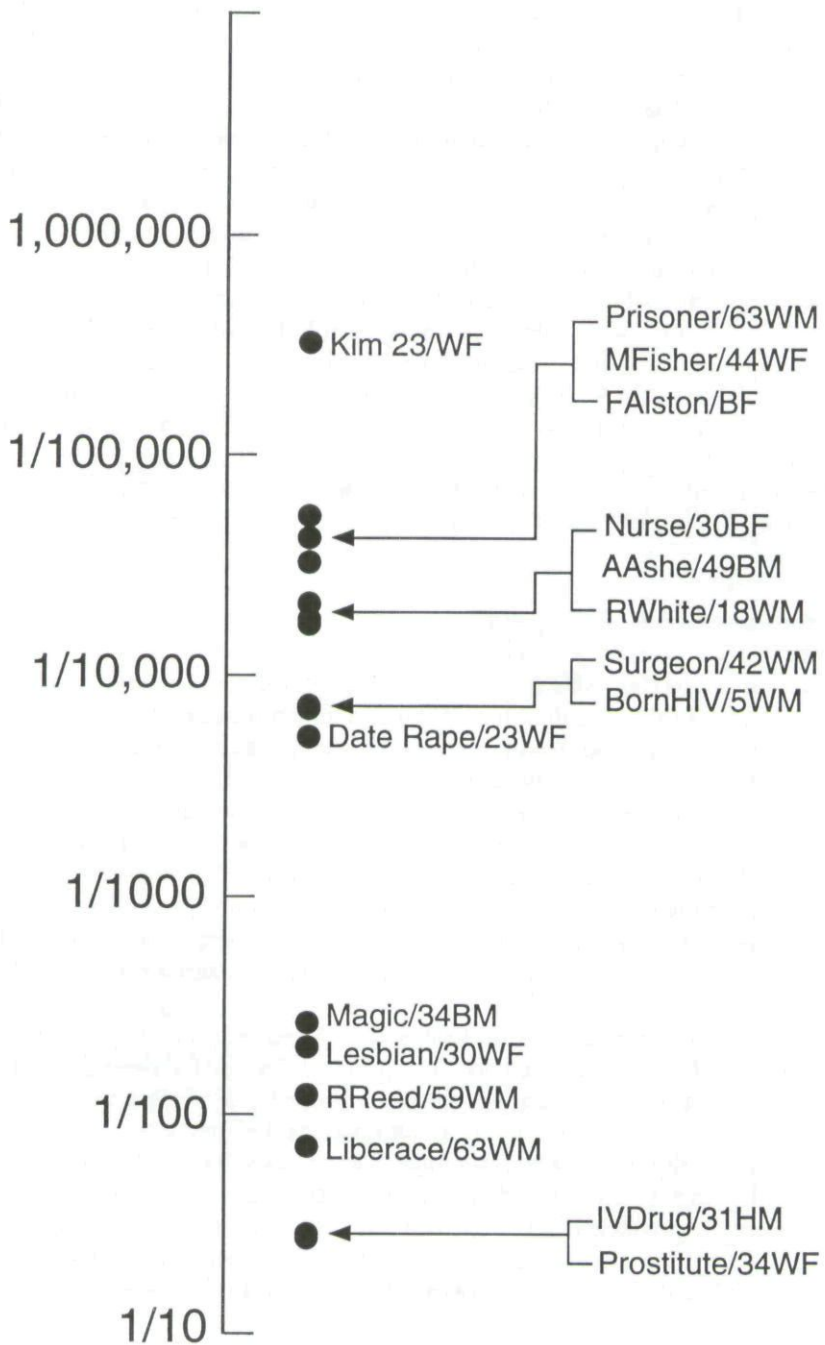
Risk Level

Exhibit 3. Mean risk estimates

**Individual differences multidimensional
scaling of the HIV/AIDS scenarios**

Ratings of the scenarios on specific unidimensional attribute scales provided some useful insights about subjects' perceptions and construals of the stimulus persons and evaluations of the behaviors or circumstances that led to the contraction of HIV/AIDS. However, this methodology relies very heavily on the intuitions and theoretical orientation of the investigator; there is no way of knowing how relevant the scales are to actual perception of HIV victims. Although subjects probably can rate the scenarios reliably on the scales, this is no guarantee that the scales correspond to attributes that subjects ordinarily use in perceiving and thinking about the stimuli. Also, conventional treatment of unidimensional rating data (i.e. aggregation across subjects to construct scales) precludes exploration of questions about individual differences in perception and cognition (Jones, 1983).

Individual differences multidimensional scaling (MDS) of generalized similarity data has neither of these disadvantages. Instead, subjects can base their pairwise similarity ratings on any, and as many, attributes as they wish. The model employed in this research, INDSCAL (Carroll and Chang, 1970) allows examination of individual differences in salience or importance of the dimensions or attributes resulting from the analysis. The SINDSCAL program was used to scale the three-way, two-mode matrix (i.e. 16 scenarios × 16 scenarios × 65 subjects) of dissimilarities. A four-dimensional solution with a goodness-of-fit of 0.66 was selected based on interpretability. The proportions of variance accounted for by the four dimensions were: 0.44, 0.11, 0.06, and 0.05. Goodness-of-fit correlations for the 65 subjects ranged from 0.63 to 0.94, with a median r of 0.84.[1]

**Multidimensional representation and
vector projections**

The stimulus space for the 16 HIV/AIDS scenarios is shown in Exhibit 4; the top panel shows the plane defined by the projections of the stimuli onto the first two dimensions and the bottom panel shows the plane corresponding to the third and fourth dimensions. Scenarios are labelled using the abbreviations given in the Appendix. To assist interpretation of the solution, and to test hypotheses about the identities of these dimensions, property vectors corresponding to several of the unidimensional scales were located in the solution space. Projections of these vectors onto the I–II and III–IV planes are shown in Exhibit 4. Exhibit 5 gives the regression weights and r^2's associated with each property vector. The r^2's associated with five scales (Famous, Similar Behavior, Years to Live, Likeable, and I Could Contract) were less than 0.70. Although most of these were significantly different from 0 ($p < 0.05$), their placement was for the most part redundant with the other vectors, and they therefore are not plotted in Exhibit 4.

Dimension I was highly correlated with Distasteful, Deserved, Tragic (negative), Involuntary (negative), and perceived Riskiness of behavior. The property vectors for these attributes are all quite close to the axis for Dimension I in the solution space. Projections of these vectors onto planes not involving the first dimension are very small, as reflected by the patterns of the b's in Exhibit 5. Positions of the scenarios along this dimension appear to reflect subjects' evaluations of the stimulus persons' behaviors leading to HIV infection. Actors with high values on Dimension I, i.e. the intravenous drug user, the prostitute, Liberace, Robert Reed, the lesbian, and Magic Johnson (listed in descending order) were seen as engaging in distasteful, risky behavior and thereby as relatively deserving of HIV/AIDS. Individuals who were infected via blood transfusions (e.g. Ryan White), at

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[1] Separate solutions were computed for male subjects and females subjects. The stimulus spaces for these solutions were virtually identical to one another, and to the solution for the total sample reported here.
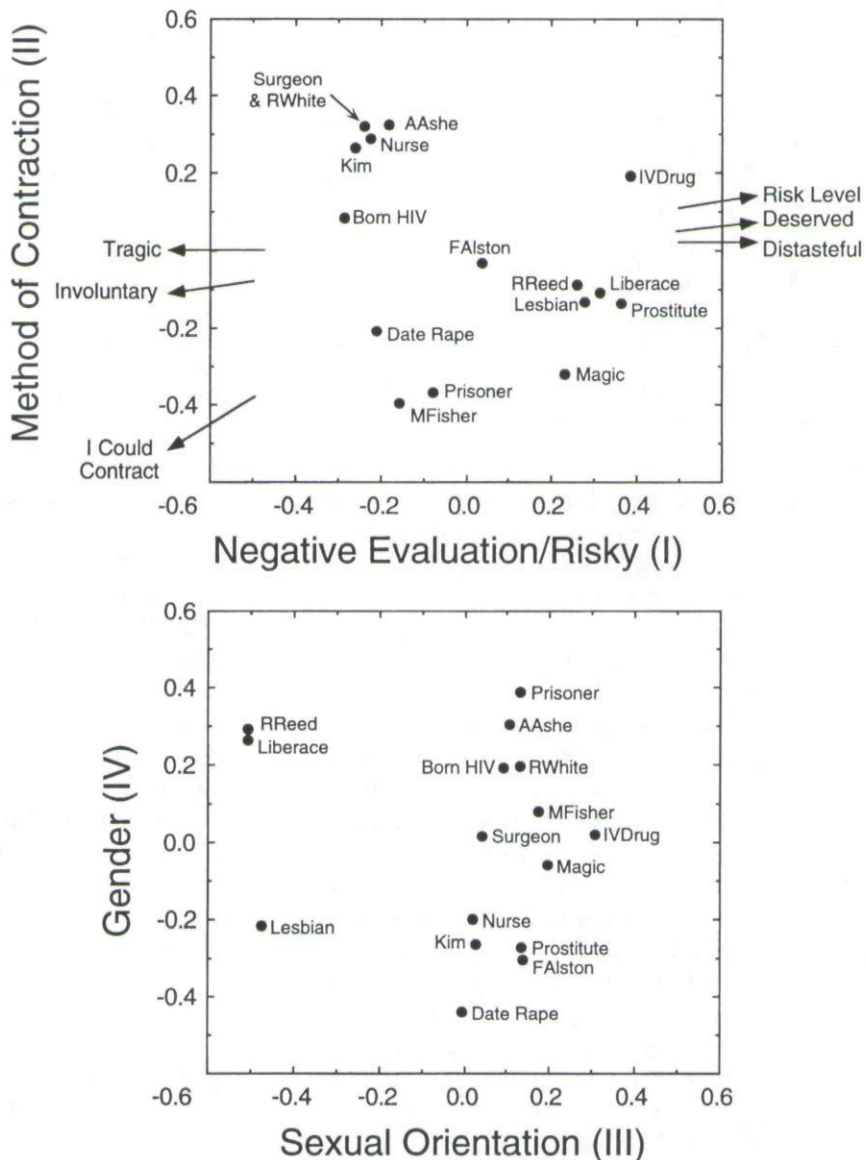
Exhibit 4. Multidimensional scaling results

birth (the five-year-old boy), or delivering health care (heart surgeon, nurse) are at the other end of this dimension. Their infections are viewed as tragic, undeserved, and resulting from behaviors that were neither risky or distasteful. Individuals who were infected via heterosexual relations with spouses (Mary Fisher, the Prisoner) or who contracted HIV in an unknown way, are located toward the middle of the dimension. Note that this dimension does not reflect merely general positive-negative valence; likability was not highly correlated with locations of the stimulus persons along the dimension.

The second dimension, Method of Contraction, is not, strictly speaking, a dimension at all. Locations along Dimension II reflect a tripartite distinction concerned with the type of behavior or situation in which the infection occurred. The group of individuals with high scale values on this

Exhibit 5. Property vector dimension loadings and reliabilities

Rating scale	b for Dimension				Model r^2	p
	1	2	3	4		
Risky	9.96	2.25	−0.22	−1.51	0.85	0.0001
Distasteful	9.33	0.74	−0.31	−0.74	0.97	0.0001
Similar	5.94	1.72	−0.09	−0.50	0.66	0.01
Risk Judgment	4.57	0.95	−0.47	−0.19	0.76	0.002
Deserve	4.00	0.32	0.24	−0.59	0.95	0.0001
Famous	−0.50	−0.70	−2.50	5.99	0.36	0.26
Likeable	−2.40	0.10	−1.01	0.82	0.35	0.26
Tragedy	−2.75	0.01	−0.30	0.02	0.89	0.0001
I could contract	−2.93	−2.17	2.79	−0.61	0.46	0.11
Involuntary	−3.31	−0.51	−0.08	0.46	0.96	0.0001
Similar to me	−3.49	−0.20	0.05	−1.38	0.78	0.001

dimension contracted HIV in medical settings, e.g. performing surgery, providing nursing care, receiving a transfusion, receiving dental care, and in the case of the drug user, self-administering an illegal injection. The group near the center of the dimension, including Liberace, the prostitute, the lesbian, and Robert Reed, were infected via illegal or (imputed) illicit homosexual or heterosexual behavior. Note that the woman who 'does not known how she contracted it' is located in this group. The third group, located at the lower end of the dimension, comprises Mary Fisher, Magic Johnson, the Prisoner, and the date rape victim, all individuals infected through heterosexual relations.

The three groups of scenarios just discussed are so identified because they (i.e. their projections) fall in distinct subranges along the second dimension. But note also that most of the scenarios fall into distinguishable clusters, in a spatial sense, within the plane defined by Dimensions I and II. A hierarchical cluster analysis, reported in a subsequent section, captures this aspect of the structure and reveals some interesting, complementary details about subjects' perceptions of the scenarios.

The third and fourth dimensions are interpretable, but together account for only eleven percent of the total variance. The third dimension, Sexual Orientation, reflects a distinction between the homosexuals (Robert Reed, the lesbian, and Liberace) and the other stimulus persons, all of whom are putatively heterosexual. The fourth dimension is simply Gender, with all the males near or above the origin and all of the females (except Mary Fisher) below the origin. At first glance, these last two dimensions appear not very substantive, psychologically. But given the methodology, in which subjects were free to base their perceptions of similarity on any aspects of the stimuli, is of interest. Recall that the scenarios varied on a wide variety of explicit and implicit attributes, including age, race, occupation, marital status, fame/familiarity, and whether the stimulus person was dead or alive. The emergence of Sexual Orientation and Gender suggests that (some) subjects viewed these attributes as more relevant in thinking about the situations and behaviors associated with contraction of HIV and AIDS. The relatively high incidence (in the US population) of HIV/AIDS for gay males, and the higher incidence for males in general (compared with females), may explain the emergence of these last two dimensions. Examination of the INDSCAL salience weights matrix revealed that 10 out of the 65 subjects had weights greater than or equal to 0.30 for the Sexual Orientation dimension, and that nine subjects had weights in this range for the Gender dimension.

INDSCAL salience weights

The INDSCAL model parameterizes individual differences in the relative salience or importance of the derived dimensions. Associated with each subject is a set of weights, one for each dimension of the

group stimulus space. These weights can be correlated with separately obtained measures of attitudes, experience, personality, demographic characteristics, and the like. A small set of measures thought to be potential correlates of individual differences in salience were included in the present study. We expected that political and religious affiliations, gender, homophobic attitudes, and attitudes about extramarital sex might be related to individual differences in perception of the HIV/AIDS scenarios. A variety of moderate, but statistically significant and psychologically meaningful, correlates were found.

Dimension I (Negative Evaluation of Behavior/Riskiness)   Salience weights were correlated with being white ($r = 0.19$), having unfavorable attitudes toward intravenous drug users ($r = 0.26$), being female ($r = 0.21$), stating a religious affiliation ($r = 0.30$), being Protestant ($r = 0.23$), attending religious services more frequently ($r = 0.24$), and agreeing with the statement that 'sex should be limited to long-term, serious relationships' ($r = 0.32$). Also, subjects attaching high weights to this dimension tended to rate the behavior of the homosexual stimulus persons as more distasteful ($r = 0.26$) and risky ($r = 0.22$), yet gave lower riskiness ratings to the date rape scenario ($r = -0.31$). Together, these correlations suggest that subjects attaching higher salience to the first dimension tend to be religious, white women with negative attitudes toward extramarital sex and illicit drug use.

Dimension II (Method of Contraction)   Correlates included 'prochoice' attitude toward abortion ($r = 0.21$), race other than white ($r = 0.29$), no religious affiliation ($r = 0.25$), and level of disagreement with the statement 'I feel that I need to know more about HIV and AIDS' ($r = 0.24$). Also, subjects attaching high weights to this dimension tended to rate the date rape scenario as more distasteful ($r = 0.31$). Thus, subjects who exhibited high weights for this dimension tended to be 'non-WASPs' who acknowledged their lack of knowledge about HIV/AIDS. Perhaps the realization that they lacked knowledge about the disease and its modes of transmission made them more attentive to the situations and circumstances surrounding the infections of the individuals depicted in these scenarios.

Dimension III (Sexual Orientation)   Significant predictors included Protestant religious affiliation ($r = -0.25$), prochoice stance on abortion ($r = 0.26$), and disagreement with 'sex should be limited to serious, long-term relationships' ($R = -0.25$). Thus, these prochoice, socially liberal Protestants tended to pay less attention to Sexual Orientation in judging similarities and differences among the scenarios.

Dimension IV (Gender)   Males attached high salience to gender than did females ($r = 0.20$). Also, salience weights size was correlated with favorable attitudes toward intravenous drug users ($r = 0.33$), level of (dis)agreement with the 'sex should limited ...' statement ($r = -0.25$), and with level of (dis)agreement with the statement 'I take precautions to avoid contracting HIV' ($r = -0.22$). It is likely that at least the latter two attitudinal correlations are reflections of the gender of the respondent; males showed significantly less agreement with both statements.

Hierarchical cluster analysis of the aggregate scenario dissimilarities

Cluster structure
Additional insights about subjects' perceptions of the HIV/AIDS scenarios were revealed by a hierarchical cluster analysis of the aggregate dissimilarities matrix using the average linkage criterion.
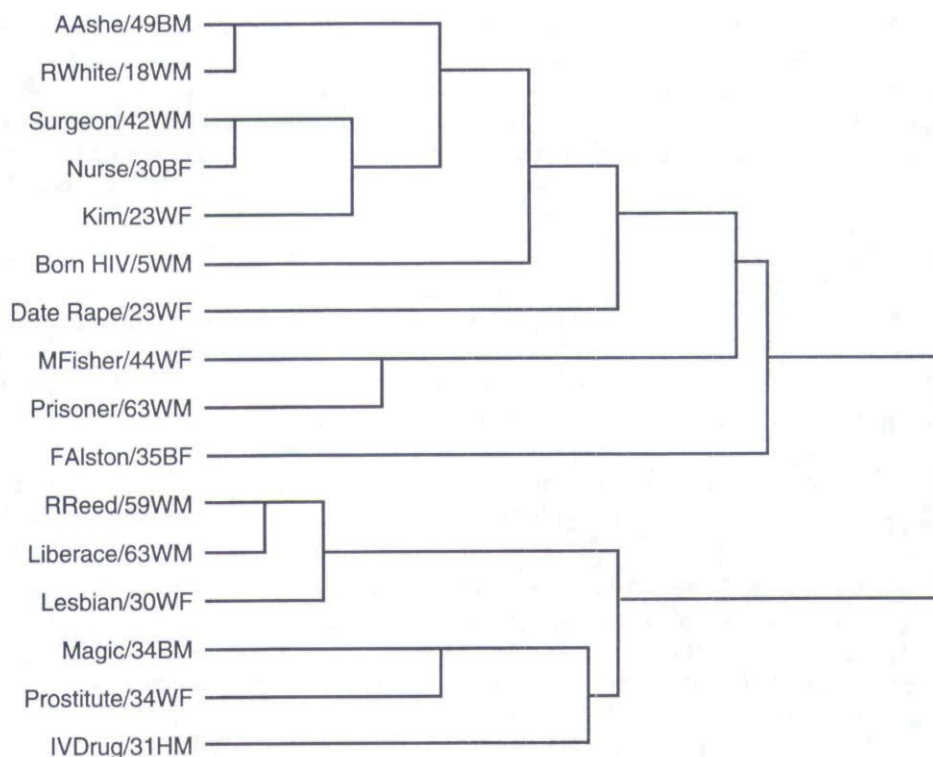
Exhibit 6. Hierarchical cluster structure

The dendrogram summarizing the results of this analysis is shown in Exhibit 6. All major levels of the hierarchical structure are readily interpretable. Starting at the left side, the first seven linkages reflect method of contracting HIV: Arthur Ashe and Ryan White via blood transfusions, the surgeon and the nurse from treating HIV positive patients, Robert Reed and Liberace (with the lesbian merging at the next level) via homosexual contacts. At the bottom left, Magic Johnson and the prostitute cluster, presumably reflecting subjects' beliefs that both contracted HIV from extramarital, heterosexual intercourse; and Mary Fisher and the male Prisoner cluster because both contracted HIV from their spouses. Finally, Kimberly Bergalis joins the Surgeon-Nurse cluster. These seven linkages comprise the first major level of clustering.

Moving toward the right, the two clusters at the most superordinate level reflect more general considerations that transcend specific behaviors and modes of infection. The largest cluster subsumes scenarios in which the actors were infected via situations that were legal and more socially sanctioned. In general, subjects viewed these stimulus persons as undeserving of HIV infections, as having engaged in behaviors that were not risky, and as tragic. These ten scenarios subdivide into two kinds of situations: medical procedures (e.g. transfusions, heart surgery, dental care, etc.) and heterosexual relations, including the date rape victim and the woman with unknown source of infection, who merged with Mary Fisher and the prisoner at a relatively late stage of the clustering. It is interesting that the date rape victim fell into the group with those who contracted HIV from spouses or in medical settings; this suggests that she was seen as a blameless and passive victim, similar to Ryan White or the five-year-old who became infected at birth.

The other superordinate cluster subsumes the remaining six scenarios and includes individuals who were perceived as behaving in a risky, illegal/illicit, and voluntary manner, leading to their being infected. These scenarios include the three homosexuals, the intravenous drug user, the prostitute, and Magic Johnson. Subjects tended to view the behavior of these individuals as distasteful and voluntary.

Discriminant analysis

A multiple discriminant analysis, using the two highest-level clusters just discussed as the basis for separating the scenarios into groups, was computed. The scores on the four factors (see Exhibit 1) were used as discriminating variables. The standardized canonical discriminant function coefficients and the group centroids are shown in Exhibit 7. The group containing the first ten scenarios has a low (i.e. negative) centroid and the cluster containing the last six scenarios has a high, positive centroid. Examination of the discriminant coefficients shows that scores on Factor 1 (Risky/Distasteful) contributed the most discriminating the groups, followed by Factor 4 (Likeable/Famous), Factor 3 (Similar to Me), and then Factor 2 (Tragic/Deserved/Involuntary). These results, along with specific information about the locations of the scenarios on the unidimensional scales (see Exhibit 2), support the interpretations of cluster formation and composition presented earlier.

Exhibit 7. Discriminant analysis predicting ratings values with cluster structure

Discriminant function coefficients (canonical correlation = 0.80)			
Factor 1	Factor 2	Factor 3	Factor 4
1.40	−0.26	0.33	−0.36

Centroids	
Cluster 1	Cluster 2
−1.04	1.72

DISCUSSION

People have many characterizations of risk, beyond basic scientific morbidity and mortality estimations. This study confirms both that different framings and settings of risk questions can produce vastly different judgments of risk scenarios and, more importantly, that these variations in judgments can rely significantly and systematically on judgments of the *victim* of the risk. Further, the multidimensional scaling and cluster analysis models show that not all characteristics of victims affect perception of a risk scenario equally. In particular, the results suggest that particular behaviors leading to HIV infection are more important to judgments of deservedness, distastefulness, and riskiness than are general behavior patterns, personal likability, or demographic such as age and race.

Method of infection loomed very large in all of our measures. The most explanatory factor in the factor analysis was a combination of the riskiness of the victim's behavior and the behavior's distastefulness. Likewise, the most important dimension of the similarity ratings was a 'deservedness' dimension that centered on how the disease was contracted. For instance, Magic Johnson and Robert Reed, both rated as very likeable individuals, were nevertheless judged high on the primary 'deservedness' dimension. In the cluster analysis, the two-cluster structure (the first, most general

classification of vignettes) splits exactly along riskiness-of-behavior lines, not along likability of the person or even distastefulness of behavior in general. People do differentiate likability of behavior and character among the vignettes, but these differentiations do not explain as much variance in the similarity ratings as do behaviors leading to contraction.

Contributions to the risk perception literature

The prevalent finding that concern about different risks is in part determined by whether the risks are 'voluntary', 'equitable', and 'affect me' (e.g. Slovic *et al.*, 1980) suggests that hazards are differentiated in terms of the actions that potential victims take and the (behaviorally defined) groups to which they belong. Our results extend and test this suggestion by holding the particular risk constant, and showing that people still distinguish among cases according to perceived behavioral differences.

One implication of our results is that risks whose victims differ along behavioral dimensions will be viewed differently for this reason, and this implication may help explain some of the variance in earlier studies of risk. For example, in Slovic *et al.*'s (1980) factor structure, illicit drugs inspire much less concern than do pesticides and herbicides. Our results suggest that this difference is driven not only by the obvious 'voluntary/involuntary' dimension, but also by the fact that the sorts of people exposed to pesticides (farmers, residents, food consumers) are not viewed as behaving as distastefully as are people who use illicit drugs. In a measure of people's differential political judgments about natural and human-made risks, Brun's (1992) subjects rated AIDS highest on a 'need for private management' (as opposed to public management via government action) scale. This ranking was not simply due to ease of prevention of HIV; AIDS was rated higher than even activities such as smoking and drinking alcoholic beverages, which are undoubtedly more voluntary and easier to personally manage. Our findings help illuminate this effect by suggesting that the distaste many people feel about the behaviors leading to HIV infection (and perhaps other risks) mediate the relationship between their knowledge that the risk is dangerous and their willingness to allocate governmental resources to it.

HIV attributions and stigma

Our subjects' focus on behavior is consistent with the fundamental attribution bias (Ross, 1977) toward forming judgments about people based on observed actions (even one action) instead of circumstantial or random effects. Our results also to some extent confirm the hypothesis implied by some studies of victim attributions and stigma (e.g. Triplet and Sugarman, 1987) that homosexual behavior is a particularly salient characteristic in person perception, and that homosexuals are uniformly judged as more deserving of misfortune than are other groups. On our rating scales, even the homosexual rated as most likable (Robert Reed) was rated highly deserving and risky. In the multidimensional models of the similarity ratings, the lesbian and two gay men were always near to each other and on the high end of the deservedness dimension. In fact, the third dimension was defined solely by homosexuals versus victims not identified as homosexual. In the cluster analysis, the three homosexual victims likewise were categorized together. All these results are especially interesting given that lesbians are assumed by the medical community to be at a much lower medical risk for transmission of HIV than are even heterosexuals, so a strict classification by actual riskiness of behavior would be unlikely to group lesbians with gay men in the way that our subjects did.

Overall judgments of HIV

All our analyses show that our respondents were sensitive to differences in the scenarios and resisted universally condemning (i.e. stigmatizing) HIV victims. For the most part, though, people appeared to make more distinctions among more distasteful cases than among less distasteful cases. In both the

multidimensional space and (especially) the cluster analysis, victims with widely differing contraction methods and personal characteristics who nevertheless were viewed similarly passive and undeserving of HIV were classified together. Even estimates of their risk level differed very little. On the other hand, there were distinct clusters of the more distasteful victims (e.g. homosexuals, illicit heterosexual contacts, the drug user). This general trend suggests that, by and large, effects of victim perception are driven by negative attributions, and that perception of risks whose victims are by and large judged favorably may not depend as strongly on perception of the victim as do risks such as HIV.

One measure of overall reactions to HIV occurrences is indicated by judgments of our scenario in which a young black woman contracts HIV and does not know how she got it. On the most important 'deservedness' dimension in the multidimensional space, this woman appears between the set of 'less deserving' and 'more deserving' victims. Likewise, in the cluster analysis, she is classified with the 'less deserving' victims in the two-cluster classification, but then breaks off into a cluster of her own. The rating scales reveal the reason for this ambivalence toward this victim; she is viewed as more risky, less likable, and more deserving than the other victims in the 'less deserving' cluster. This result is consistent with the notion, suggested by the victimization literature (e.g. Stockols and Schopler, 1973; Godfrey and Lowe, 1975), that HIV victims may be blamed for their illness unless they can distinctively prove that they resisted the illness by not behaving in a risky manner. In fact, using this 'guilty until proven innocent' reasoning, subjects may have attributed this victim's ignorance about her contraction to an overall lifestyle involving many high-risk behaviors.

LIMITATIONS AND FUTURE DIRECTIONS

The results presented here extend the existing literature on psychometric models of risk perception to include who is at risk. Because many risks are strongly identified with whom they affect, these results suggest that the relationship between 'world view' (Slovic, 1994) and risk perception may be mediated by victim perception. In other words, reactions to risk are driven not only by political notions of who is producing the risk and/or in charge of eradicating it (Flynn *et al.*, 1994), but also by social and political viewpoints about who should bear the risk. Indeed, our SINDSCAL results show that the salience of such emotionally and politically charged issues as 'distastefulness' and 'deservedness' correlates reliably with personal religious and social beliefs, indicating that (as suggested by Slovic, 1994) individual differences in reactions to the social aspects of risk (e.g. who is at greatest risk) may play a much larger role in risk perceptions and reactions than has previously been assumed.

Any study of reactions to a widely discussed and analyzed issue such as HIV will likely at least partially confirm the received opinion about the issue. Our study did show, for example, that the homophobia that receives such media attention in fact did underlie many responses to HIV, and that people did stigmatize HIV victims (although perhaps not as much as might have been expected). On the other hand, the results reported here provide specific distinguishing information that is both surprising and potentially useful for policy purposes. For example, the overall result linking the specific contraction behavior to overall judgements of deservedness and riskiness suggests an under-explored reasoning process.

For instance, while many of our respondents undoubtedly are sexually active in some way, they nevertheless judged contraction via dental work as their most probable risk for HIV. Likewise, after all of the education and widespread attention, it is unlikely that most college students do not know that male homosexuals are at far greater risk than are female homosexuals. Yet, in both the MDS and cluster representations, all homosexuals were perceived as similar to each other. Our subjects appear to have focussed on their attitude toward the particular contraction behavior when making both 'blame' and riskiness attributions. Further, there is an evident hindsight bias (Fischhoff, 1982) operating: all the behaviors (and especially subjectively distasteful behaviors) leading to actual contraction among

the vignette victims are judged to be highly risky. It would be an instructive next research step to study how people judge behaviors such as Magic Johnson's heterosexual contacts in someone who has not contracted HIV. In other words, an important public policy objective might be to discourage thinking about infection-related behaviors as unusual, defining moments that delineate risk groups. The cognitive tendency to separate the contraction instances from other behaviors in the person's ongoing life leads to the sort of hindsight and world-view-based thinking that may have produced our results. For the victims (and potential victims), who have no hindsight benefit it is doubtful that the actual decision to engage in the particular behavior loomed so large.

Just as studies eliciting responses to many generally defined hazards will be limited in the depth of information provided about a particular risk, a concentrated study of one disease may not perfectly extend to predict responses across hazards. We chose HIV because of the widespread assumption that the typical victims of the disease drive responses to it; there are policy-relevant as well as theoretical reasons for understanding people's representations of this disease. Given that, though, it is worth noting that future research should explore other risks that may not be as strongly affected by victim-perception, test whether changing the group at risk (by moving a nuclear waste site, for example) affects perception and concern, and examine the degree to which who is at risk contributes to distinctions among sets of hazards.

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NOTE

APPENDIX: SCENARIOS AND ABBREVIATIONS

Scenario	Abbreviation
1. Kimberly Bergalis, 23 years old, contracts HIV from her dentist.	KIM-WF
2. Magic Johnson, 34, contracts HIV. He states that he was infected from numerous heterosexual contacts.	MAGIC-BM
3. Susan Lentz, a 34-year-old white woman, contract HIV from working as an inter-city prostitute.	PROSTITUTE-WF
4. Robert Reed, who played the father on the popular television series *The Brady Bunch*, dies of AIDS at the age of 59. He was rumored to be homosexual.	RREED-WM
5. Frankie Alstin, a 35-year-old black woman, had HIV and does not know how she contracted it.	FALSTON-BG
6. Mary Fisher, a 44-year-old mother who spoke at the Republican national convention last year on the plight of AIDS patients, is HIV positive. She contracted the virus from her ex-husband.	MFISHER-WF
7. Michael Boccomino, 5 years old, has AIDS. He was born with the virus; he contracted it from his mother.	BORNHIV-WM
8. Anthony Richards, a 63-year-old white male, dies of AIDS in prison, where he was serving a sentence for armed robbery. He contracted the virus from his wife of many years.	PRISONER-WM
9. Daniel Gonzales, a 31-year-old hispanic man, contracts HIV from IV drug use.	IVDRUG-HM
10. Christina Lewis, a 23-year-old white woman, contracts the HIV virus from a date-rape.	DATERAPE-WF
11. John Williamston, MD, a white man aged 42, contracts HIV from performing emergency heart surgery on HIV positive patients.	SURGEON-WM
12. Arthur Ashe, the first black tennis player to win Wimbledon, dies of AIDS at the age of 49. He stated that he contracted the virus through a blood transplant.	AASHE-BM
13. Ryan White, an 18-year-old hemophiliac, dies of AIDS. He contracted the virus from a blood transfusion.	RWHITE-WM
14. Claudia Washington, a black woman in her 30s, has AIDS. She contracted the virus from working as a critical-care nurse in a city hospital.	NURSE-BF
15. Jesse Chips, a 30-year-old white woman, contracts HIV from lesbian contact.	LESBIAN-WF
16. Liberace, the flamboyant piano player, dies of AIDS at the age of 67. He was homosexual.	LIBERACE-WM