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Effect of Sexual Motivation on Men's Risk Perception for Sexually Transmitted Disease: There Must Be 50 Ways to Justify a Lover

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Recent research has incorporated situational factors into assessment of risk. Working from a rational appraisal framework, however, these studies have not emphasized contextual features that might introduce motivated risk assessment. In the current study, participants ($N = 40$ male undergraduates) lowered their risk perceptions for STDs following the induction of a sexual motivation. In an initial baseline condition, participants estimated the risk of contracting STDs from partners with relatively high- or low-risk sexual histories. In a subsequent trial, participants repeated the imagery task while viewing photographs that were high or low in sex appeal. As predicted, participants reduced their risk perceptions when they viewed photographs high in sex appeal. The only necessary precondition was the presence of nondiagnostic information from which they could construct biased risk estimates.

Key words: health belief model, motivation, cognition, ambiguity, vulnerability, HIV

Perceptions of vulnerability play an important role in most theories of preventive behavior, such as the health belief model (Becker & Maiman, 1975; Rosenstock, 1974), protection motivation theory (Rogers, 1975), and the precaution adoption process (Weinstein, 1988). Typically, vulnerability perceptions have been assessed using measures of global risk perception (for a discussion of measurement issues, see Gerrard, Gibbons, & Bushman, 1996; Weinstein & Nicolich, 1993). Recently, however, research has begun to incorporate situational influences into risk estimates. This research suggests that vulnerability perceptions can be quite responsive to aspects of the situation that are diagnostic of risk. For instance, Gerrard and Luus (1995) demonstrated that women's perceptions of vulnerability to pregnancy varied predictably as a function of anticipated contraceptive method and frequency of intercourse.

Moreover, recognition of this situational variability has led to better prediction of both risky and preventive behaviors. In one study, Fishbein, Chan, O'Reilly, and Schnell (1993) demonstrated that gay men's perceptions of risk for HIV varied from situation to situation as a function of the sex act and the sexual partner. As a result, vulnerability measures that took these factors into account provided better prediction of intentions to engage in unprotected sex than measures that did not. Stasson and Fishbein (1990) found similar results with preventive behavior. They conditionalized the perceived vulnerability to car accidents in terms of road, driving, and trip conditions and found corresponding differences in intentions to wear safety belts.

Behavioral Motivation

These studies suggest that people have some insight into the relative riskiness of different situations and that behavioral prediction is enhanced by taking this into account (see also Ronis & Harel, 1989; Weinstein & Nicolich, 1993). However, much of this work has implicitly assumed that vulnerability estimates are the product of a rational appraisal process. As a result, research has focused almost exclusively on aspects of the situation that might be logically (or validly) related to actual risk. This ignores the motivational factors that can introduce bias into judgments of risk.

It is our hypothesis that behavioral motivations often undermine a rational risk assessment, such that people construct vulnerability perceptions that will justify the desired response to a situation. This occurs when someone is considering whether to engage in a behavior that is potentially risky but, nonetheless, highly desired. This prediction is based on a theoretical orientation in which individuals want to believe that they would not knowingly and willingly engage in actions that would bring about unwanted or aversive consequences (e.g., Cooper & Fazio, 1984). From this perspective, someone who possesses a strong desire to pursue a particular course of action will be motivated to believe that the action will entail little, if any, risk. This perspective differs from that presented in traditional health models, which emphasize how vulnerability perceptions impact on behavioral motivations and argues instead for a

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dynamic process in which behavioral motivations exert influence on vulnerability perceptions as well. The following section elaborates the process by which this is predicted to occur.

Justifying Beliefs

In general, people seem to be quite good at constructing beliefs to fit their needs. Motivations have been shown to influence attitudes (Cooper & Fazio, 1984), perceptions of others (Klein & Kunda, 1992; Sanitioso, Kunda, & Fong, 1990), and even views about the self (Fazio, Effrein, & Falender, 1981). For risk perceptions to be impervious to this sort of influence, they would have to be relatively stable, but evidence that they are affected by nonmotivated judgment heuristics argues against this (e.g., Rothman, 1995; Sherman, Cialdini, Schwartzman, & Reynolds, 1985).

Research suggests, however, that people are not at liberty to believe anything they want. Instead, they must construct their beliefs from information that can justify the conclusion (Darley & Gross, 1983; Klein & Kunda, 1992; Pyszczynski & Greenberg, 1987). For instance, a man calculating the risk of unprotected sex with a sexually appealing woman cannot conclude that she poses little STD risk if all he knows about her is that she has had frequent high-risk partners in the past. To reach the desired conclusion, he must incorporate other pieces of information into his calculations. For instance, he might look for evidence that she is a member of a group that he assumes would pose little risk. For this purpose, he might note how she plays the clarinet and collects classical music. Such a person does not seem typical of high-risk individuals, and so, he concludes, the risk from having unprotected sex with her is probably low. Of course, were this man not motivated to lower his risk perceptions, he would not consider musical hobbies and preferences relevant to the judgments of STD risk. It is this strategic use of otherwise nondiagnostic information that is taken take to be evidence of motivated processing.

Study Overview

The current study investigated both the rational and motivated construction of vulnerability perceptions to STDs across situations varying in risk. In an initial (baseline) trial (adapted from Gerrard & Luus, 1995), participants examined the sexual history of nine different women and then estimated the STD–HIV risk of having sex with each one individually. The sexual histories contained two types of information: the woman's number of past sexual partners and her frequency of condom use. It was predicted that higher risks would be associated with women who had had many prior sexual encounters and tended not to use condoms (e.g., Fishbein et al., 1993; Gerrard & Luus, 1995).

In the second trial, a behavioral motivation was introduced. It was predicted that the motivation to have sex would bias risk calculations if (and only if) the participants were supplied with additional nondiagnostic information from which they could justify their new risk estimates. Thus, all participants made a second set of estimates for the same women under high and low sexual motivation. Half did so in the presence of nondiagnostic information and half did not. The motivation to have intercourse was manipulated through the physical attractiveness (sex appeal) of the woman, and nondiagnostic information was provided in the form of descriptions of the woman's personality and interests. Consistent with the hypothesis that nondiagnostic information would be used according to motivational need, it was predicted that nondiagnostic information would undermine the risk calculus, resulting in diminished risk perception when the woman was sexually appealing. When the she was not attractive, it was predicted that personality attributes would either have no effect on risk perception or, possibly, increase risk perception to justify lack of interest in sexual intercourse.

Method

Participants

Participants were 40 heterosexual male undergraduates at Iowa State University who stated an interest in having sexual intercourse with a woman sometime before marriage. This was determined by asking participants to answer "yes" or "no" to the question "Would you be interested in having sex before marriage with a woman?" Three participants were dropped from all analyses for answering no to this question. Admittedly, this limits the external validity of the results, but it was felt that experimental realism could be attained in this specific laboratory setting only if the sample was restricted to include participants who would have a reasonably homogenous reaction to the stimulus materials (see Aronson, Brewer, & Carlsmith, 1985). Two additional participants were dropped due to experimenter error. Of the remaining 40 participants, 78% reported prior sexual contact with women. All participants signed an informed consent form.

Procedure

Participants estimated the likelihood of contracting an STD and the likelihood of contracting HIV from the women (targets) on the basis of information about each target's prior sexual history. These sexual histories contained information that was designed to be diagnostic of STD–HIV risk. Specifically, each history consisted of information about the target's total number of past sexual partners (number: 1, 3, or 8) and her past condoms use (protection: *extremely good, pretty good,* or *not very good* about using condoms in the past). Thus, each participant made risk estimates for a total of nine (three number × three protection) hypothetical partners. This complete set of ratings was made three times (i.e., practice, baseline, and experimental trials).

Practice trial. In the practice trial, participants were shown the full set of nine sexual histories and were told to imagine that they were associated with nine undergraduate women at their college who were roughly their own age. Participants then rated the probability of contracting STD and HIV from "one instance of unprotected sex" with each woman, using a 100-point scale. When participants finished this trial, they reviewed their responses and made any changes they felt appropriate.

Baseline trial. Participants then made the same nine ratings a second time. In this trial, the histories were presented sequentially and in a fixed random order. Each description was projected onto a view screen by a slide projector.

Experimental trial. Participants were then shown the slides one more time, now with additional information that would help them make "more informed decisions." During this trial, partici-

pants first viewed a photograph of a woman that was projected in front of them on a second view screen. This picture was presented in isolation for 10 s while participants engaged in an imagery task. Participants were instructed to imagine that they met this woman at a bar and then returned with her to her apartment, where it becomes apparent that she is interested in having sexual intercourse. Participants were told to reflect on this situation and how they would respond.

There were two manipulations in the experimental trial. First, the sex appeal of the photographs was varied. Half of the photographs were chosen to be high in sex appeal (HSA) for this particular sample, and half were chosen to be low in sex appeal (LSA) for this sample. The sex appeal of photographs was determined from pretesting with a separate sample of 18 heterosexual male undergraduates from the same university. These participants rated each photograph on a number of dimensions related to sex appeal. The photographs were selected such that, for each of the nine HSA targets, a minimum of 83% of the participants reported a desire to have sex with her. In contrast, for each of the LSA targets, a maximum of 17% reported a desire for sex.

The second manipulation involved personality descriptions. Half of the participants were given a three- to five-sentence description of the target's personality, which appeared on the same slide as the diagnostic information. Participants in the no-personality condition received only the diagnostic information. Using the procedure of Hilton and Fein (1989), these descriptions were pretested to be nondiagnostic with respect to STDs but generally informative about one's personality.

Design

During baseline, diagnostic information was presented in a 3 (number) × 3 (protection) repeated measures factorial. In the experimental trial, information was presented in a 2 (sex appeal) × 2 (personality) × 3 (number) × 3 (protection) mixed factorial, with personality as the between-subject variable. As in the baseline condition, participants saw nine sexual histories (number × protection) in the experimental trial, but each history was presented twice—once paired with a HSA photograph and once paired with a LSA photograph. For participants who received personality information, each sexual history was paired with 1 of 18 personality descriptions. These paragraphs were counterbalanced so that each appeared an equal number of times in the HSA and LSA conditions in each of five random orders.

Miscellaneous Measures

During the experimental trial, participants rated how interesting, similar (to participant), likable, attractive, and sexy the target was and then rated their personal sexual interest in her. All ratings were made on 100-point scales. One critical feature of the questionnaire is that participants rated the target's sex appeal and sexual desirability and their own interest in having sex with the target immediately prior to making the STD and HIV ratings. This was done to make the target's sex appeal salient during the risk rating and to ensure that participants self-articulated their interest in having (or not having) sexual intercourse with the target.

Results

Manipulation Check

A set of t tests revealed that HSA targets were viewed as more sexy, $t(39) = 24.45, p < .001$ ($M = 78.67$, $SD = 9.43$) and more attractive, $t(39) = 21.38$, $p < .001$ ($M = 79.48$, $SD = 8.62$) than LSA targets ($M = 23.93$, $SD = 14.78$ and $M = 31.19$, $SD = 15.94$, respectively) and that participants had a greater interest in having sex with the HSA ($M = 64.52$, $SD = 22.75$) than the LSA targets ($M = 17.02$, $SD = 13.46$), $t(39) = 15.62$, $p < .001$. In addition, compared with LSA targets, the HSA targets were viewed as more similar to the participant ($M = 55.17$, $SD = 17.71$ vs. $M = 34.83$, $SD = 16.29$), $t(39) = 9.38$, $p < .001$; more likable ($M = 25.95$, $SD = 17.03$ vs. $M = 20.31$, $SD = 18.34$), $t(39) = 5.13$, $p < .001$; and more interesting ($M = 67.81$, $SD = 12.20$ vs. $M = 45.21$, $SD = 16.45$), $t(39) = 10.00$, $p < .001$.

Baseline Risk Perception

Absolute risk estimates. The average baseline estimate of the likelihood of contracting STD from the target was 30%, and the average risk of contracting HIV was 20%. Recent estimates of the prevalence of STDs in the general population are about 0.25% for STD other than HIV, with estimates for HIV infection for college students estimated at 0.02% (Gayle et al., 1990; U.S. Centers for Disease Control and Prevention, 1993). Thus, these estimates are extremely high. However, this is common in studies using percentage estimates, particularly when participants are asked to estimate the probability of unlikely consequences (Rothman, Klein, & Weinstein, 1996; van der Velde, van der Pligt, & Hooykaas, 1994).

Risk calculus. To determine how the calculus operates in the absence of motivational influence, a 3 (number of partners) × 3 (protection) factorial analysis of variance (ANOVA) was performed on the baseline risk ratings. Preliminary analysis, in which STD and HIV were both entered as repeated measures, revealed a similar calculus for STD and HIV. As a result, and given the high correlation between the nine HIV and STD ratings, $r(8) = .86$, the analyses presented here were performed on the average of perceived STD and HIV risk, rather than on the two variables separately. Despite the redundancy, the average of the STD and HIV measures is referred to as *STD risk.*

As predicted, both number and protection had significant main effects on estimates of STD risk, $F(2, 78) = 84.35, p < .001$, and $F(2, 78) = 89.02, p < .001$, respectively, and these two main effects were qualified by a first-order Number × Protection interaction, $F(4, 156) = 10.99$, $p < .001$. As shown in Figure 1, the pattern of means suggests that participants had some general understanding that an increase in the number of prior partners is particularly diagnostic of risk when someone has not consistently used protection.

Motivational Disruption

By comparing baseline estimates of risk in specific conditions with estimates made when the diagnostic information was paired with a HSA or LSA photograph, it is possible to determine if sexual motivation systematically biases risk calculations. A positive value on this measure indicates increased risk estimates in the presence of a photograph, whereas a negative value indicates a diminished estimate. Thus, a 2 (sex appeal) × 2 (personality) × 3 (number) × 3

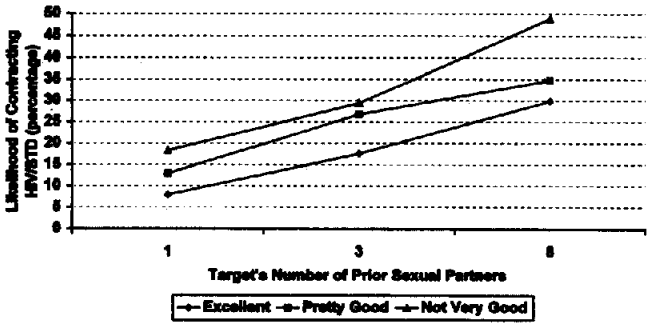

Figure 1. Perceived HIV–STD risk of targets as a function of the target's history of protection (i.e., condom use) and number of past partners. Likelihood refers to the perceived likelihood of becoming infected after one instance of unprotected intercourse with the target.

(protection) mixed ANOVA was run on the residual STD estimates to determine if sex appeal resulted in systematic deviation from baseline risk estimates.

Prior partners. It was predicted that sex appeal would interact with the risk calculus of participants by undermining their use and integration of the diagnostic features. Support for this prediction can be found in the Number × Sex Appeal interaction, $F(2, 76) = 4.02$, $p < .03$, qualified by a Personality × Number × Sex Appeal interaction, $F(2, 76) = 4.21$, $p < .02$. This pattern of means is shown in Figure 2. As can be seen, number appears to have interacted with sex appeal but only when the target's personality was described. This pattern can be quantified by testing for a simple effect of a Sex Appeal × Number interaction in both the personality-present and personality-absent conditions. This revealed a significant Number × Sex Appeal interaction in the personality-present condition, $F(2, 76) = 16.42$, $p < .001$, but not the personality-absent condition, $F < 1$. Inspection of the means suggests that the personality information diluted the diagnostic information to a significant degree when the participants were sexually motivated. *T* tests revealed that the deviation scores in the HSA–personality-present condition were significantly less than zero in the three-partner ($M = -2.42$, $SD = 3.27$), $t(19) = 3.31$, $p <$ .01, and the eight-partner conditions ($M = -3.66$, $SD = 3.97$), $t(19) = 4.12$, $p < .01$. Moreover, planned comparisons between means revealed that the eight-partner deviation scores were significantly lower than those in the one-partner condition ($M = 1.07$, $SD = 2.70$), $t(76) = 7.38$, $p < .01$, although neither condition differed significantly from the three-partner condition. Thus, it appears that (high-risk) diagnostic information was given less weight the more it contradicted the desired behavior, but only when it was paired with nondiagnostic information. In the LSA condition, means did not significantly differ from zero or from each other. However, the direction of the means is opposite of that in the HSA condition and suggests a tendency to magnify risky behavior when it is paired with nondiagnostic information.

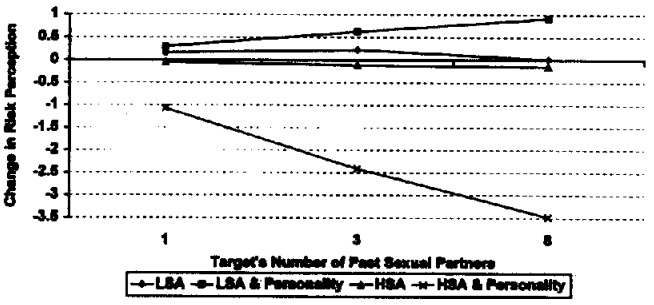

Figure 2. Change in HIV–STD perception as a function of the target's sex appeal, number of past sexual partners, and the presence or absence of nondiagnostic personality information. HSA = high sex appeal; LSA = low sex appeal; Personality = nondiagnostic personality information.

Condom use. Similar results were found with protection. As with number, protection interacted with both the sex appeal, $F(2, 76) = 3.67$, $p < .03$, and with the Sex Appeal × Personality interaction, $F(2, 76) = 3.31$, $p < .05$. Simple effects analysis revealed that the Protection × Sex Appeal interaction was significant in the personality-present condition, $F(2, 76) = 13.94$, $p < .01$, but not in the personality-absent condition, $F < 1$. In the personality-present condition, all HSA deviation scores were significantly less than zero, $t(19) \geq 2.47$, $p \leq .05$, whereas the LSA scores did not differ significantly from zero ($M = 0.61$, $SD = 2.82$). Moreover, HSA scores deviated from baseline more in the *not-very-good* condition ($M = -3.48$, $SD = 2.98$) than in the *excellent* condition ($M = -1.45$, $SD = 3.00$), $t(76) = 5.75$, $p < .05$, neither of which differed from the *pretty good* condition ($M = -2.02$, $SD = 4.02$). These results indicate that personality information undermined the use of protection information to a greater extent when the target was sexually appealing but engaging in high-risk sex.

Discussion

This study suggests that risk estimates for STD and HIV are influenced by motivated distortions. When the behavioral motivation was induced through the use of HSA photographs, the men in this study made lower risk estimates, provided they had personality information with which they could justify their beliefs. The fact that personality characteristics diluted the risk behaviors of HSA targets but not LSA targets provides strong evidence of a justification process.

An alternative explanation for this set of results is more cognitive in nature. It could be that the photographs evoked a stereotype that attractive women possess desirable personality attributes, resulting in the conclusion that they are also lower in STD risk (cf. Eagly, Ashmore, Makhijani, & Longo, 1991). In support of this, HSA women were not only seen as more sexually appealing and attractive but also as more likable, interesting, and similar to the target. In addition, these results are consistent with prior work demonstrating that nondiagnostic information can be used to enhance a stereotypic expectation (cf. Darley & Gross, 1983; Pyszczynski & Greenberg, 1987). However, it is not clear why a stereotype would be used more or less as a function of the

target's risk level. If this were just "cold" processing, the stereotype should bias the nondiagnostic information regardless of the target's risk. In this study, diagnostic information was undermined to the greatest extent when it most contradicted the desired behavior. Thus, the results are more consistent with the hypothesis that nondiagnostic information was used to justify the desired conclusion.

Motivated Risk Construction

Whereas past research has primarily emphasized situational variables that influence a rational analysis of vulnerability, the current study illustrates the importance of features that elicit motivated processing. It should be emphasized that these motivational influences occurred in addition to the rational analysis. It was not the case that participants abandoned their use of the diagnostic features. In fact, the diagnostic features were considered just as diagnostic when sexual motivation was high but personality information was not available. It was only through the use of nondiagnostic information that participants were able to create the desired belief, and, even when this was provided, risk ratings deviated only a small degree in comparison to the original baseline. This suggests that, to the extent there was bias, this bias was small in comparison with the rational analysis.

Nonetheless, the current study does open the question of just how rational (or how biased) STD risk perceptions are in real-life situations. One of the more disturbing aspects of this study is that it evoked biased risk estimates using a very low-impact manipulation. Sexual motivation was introduced through the use of photographs and an imagery task. At no point were participants led to believe that they would have the opportunity to interact with the targets, much less have sexual intercourse with them. Thus, the experimentally induced motivation that was driving this bias was small and weak in comparison with the one that occurs in the bedroom. This argues for the robustness of motivated influences on STD risk perception (see Prentice & Miller, 1992). Furthermore, this study investigated only one source of error: constructing biased conclusions out of nondiagnostic information. In a real interaction, people have many more strategies for confirming desired beliefs. They can ask hypothesis-confirming questions (Snyder & Swann, 1978) and they can evoke hypothesis-confirming behavior from the target (Snyder, Tanke, & Berscheid, 1977; Word, Zanna, & Cooper, 1974). Someone who is invested in believing that a partner is low risk can elicit responses that would support this hypothesis without ever needing to dilute unwanted evidence of risk. Thus, the bias explored in this study may occur only in those rare encounters in which the individual's interaction strategies fail to elicit justifying information from the target.

Implication for Health Models

Traditional health models typically portray vulnerability perceptions as providing a relatively stable foundation from which to base behavioral decisions. In contrast, the current study illustrates the potential flexibility of belief. This suggests the possibility that other health beliefs (e.g., perceived severity, costs, benefits, etc.) could be similarly affected by behavioral motivations. For instance, were they given the option, motivated participants might have lowered severity ratings for STDs or increased perceptions of the costs of using condoms. In fact, there are numerous ways in which someone might go about justifying a desired sexual encounter, and people may be opportunistic in this regard, altering the belief or beliefs that are most amenable to change.

If so, health models should place greater emphasis on the potential reciprocal influence of behavioral motivations and health beliefs. A potential research question would be determining the conditions under which health beliefs exert influence on behavioral motivations versus the other way around. In this regard, Festinger's (1957) original theory of cognitive dissonance may help guide future research. What made Festinger's theory unique among consistency theories was the realization that some cognitions are more malleable than others. In a typical induced-compliance study (e.g., Festinger & Carlsmith, 1959), cognitions about attitudes are more malleable than cognitions about past behavior: It is hard to believe that one did not engage in a behavior that was just performed but it is relatively easy to believe that this action was consistent with prior attitudes. The result of this insight was a wealth of research demonstrating the many ways in which people justify past actions through cognitive distortions (see Cooper & Fazio, 1984). What the current study points out is that one does not have to engage in a health risk (i.e., to actually smoke or to have sexual intercourse) for the behavior to be less malleable than the beliefs surrounding it. Future behaviors can have this quality if they are highly desired. This interpretation argues for interventions that either diminish the motivation to engage in unhealthy behaviors or increase the stability of risk perceptions. Both approaches should reduce motivated construction of health beliefs.

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