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Potential moral stigma and reactions to sexually transmitted diseases: Evidence for a disjunction fallacy

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Abstract

Five experiments demonstrate how potential moral stigma leads people to underplay their susceptibility to STDs and dampens their interest in getting tested. After adding unprotected sex to a list of otherwise innocuous possible vectors for a disease, we found that infected people were perceived to be less moral (Experiment 1A), and individuals believed that if they had the disease, others would see them as less moral too (Experiment 1B). Adding this stigmatized vector also reduced reported testing intentions (Experiment 2) and perceived risk of exposure (Experiment 3) – a *disjunction fallacy* because adding a potential cause reduced estimated likelihood, in violation of basic probability rules. Finally, we replicated the effect in a computer virus analog (Experiment 4), and showed that it did not result from simply knowing that one has not engaged in the stigmatized behavior. Results suggest that avoidance of potential stigma can have dramatic health consequences.

Keywords: stigma, morality, testing, STD

Imagine that a man visits his doctor and is alerted about a prevalent new disease that can be contracted by sharing food with an infected individual or by eating improperly sanitized food. The doctor says that the disease is benign if treated rapidly but can have costly consequences if untreated. The patient might be quite eager to be tested in this case. Now imagine an almost identical scenario, only this time, the doctor tells him that in addition to the two innocuous causes listed above, this disease may also be contracted through unprotected sex. Despite the fact that an additional potential means of transmission can only increase the man's likelihood of exposure, we predict that with this minimal variation, the patient would be less likely to declare himself at risk, and be less willing to get tested. We propose to document and investigate this puzzling discrepancy in reactions, which could have dramatic public health consequences.

Why would one be more comfortable getting tested in the first case than in the second? This difference cannot be explained by showing that people are resistant to negative health information (e.g., Ditto & Lopez, 1992; Kunda, 1987), because in the case above, the health consequences are the same across scenarios. Instead we predict that the addition of a stigmatized behavior (unprotected sex) as a potential cause is enough to make testing less appealing. We propose that in this case, the reluctance to get tested stems from the fear of raising the suspicion that one engaged in the stigmatized behavior – here, unprotected sex with an unsafe partner, suggesting promiscuity. Actually receiving a positive result would further strengthen this suspicion, even if one did not engage in the stigmatized behavior. Normatively, adding a potential cause should increase people's chances of contracting the disease. However, we predict that people will be *less* comfortable admitting vulnerability to the disease when the added cause is

stigmatized – a pattern we dub a *disjunction fallacy* (in reference to Tversky & Kahneman, 1983). Therefore, the decision of whether or not to get tested may be less the result of legitimate health concerns than of a desire to avoid stigma. Consequently, compared to a situation involving a disease that is *not* sexually transmitted but is otherwise identical, contending with a potentially stigmatizing disease should result in a greater amount of denial and a lower likelihood of testing.

Stigmatized diseases in the medical literature

A substantial medical literature exists on the association between stigma and disease (e.g., Folkman, Chesney, Cooke, Boccellari, & Collette, 1994; Weinhardt, Carey, & Carey, 2000; Fortenberry, McFarlane, Bleakley & Bull, 2002; Dunne & Quayle, 2002). Investigators have documented the negative social consequences associated with various ailments, from mental disorders (Ertugrul & Ulug, 2004), to cancer, tuberculosis (Sontag, 2001), and addictive behaviors (Finkelstein, Weiss, McCoy, Kluger, 2004). In the case of sexually transmitted diseases, the discovery of a positive test result may lead to the loss of family ties, friendship, employment and housing, dismissal from school, and denial of health/life insurance and health care (Lee & Craft, 2002; Folkman et al., 1984; Herek, 1990; Tross & Hirsch, 1988). Although medical investigators typically explain these undesirable effects by attributing them to stigma (e.g., Sontag, 2001; Siegel, Lune & Meyer, 1998), there is little direct experimental evidence demonstrating that stigma is indeed why people are less likely to seek testing and treatment for these diseases. Numerous studies have shown that individuals minimize their risk of contracting STDs and their need for testing (Anderson, Hardy, Cahill, & Aral, 1992; Berrios et al., 1993; Phillips & Coates, 1995; Weinstock, Dale, Linley, & Gwinn, 2002; Weinhardt, et al.,

2000; Smith, Buzi, & Weinman, 2005). Even when individuals do get tested, they are often reluctant to obtain the results of their test. One study tested 285 adolescents for an STD, and invited them to receive their results; 58% chose not to see their results (Lazebnik, Hermida, Szubski, Dieterich-Colon, & Grey, 2001). Other studies have documented that many people who are infected with stigmatized diseases delay getting tested and seeking care (Chesney & Smith, 1999; Siegel, Raveis, & Krauss, 1992; Stall, Ekstrand, Hoff, Paul, Catania & Coates, 1993; Perry, Ryan, Ashman, & Jacobsberg, 1992; Silvestre, Zhou, Kingsley & Rinaldo, 1993). Again, however, there is no direct experimental evidence documenting that stigma plays a causal role in these decisions.

Investigators do speculate that social stigma and fear of discrimination are some of the potential barriers to medical testing (e.g., Myers et al., 1993; Fortenberry et al., 2002), but respondents actually seem to underplay the role of stigma in their intention to get tested. Herek, Capitanio and Widaman (2003) found that 56% of people in a randomized telephone survey said that they believed that stigma had no effect on their decision of whether or not to get tested. One of the goals of the present paper is to test whether, in contrast to these lay understandings, and in line with speculations in the medical literature, stigma does play a role in risk perceptions and testing decisions.

Potential moral stigma

The present research is intended to investigate the effects of *potential moral stigma* on people's reaction to a disease, self-reported estimates of risk, and testing intentions. We define potential stigma as an undesirable identity that someone fears others will attribute to him or her. The bulk of stigma research has focused on how people deal with identities that are already stigmatized; instead, we concentrate on how

non-stigmatized individuals react when negotiating between their current identity and one that would make them stigmatized (such as in the context of testing for sexually transmitted diseases) and to document the strategies of denial used by individuals to keep this stigma at bay. In the four decades since Erving Goffman's (1963) seminal work on stigma, numerous researchers have catalogued the costs of having a stigmatized identity. In Goffman's account, the stigmatized individual is considered "morally defective and to be avoided" (1963, p.5). Stigmatized individuals must not only contend with the awareness that their social identity is subtly devalued in certain contexts (Crocker & Luhtanen, 1990; Crocker, Luhtanen, Blaine, & Brodnax, 1994; Crocker & Major, 1989), but they must also face the looming possibility of overt prejudice and discrimination directed towards them (Crocker, et. al, 1998; Crocker, Voelkl, Testa, & Major, 1991; Jones et al., 1984). Extending this previous work, we contend that merely confronting potential moral stigma will cause people to actively seek to avoid such an identity, even at the expense of their actual health.

Social psychological research also provides evidence that people process negative health information in a biased and defensive fashion (Ditto & Lopez, 1992, 1998, 2003; Kunda, 1987, 1990), albeit without reference to stigmatization. Negative information is more thoroughly scrutinized and is therefore less likely to be accepted as valid. Both Kunda and Ditto suggest that when faced with the possibility of a negative health outcome, people can evade unwelcome conclusions with the help of biased cognitive processing. However, neither line of research explores the implications of stigma. Combining these processes with the findings reviewed in the medical literature on stigma, we propose that defensiveness will be greater for stigmatized diseases than for non-

stigmatized ones because the former will be perceived as more negative and therefore exacerbate the bias.

The Present Research

To test the negative impact of potential moral stigma, the present studies assess the consequences of adding a stigmatized potential cause for a disease to a list of otherwise innocuous ones. We verified that unprotected sex was stigmatized in our subject population by asking a pilot sample of 23 people to rate "how bad do people think it is to become infected with a disease that is caused by engaging in the following behavior?" – yielding a mean of 6.0 (SD = 1.1) for unprotected sex, on a scale ranging from 1 (*not at all stigmatized*) to 7 (*very stigmatized*). Experiments 1A and 1B establish both that having a stigmatized disease leads to generalized moral discrediting, and that people are aware of this threat. In Experiment 2, we show that people are less likely to get tested for a disease that can be contracted through stigmatized means than for an identical non-stigmatized disease. In Experiment 3, we aim to demonstrate a "disjunction fallacy" by asking participants to estimate their vulnerability to a disease that is either described as stigmatized or non-stigmatized, and to test whether they minimize their reported likelihood of exposure when stigma is added. Finally, Experiment 4 explores whether this denial generalizes outside of the health setting by conducting an analogous experiment in the domain of computer viruses, ruling out that the effect results from people knowing they did not engage in unprotected sex.

Experiments 1A and 1B

The first experiment was designed to establish a link between stigmatized diseases and evaluations of morality, and was divided in two parts: In the *perceptions*

part (Experiment 1A), we asked participants to make moral judgments about a hypothetical other who had contracted a sexually transmitted disease as compared to a non-sexually transmitted disease. In the *meta-perceptions* part (Experiment 1B), we asked participants how they thought others would perceive them if they were known to have contracted such a disease. In both cases, we avoided asking respondents *directly* about morality to avoid demand characteristics but we asked them instead about the likelihood of engaging in various behaviors, some of which have been identified in past research as related to morality (Reeder & Spores, 1983). For ease of presentation we describe Experiments 1A and 1B together, indicating subtle differences when necessary.

In this first pass at the phenomenon, we manipulated the frequency that the stigmatized behavior would lead to the disease, to test for the differential impact of base-rate information between perceptions and meta-perceptions. Because we assumed that people are more motivated when thinking about the self (Kunda, 1987), and thus will process information more thoroughly when it threatens the self (Ditto et al., 1992), we predicted that frequency information would be weighed more heavily in meta-perceptions (1B) than in perceptions of others (1A). This prediction is consistent with recent advances in dual-process models (e.g., Pryor et al., 2004; Kahneman & Frederick, 2002; Smith & DeCoster, 2000) which emphasize that people rely on associative (or heuristic) reasoning unless motivated to do otherwise.

In summary, our first and central prediction was that the addition of a stigmatized vector (unprotected sex) would lead to suspicion of immorality, even on behaviors not directly related to sexual promiscuity. This effect should occur both when judging the self

as well as when judging others. We further predicted that frequency would be taken into account when the target was the self, but not in judging others.

Methods

Participants. One hundred and thirteen (Experiment 1A) and 112 (Experiment 1B) Stanford students from the introductory psychology class received questionnaires (on separate and unrelated occasions) as part of their requirement for course credit, and were randomly assigned to one of three groups: 1) the stigma-neutral (control) group, 2) the stigma low-frequency group, or 3) the stigma high-frequency group.

Procedure. Using vignettes, Experiments 1A and 1B asked participants to consider what judgments would follow if either a hypothetical male or female (Experiment 1A) or the participant him- or herself (Experiment 1B) contracted a fictitious disease. The two experiments were similar in structure (see Appendix): the control group was told that the disease could be contracted through two possible non-stigmatized means (e.g., through ingesting unsanitary food). In the stigma groups we added to these two neutral means a third, stigmatized mode of contraction, namely, unprotected sexual contact. Furthermore, participants in the stigma group received one of two versions: In the stigma low-frequency version, they were informed that the disease is only transmitted through unprotected sex in rare instances (approximately 5% of cases), whereas participants in the stigma high-frequency version were told that the disease is most frequently transmitted through unprotected sex (approximately 90% of cases in Experiment 1A; approximately 80% of cases in Experiment 1B). There were thus three conditions in the designs of both 1A and 1B: a no stigma control group, a stigma low-frequency group, and a stigma high-frequency group.

Participants were then asked to make predictions about how they would perceive the other (Experiment 1A) or how they would be perceived by others (Experiment 1B) in terms of likelihood to fit with a number of descriptor items, among which we included 5 nonsexual immoral acts: abusing illegal drugs, shoplifting, lying, being honest (reverse-scored), and cheating on an exam. Questions were phrased as "How likely is John to lie?" (1A) or "How likely is someone else to think that you would lie?" (1B) using a 7-point response scale ranging from *Not at all likely* to *Extremely likely*. Mixed among these 5 nonsexual immoral acts were 3 sexual immoral behaviors (promiscuity, infidelity, and premarital sexual intercourse), and 5 filler items. Participants also indicated how likely they would be to be friends with John/Jane (1A) or how likely others would be to be friends with them if they had the disease (1B). Finally, Participants in Experiment 1B were asked, "How likely would you be to tell others about having been infected?" (7-point scale ranging from *Not at all likely* to *Extremely likely*).

Results

We started by creating a composite score for nonsexual immorality by summing the 5 nonsexual immoral items: abusing illegal drugs, shoplifting, lying, being honest [reverse-scored], and cheating on an exam (Cronbach's α = .79 in 1A; α =.86 in 1B) and a composite for sexual immorality by summing the 3 sexual immoral items: being promiscuous, having premarital sex, and committing an infidelity (α = .54 in 1A; α =.78 in 1B). Preliminary analyses showed that the gender of the target in 1A had no significant impact on these dependent variables, nor did it interact with the manipulation. We therefore collapse all further analyses across this variable.

Sexual immorality. Not surprisingly, we found significant differences in ascriptions of sexual immorality between when the disease was said to be sexually transmissible and when it was not sexually transmissible. In 1A, F (2,110) = 12.5, $p < .01$; In 1B, F (2,108) =17.4, $p < .01$. Although consistent with the effect under study, these inferences do not stray very far from a manipulation check as our manipulation of stigma was that the disease could be contracted through unprotected social contact.

Nonsexual immorality. More interestingly, initial omnibus tests showed a marginal difference on the nonsexual immorality composite (see Table 1) between the three groups in Experiment 1A, $F(2,110) = 2.4$, $p < .10$, and a significant difference between the three groups in Experiment 1B, $F(2,109) = 5.0$, $p < .01$. For a more focused test of our hypotheses, we conducted two orthogonal contrasts in each experiment, to show each time that the target condition differed from the other two conditions, while the remaining two did not differ from each other. In Study 1A, when judging others, we predicted that frequency would have little impact, so the first contrast pitted the two stigma groups against the no-stigma group, and it was significant, $t(110) = -2.2$, $p < .03$, whereas a second contrast comparing the two stigma groups was not significant, $t(110) = -0.14$, *ns*, showing no effect of frequency. In 1B, however, when estimating other people's reaction to oneself, we predicted that the mean likelihood of immoral behaviors would be highest in the stigma-high-frequency group. Indeed, a contrast comparing this condition to the other two was significant here, $t(109) = -2.5$, $p < .02$, whereas the stigma-low-frequency group was only marginally different from the control group, $t(109) = 1.8$, $p = .08$ – and if anything was *lower* than the control group, suggesting that frequency was taken into account by participants when the target was the self.

Social consequences. Participants in Experiments 1A and B were not affected by our manipulations in terms of the friendship variable, $t(111) = 1.6$, *ns*, in Study 1A; $t(109) = .8$, *ns,* in Study 1B. However, people in 1B were reluctant to admit having the high-frequency stigma disease. Participants in the stigma condition reported that they would be less likely to tell others if they were infected with the disease, omnibus $F(2,108) = 3.1$, $p < .05$. A contrast also indicated that participants in the stigma high-frequency condition reported that they would be less likely to tell other people that they had contracted the disease ($M = 3.5$, $SD = 1.4$) than participants in the other two conditions (stigma low-frequency $M = 4.3$, $SD = 1.8$; control $M = 4.3$, $SD = 1.6$); $t\ (108) = 2.51$, $p < .02$.

Discussion

This first two-part study confirms prior findings suggesting that disease is a good arena to study potential moral stigma (e.g., Pryor & Reeder, 1993; Pryor et al., 2004). When a disease was said to be primarily transmitted through unprotected sex, participants revealed that they would expect an infected other to act less morally (1A), and that they would expect similar judgments from others if they contracted the disease themselves (1B). More striking, and as predicted, we found that when judging others, frequency information was disregarded, such that the mere possibility (5%) of sexual transmission was enough to condemn an infected other, whereas participants imagining that they themselves were infected expected more level-headedness from potential observers, and only expected opprobrium when sexual transmission was the modal vector. As described above, we interpret this result in terms of greater motivation to fully use the information available when the self is threatened (Kunda, 1987).

After showing that moral stigma is associated with a sexually transmissible disease and demonstrating that people are aware that others will judge them in terms of this stigma, we now turn to the question of whether people will alter their behavior to avoid the threat of stigma. In the next experiment we investigate whether people are less likely to get tested for a disease when it is presented as being sexually transmissible.

Experiment 2

In Experiment 1, we showed that people who contract a disease that has a stigmatized mode of transmission are more likely to be perceived as immoral, and that individuals are aware that others would also judge them in this way if they were infected. As a result, we predict that a person would be less willing to acknowledge the possibility of having a stigmatized disease than a non-stigmatized disease. The desire to avoid potential moral stigma might lead a person to refuse to get tested for a disease, even if it can also be contracted through non-stigmatized means. To test this, in Experiment 2 we investigated whether potential stigma would actually influence their intention to get tested, and to show that the desire to avoid potential stigma could lead to behavioral intentions with real-world implications – preventing people from getting tested for a disease that may be harmful to themselves and possibly to the rest of society.

Methods

Participants and procedure. Thirty-two Stanford University undergraduates came to the laboratory as a requirement for an introductory psychology course. One participant was eliminated for expressing suspicion at debriefing. Participants were told that the study looked at the relationship between mental and physical health states, and were instructed to complete an online survey about their health behaviors on a computer

ostensibly connected to a local health website. Participants completed a Rosenberg (1965) self-esteem questionnaire, answered questions about their health behaviors (e.g., how much they sleep, where they have traveled), and reported how often they experienced various health symptoms (e.g., fatigue, headaches, and blurred vision). No questions dealt with sexual behavior in the survey. The instructions on the computer screen stated that participants should input their information and wait for it to be processed.

Once responses had been (fictitiously) evaluated, the program informed all participants that they were at moderately high risk for a disease called *Liscus Acidophilus* (Tuner's Disease). The information about the disease was randomly assigned to them based on their group: The control group was informed that "the disease is transmitted through bacterial contact," while the stigma group was provided with additional information that the disease is "frequently transmitted sexually." Participants in both groups were then given the option to view more information about the disease on the website, which was modeled on information from the Center for Disease Control website on the influenza virus, informing the subjects of the disease severity, prevalence, and testing information. When participants had finished, they were informed that testing for the disease was available at the health center and they were asked to check a box on the website stating their likelihood of testing (7-point scale; 1= *extremely unlikely*, 7= *extremely likely*). Finally, participants were thanked and carefully debriefed (Ross, Lepper & Hubbard, 1975). As mentioned above, only one participant was suspicious of the manipulation.

Results

Testing intention. As predicted, participants reported reduced intentions to test when they were told that they were at risk for a stigmatized disease ($M = 1.25$, $SD = .44$) than when they were told they were at risk for a non-stigmatized disease ($M = 2.13$, $SD = .89$), $t(30) = -3.53$, $p < .01$. Since this study was designed to assess testing intentions, we did not record or analyze results from the Rosenberg self esteem questionnaire or from any of the other health assessment questionnaires.

Discussion

Experiment 2 demonstrates that people are less likely to get tested for a disease when it is presented as potentially stigmatizing. Individuals in both the stigma and the control condition received ostensibly personalized information conveying that they were at risk for a disease, and yet, those in the stigma group said they were less likely to get tested for the disease than those in the control group. Low testing intentions in both groups may be explained by people's reluctance to expose themselves to potentially negative information, independent of stigma (Ditto & Lopez, 1992). In light of the results of Experiment 1A and 1B, we believe that people lowered their testing probability when unprotected sex was added to keep stigma at bay and to minimize the chances that they would come under suspicion for a stigmatized behavior. Experiment 2 provides compelling initial evidence that the likelihood of getting tested for a disease can be lowered when that disease is sexually transmissible. One ambiguity in Experiment 2, however, is whether participants want to avoid testing because they are reluctant to find out that they have a stigmatized disease, or whether they actually come to believe that they are less at risk when the disease is stigmatized, making testing less necessary in their

eyes. The next study will address this ambiguity by asking respondents how they perceive their risk of having been exposed to the disease.

Experiment 3

Experiment 3 clarifies the results of Experiment 2 by going beyond behavioral intentions and asking respondents their perceived likelihood of having been exposed to the disease. This enables us to get a closer look at the psychological processes involved in the reluctance to get tested for a sexually transmitted disease. If people were simply reluctant to test, then estimates of risk for the diseases should not vary. If, however, as we believe, reluctance to get tested serves to deny the mere possibility that one is associated with the stigmatized behavior, then we should observe not only that people are reluctant to get tested, but also that they minimize even the possibility that they were exposed to the disease when it is stigmatized. Experiment 3 tests this possibility. Furthermore, Experiment 3 was conducted outside of the psychological laboratory under the guise of a health campaign, therefore reducing concerns about suspicion and demand characteristics.

Method

Participants. Undergraduates from Stanford University dormitories (n =36; 23 male, 13 female; ages 19-22) were approached individually and given brochures that were ostensibly part of an information campaign from a local health center describing a (fictitious) disease that was affecting the community. One participant was excluded from the sample after reporting suspicion and two were eliminated for providing incomplete data, leaving 33 valid participants.

Procedure. Participants were randomly assigned to a stigma or no-stigma group and asked to read a brochure and estimate their risk of exposure to a fictitious disease.

Reading about a disease called *Streptococcus Encephalinus* that was currently infecting students on campus, both groups were informed that approximately 75 to 85% of Stanford students had been exposed to the bacteria and were at risk. In the control (non-stigma) group, participants read that the disease could be contracted through any one of three non-stigmatized ways (1) exposure to crowded settings, (2) prolonged exposure to infected individuals, or (3) sharing of eating and drinking materials. The stigma group was told that the disease could be contracted through these same 3 vectors of transmission, along with a fourth possible vector, (4) unprotected sexual intercourse or exchange of bodily fluids (S.T.D.). Respondents recorded their perceived risk of exposure to the disease and likelihood of getting tested (expressed as percentages), their perceived risk of exposure compared to the average Stanford student, and how upset they would be with a positive diagnosis (both 7-point scales ranging from *Not at all* to *Extremely*). Finally, participants were thanked and put through a careful process of debriefing (Ross et al., 1975). As mentioned above, only 1 participant was suspicious of the manipulation.

Results

As in Experiment 2, we found that participants in the stigma group indicated that they would be less likely to get tested for the disease (M = 16.3%) than those in the control group (M = 24.7%); $t(31) = -1.88$, $p < .04$, one-tail. More central to this study, we also found that participants in the stigma group declared themselves on average to be less at risk for the disease (M = 23%, SD= 18%) than participants in the control group (M = 48%, SD = 22%), and this difference was highly significant, t (31) = -3.64, $p < .01$. We found a positive correlation overall between perceived likelihood of exposure to the

disease and intention to get tested, $r(33) = .35$, $p < .05$, and the effect of stigma on likelihood of testing went from marginal in a two-tail test [$F(1,31) = 3.5$, $p = .07$] to nonsignificant [$F(1,30) = .8$, $p = .38$] once exposure was included as a covariate. We also found a positive relationship between one's perceived likelihood of exposure and perceived exposure compared to the average Stanford student $r(33) = .5$, $p < .01$. There were no differences in terms of how upset participants expected feeling if they contracted the disease $t(31) = -.96$, *ns*, or how likely they would be to contract the disease relative to the average Stanford student $t(31) = .9$, *ns*.

Discussion

In the control condition, where the three possible modes of transmission were not stigmatized, participants' average reported likelihood of exposure was nearly 1 in 2. In the stigma condition, where the same three modes of transmission were listed and a fourth, stigmatized mode was added (unprotected sex), their estimates were cut to less than 1 in 4. One important advance from the testing intention results in Experiment 2 is that the present pattern clearly violates normative prescriptions: Adding an additional *potential* cause (a disjunction in logic terms) should, if anything, *increase* the likelihood that one has contracted the disease. Instead, adding a possible cause reduced that estimate by half.

Just as Tversky & Kahneman (1983) identified cases of a "conjunction fallacy" where the representativeness and availability heuristics make a conjunction appear more probable than one of its constituents (e.g., Linda the feminist bank teller), we propose that potential moral stigma can lead to the observation of a "disjunction fallacy" where people ascribe lower probability to a disjunction than its constituting predicates. In formal terms,

whereas the conjunction fallacy was observing $P(p \cap q) > P(p)$, the disjunction fallacy is the case where participants seem to believe that $P(p \cup q) < P(p)$, both of which violate the tenets of formal logic.

This result suggests that people are minimizing their perceived risk of exposure to a disease in response to the stigma associated with it. This has profound implications in the context of health care, where it has been argued that a first step in getting people to test for diseases is to make them feel vulnerable to them (de Zoysa et al., 1995; Catania, Kegeles, & Coates, 1990; Prochaska, Diclemente & Norcross, 1992). As in Experiment 2, we found in this study that participants were less willing to get tested when the disease was sexually transmissible.

Experiment 4

Experiment 2 showed that participants are reluctant to get tested for a stigmatized disease. Experiment 3 suggested that one cause of this reluctance is that people minimize their likelihood of exposure to the disease. Experiment 4 was designed to address a possible alternative interpretation for these results: It is possible that rather than raising the specter of stigma, the addition of unprotected sex as a potential cause gave respondents who typically did not engage in unprotected sex a sense of safety, reassuring them that they are not the sort of person who gets this disease. It may not be the immorality of the added behavior but the fact that the added cause was alien to some respondents that led them to minimize their exposure to the disease. For example, if people weighed the stigmatized source of the disease as being particularly causal, they may feel that they are less susceptible to the disease because they are not that sexually active (or practice safe sex). Or, if participants implicitly divide the likelihood of

contracting a disease into the various potential causes, then eliminating one cause could be enough to reduce one's perception of risk. If participants are given 2 potential causes for a disease, they might implicitly understand that each cause explains 50% of cases, and if both causes could credibly apply to them, start with an anchor of 100%. When we add a third cause, they might now implicitly ascribe 33.3% of the causality to each factor, and if the third factor is one that they feel doesn't apply to them, start with an anchor of 66.7%. It seems important to rule out this possibility by including a condition where the added factor is non-stigmatized, but is also one that we know does not apply to our respondents.

The situation presented in Experiment 4 is only metaphorically related to the health domain but gave us a chance to test the generalizability of potential moral stigma by using a new morally reproachable behavior: We told participants that they might have been exposed to a computer virus by browsing the web, and as a stigmatized cause, we used browsing pornographic websites. Despite these differences, the structure of the experiments was quite similar to the studies presented so far, and we believe that the psychology involved is also more or less identical. Making this small change gave us more control to rule out the alternative interpretation described above, as we were able to create a supplementary cause that we knew for a fact respondents could not qualify for – by making up the name of a non-existent (but innocuous) website. If the alternative interpretation described above accounts for our results so far, our respondents should reduce their estimates with this impossible non-stigmatized behavior as much as with the stigmatized behavior. If this is not what is driving our effect, then we predict that the

effect should persist in the stigmatized condition but disappear in the impossible non-stigmatized condition.

Methods

Participants. One hundred and four undergraduate students completed questionnaires as part of a requirement for their introductory psychology course.

Procedure. Participants were randomly assigned to one of three conditions, control, stigma and impossible event. All groups read about a (fictitious) computer virus that was allegedly contracted over the Internet and infecting computers. The control group was informed that one's computer could be compromised by visiting a) news-related sites such as CNN.com and MSNBC.com and b) music-related sites such as MTV.com, VH1.com, and iTunes.com. The stigma group was told that the virus could result from the same neutral sites, as well as c) various pornography sites. The impossible event group was told that the virus could be contracted on the same two neutral sites as the control group, as well as c) by visiting a non-stigmatized online tutorial for computer programming ("www.programmingCplus.com"). This programming site was meant to be an impossible event to ensure that the participants had never visited the website (since it did not actually exist at the time of the experiment), as well as arcane in topic to make sure participants did not assume they might have browsed it unknowingly in their daily web surfing. Participants were then asked their frequency of visiting the listed sites as a whole (on a 7-point scale ranging from *never* to *more than 15 times per month*), likelihood of exposure to the computer virus, and steps they would take to remove or prevent it (9 point-scales ranging from *not at all likely* to *extremely likely*).

Results

An initial omnibus ANOVA on likelihood of being exposed suggested that the overall difference between groups was marginally significant, F (2,101) = 2.4, $p < .10$. To test our hypothesis that participants in the stigma group would be less likely to admit being exposed to the virus than participants in the other two groups, we performed a planned contrast that pitted the control and impossible event group against the stigma group. The stigma group (M=3.33, SD=2.25) was less likely to report having been exposed to the computer virus than the control (M=4.41, SD=2.85) and impossible event groups (M=4.68, SD=2.93), contrast $t(101) = 2.2$, $p < .04$. Participants in the stigma group (M=2.72, SD=1.58) also reported visiting the websites marginally less frequently than participants in the control (M=3.38, SD=2.30) and impossible event (M=3.68, SD=2.33) groups, contrast $t(101)=1.87$, $p < .07$. A contrast between the stigma group and the impossible event group showed that people in the stigma group (M=3.33, SD=2.25) were less likely to admit being exposed to the virus than the impossible event group (M=4.68, SD=2.93), $t(101) = 2.04$, $p < .05$. The stigma group also declared being marginally less likely to visit the websites linked to the virus (M = 2.72, SD = 1.58) than the impossible event group (M = 3.68, SD = 2.33), $t(101) = -1.87$, $p < .07$. We performed a planned contrast (orthogonal to the first) between the control and impossible event group and found no differences on any of the variables. As expected, one's frequency of visiting the websites correlated with reported exposure to the virus, $r(104) = .75$, $p < .01$.

Discussion

Experiment 4 replicated our previous findings that people minimize their risk of having a problem (a disease or, here, a computer virus) when stigmatized behavior is associated with it. Unique to this study, we showed that merely adding an unlikely cause

is not enough to reduce estimates of exposure. When the third cause was browsing an imaginary computing website (which we knew they could not have visited), participants did not reduce their estimate of exposure. Yet when the third cause was browsing pornographic websites, an activity that participants would be more uncomfortable admitting to or being suspected of, they drastically reduced their reported estimate of exposure. Another interesting feature of Experiment 4 is that it replicated the effect of potential stigma outside of health but in a domain that has many metaphorical bridges with it (where viruses and enticing emails by strangers require that one uses appropriate protection…and can come at the cost of contracting debilitating and self-replicating ailments that one then risks passing on) and where a similar psychology seems to be at work.

General Discussion

Five experiments demonstrate the role of potential moral stigma in the reluctance to admit exposure to a sexually transmitted disease and the expressed likelihood of getting tested for it. Building on prior stigma research, particularly in the medical domain (e.g. Ertugrul et al., 2004; Finkelstein, et al., 2004; Lee et al., 2002), Experiment 1A showed that people with a sexually transmitted disease are considered more immoral than people with an identical but non sexually transmitted disease. Experiment 1B revealed that people were aware that if they contracted a stigmatized disease others would judge them similarly, though people mistakenly assumed that others would take into account base rates when making this inference. This two-part study established potential moral stigma – namely, that people are aware that others will judge them as morally deficient if they are suspected of having a sexually transmitted disease. We then showed that when a

disease is associated with unprotected sex, people decrease their intention to test for it (Experiment 2) and underplay their risk of having contracted it (Experiment 3). Finally, transferring the phenomenon to the domain of computer viruses (Experiment 4), we ruled out the alternative interpretation that a stigmatized cause reduces perceived risk when some respondents know they do not engage in the behavior: We showed that perceived risk for a virus was downplayed when it was associated with browsing pornography, but not when it was associated with browsing an even more unlikely (bogus) website.

The Phenomenon of Potential Moral Stigma

Potential moral stigma extends our understanding of stigma by demonstrating that even the threat of stigma can have important psychological and behavioral consequences. While prior research has focused primarily on the experience of contending with a socially devalued identity, the present research suggests that the effects of stigma can be felt even earlier. In cases of actual and potential stigma, the experience is analogous: both involve being forced to contend with negative societal perceptions (Crocker, et al., 1998; Goffman, 1963; Steele, Spencer, & Aronson, 2002). However, in cases of potential moral stigma, the experience of being socially devalued is a threat and not yet a reality. The potentially stigmatized individual recognizes that if she were to have the stigma, devaluation would follow and therefore, we contend, is motivated to avoid the stigmatized designation. In our experiments, people denied vulnerability to disease (and a computer virus) and avoided testing simply because admitting risk would bring them one step closer to the stigmatized behavior. In identical scenarios, with the only difference being the absence of a stigmatized mode of transmission, people showed significantly less avoidance. Notably, even when we ruled out the possibility that the stigmatized

mode of transmission was just less common – as we did in Experiment 4 – people still denied vulnerability to the stigmatized version more than to the non-stigmatized version.

We demonstrate that merely linking one immoral behavior with a disease can lead a neutral disease to become stigmatized. By weakening this association, we may be able to reduce the potential moral stigma associated with disease. Experiment 1A and 1B provide an interesting piece of the puzzle in attempting to de-stigmatize a disease. They suggest that if the disease is only attributed to the stigmatized behavior in rare instances (e.g., a cold or influenza), people might be more comfortable getting tested because they will think that others will give them the benefit of the doubt (Experiment 1B), even if this confidence is actually misplaced (Experiment 1A). However, de-stigmatizing a disease already perceived as stigmatized is difficult when a behavior that is recognized as being immoral is the most common form of getting the disease. While people need to be informed about the consequences of engaging in this behavior, bringing attention to this link between stigmatized behavior and disease may increase people's reluctance to test because of the potential stigma now associated with the disease.

Self-presentation or self-perception?

The results of the previous studies do not resolve whether people truly believe that they are at lesser risk to stigma-related diseases, or whether their appraisals of vulnerability are strictly self-presentational. There is good reason to believe that both defensive and self-presentational mechanisms are at play and that while people are concerned with others' perceptions, they are also inclined to disbelieve their own vulnerability to stigmatized diseases.

According to Ditto and his colleagues (Ditto, Munro, Apanovitch, Scepansky, Lockhart, 2003; Ditto, Scepansky, Munro, Apanovitch, Lockhart, 1998; Ditto et. al., 1992) people are less likely to believe negative health information because it is inconsistent with their preference for being healthy. In our studies, we kept the medical severity of a disease constant but increased the psychological severity by adding stigma. Since immorality is compounded with negative health information, this threat of receiving negative health information should be increased, as the information now implies that a person is not only unhealthy but also immoral. Moreover, given the relative privacy of the self-reported information (in Experiment 3, for instance, participants filled out a confidential form) it seems plausible that people internally altered their beliefs to minimize perceived vulnerability to the stigmatized disease. Alternatively, self-presentation or impression management theories (Goffman, 1959; Schlenker, 1980; Leary & Kowalski, 1990) would predict that people deny susceptibility to stigmatizing conditions to avoid negative societal judgments. That is, individuals may internally believe they are vulnerable to stigmatizing conditions, but they may publicly deny vulnerability to prevent public condemnation. Both internalized defensiveness and self-presentation may contribute to the disjunction fallacy and results presented here, and more research is necessary to disentangle and isolate the factors leading to people's avoidant behavior.

The role of morality

Throughout this paper we have claimed that the potential stigma threatening our reluctant testers was moral in nature, and this warrants a brief discussion at this point. Stigma is always in some way related to morality – recall Goffman's (1963) description

that stigmatized individual are seen to be "morally defective" – and to ideas of purity and wholeness. We chose unprotected sex knowing it was frowned upon in a generation that became sexually active more than 20 years after the onset of the AIDS epidemic, and indeed, as we described earlier, a pilot study revealed that our subject population thought it was fairly "bad" (M = 6.0 on a 7-point scale) to contract a disease through unprotected sex. Furthermore, Experiments 1A and 1B indicated that a sexually transmitted disease was linked not only to immoral sexual practices like infidelity, but also to more traditional ethical failures like shoplifting, lying or cheating on an exam, confirming that unprotected sex was seen as relevant to the moral domain. Experiment 4 relies on browsing pornography, an activity that is also seen as immoral in contemporary American public discourse (even if the immense revenues of the pornographic industry question the prevalence of this attitude among private consumers). We did not collect any direct evidence that this condemnation was shared by our population, or at least if they thought it was shared by others, but we did observe that people denied browsing the sites more when pornography sites were added, and we find it difficult to explain the stigmatization of pornography other than in moral terms. Ultimately, we realize that we cannot establish for certain the moral nature of our potential stigma, but we believe that using the term has heuristic strength and captures the experience of the phenomenon for many of the participants.

Conclusion

The present studies address an aspect of stigma that has received little empirical attention but may have important consequences, particularly in the domain of health. People's judgments of their vulnerability to disease, and their willingness to undergo

appropriate testing, appears to be distorted when the disease is perceived as stigmatized. In the current research, participants were less inclined to admit vulnerability or to seek testing for a disease that was described as stigmatized than for a disease that was otherwise identical but had no stigma associated with it. These results also suggest that people are aware that their identity may be devalued by others if they are afflicted with a stigmatized disease. In a broader sense, these studies identify that it is not necessary for one to actually have a stigmatized identity to suffer negative consequences, but rather that even the potential of being stigmatized is enough to lead to maladaptive outcomes. This phenomenon has particularly important consequences in the health domain where potential moral stigma may lead people to engage in sub-optimal behaviors, affecting both individuals and their community.

Appendix

Differences between the method of Experiments 1A and 1B.

	Experiment 1A	Experiment 1B
Name of disease	*Histoplasmosis*	*Cephalinus capsulatum*
Target of judgment	Other	Self
Low vs. high frequency	5% vs. 90%	5% vs. 80%
Potential vectors in stigma condition	1) ingesting unsanitary food 2) exposure to infected water (such as swimming pools) 3) unprotected sex	1) airborne bacteria (sneezing, coughing) 2) infected water (such as water fountains and pool filtration systems) 3) through unprotected sexual contact
Additional question	None	How likely would you be to tell others about having been infected?

Author note

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Table 1. Perceptions of morality as a function of stigma, Experiments 1A and 1B. Scores range from 5 (least immoral) to 35 (most immoral).

	Experiment 1A Perception of other		Experiment 1B Meta-perceptions	
	M	SD	M	SD
No stigma	16.6	(3.7)	18.3	(5.2)
Stigma Low-frequency	18.2	(4.3)	16.8	(5.6)
Stigma High-frequency	18.3	(3.0)	19.1	(4.6)