Perceived Vulnerability to HIV Infection, Anti-Gay Prejudice, and College Student Sexual Behavior

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ABSTRACT. Despite demonstrating adequate knowledge and awareness of HIV/AIDS, college students continue to report low levels of safe sex behaviors. Effective risk reduction strategies rely on identifying and addressing cognitive barriers such as prejudice that HIV/AIDS is a disease affecting only certain populations such as gay males and intravenous drug users. These beliefs can interfere with the success of effective HIV/AIDS prevention programs by making it difficult, embarrassing, or threatening to engage in preventive behaviors. This study tested the hypothesis that prejudice toward gay men would predict perceived personal vulnerability to HIV infection and engagement in protective sexual behaviors, specifically talking with one’s partners about the chance of HIV transmission and being tested for HIV infection. Students with higher levels of anti-gay prejudice reported less perceived vulnerability of HIV infection, after controlling for higher risk sexual behaviors, $R^2 = .19, F(1,148) = 8.30, p = .004$. Greater prejudice was also related to less likelihood of having been tested in the past year. We discuss implications for augmenting prevention programs by targeting misconceptions stemming from anti-gay prejudice.
sexual intercourse dramatically reduces the rate of HIV/STD transmission, there has been limited evidence of increased consistent condom use (Civic, 2002; Scholly, Katz, Gascoigne, & Holck, 2005). These findings indicate that although educational campaigns provide a necessary and valuable foundation for disease control, they are not sufficient to affect essential changes in the risk-taking behaviors of young people (O’Sullivan et al., 2006).

Research has expanded to look beyond knowledge to account for engagement in protective behaviors (Stiles & Kaplan, 2004). Given that college students do not base their estimates of risk of infection on actual statistics, rates of infection, or the risky sexual behaviors in which they engage, there must be other salient factors accounting for risk perception. One possible factor is that college students’ risk judgments are influenced by cognitive heuristics, decision-making shortcuts (Tversky & Kahnemann, 1974). For example, in estimating their own or their partner’s risk of contracting a sexually transmitted infection, a person may compare themselves to a representation of what constitutes a high risk individual (Malloy, Fisher, Albright, Misovich, & Fisher, 1997; Ward, Disch, Levy, & Schensul, 2004). Rather than rely on known methods for protection from infection, people view themselves as safe since they are not demographically similar to those known to be at the highest risk. In short, beliefs regarding who is at risk of HIV contraction are likely to influence college students’ assessments of their own overall risk of infection as well as the risk associated with their behaviors.

As the awareness of HIV/AIDS increased in the 1980’s and the majority of infected individuals were gay men, the AIDS epidemic quickly became associated with male homosexuality and nicknamed the “gay plague” (Ruel & Campbell, 2006). Sexually-prejudiced individuals may ascribe homosexuality as the primary risk factor for HIV/AIDS and thus minimize their own personal risk. Individuals with this particular sexual prejudice may believe that because they and their partners are heterosexual, they are safe from risks of transmission (Ward et al., 2004). Therefore, individuals who are prejudiced against gay men may believe that HIV/AIDS only strikes gay men and fail to recognize the risk to heterosexuals. This misperception is inaccurate and dangerous, because according to the CDC, the majority of individuals under 25 who contract HIV now do so through heterosexual transmission (O’Sullivan et al., 2006).

Sexual prejudice toward gay men and AIDS-related stigma can interfere with the success of effective HIV/AIDS prevention and care programs by making it difficult, embarrassing, or threatening to engage in preventive behaviors such as asking sexual partners about their HIV status and being tested for HIV. In fact, a large, multi-site survey found that higher perceptions of STD stigma predicted whether participants had been tested for HIV in the previous year (Fortenberry et al., 2002). In addition, Stipp and Kerr (1989) found a relationship between sexual prejudice and AIDS misinformation. Their findings linked sexual prejudice to a lack of acceptance of media information about AIDS, which in turn reduced the effectiveness of prevention messages. Sexual prejudice also hinders an individual’s ability or willingness to engage in protective sexual behaviors (Boone & Duran, 2009). Consequently, sexually-prejudiced people view discussing HIV risk and testing for HIV as unnecessary potentially threatening to them socially due to the risk of being associated with homosexual or bisexual behaviors (Brooks, Etzel, Hinojos, Henry, & Perez, 2005).

In sum, there is growing support suggesting that anti-gay prejudice may influence an individual’s perceived vulnerability to HIV infection. This relationship is especially troubling given the impact of vulnerability estimates on engagement in protective behavior. Specifically, the Health Belief Model (HBM; Becker, 1974; Rosenstock, Strecher, Becker, 1988), the most commonly used model for explaining the adoption of preventive behavior for guarding against disease, suggests that as individuals’ perceived vulnerability increases, so will their engagement in protective behaviors. In other words, it is likely that an individual’s anti-gay prejudices may inaccurately lower his or her perceived vulnerability and reduce the likelihood of engaging in HIV protective behaviors. If this is the case, then addressing anti-gay prejudice would play a crucial role in the creation of effective HIV/AIDS prevention programs.

In this study we explore whether sexual risk behaviors, including having sex under the influence of alcohol or drugs, having multiple partners, and the inconsistent use of condoms, are expected to be related to perceived risk of HIV infection. We also test the following hypotheses:

1) We predict that greater perceived vulnerability to HIV infection will be related to higher rates of HIV-specific protective
behaviors, specifically talking to partners about the risk of HIV transmission and being tested for HIV infection.

2) We predict that after controlling for sexual risk behavior, anti-gay prejudice will contribute unique variance to the prediction of perceived vulnerability to HIV. Specifically, we expect those expressing stronger anti-gay attitudes to report less perceived vulnerability.

3) Similarly, we predict that anti-gay prejudice will be associated with a decreased likelihood of protective sexual behaviors.

**Methods**

**Participants**

The original sample of participants included 395 undergraduate students attending a southern, state-supported college of approximately 6,000 students. Students who had not been sexually active in the past 12 months and students who were married were excluded from the sample leaving a sample size of 184 students. As we were interested in heterosexual students’ perception of risk and use of protective behaviors, we also excluded 17 respondents who reported a history of a same-sex sexual relationship. Thus, the final sample used in the analyses consisted of 167 students. Of the 167 students in the sample, 61% were women (n = 102), and 39% were men (n = 65). Ages ranged from 17 to 25, with a mean age of 20.6 (SD = 1.9). About 44% of our sample was ranked as first-year students or sophomores (n = 72) and 56% were ranked as juniors or seniors (n = 95). The majority of respondents were White American (69%, n = 114) with 10% African American students (n = 17), 9% Latino/Hispanic students (n = 15), and 12% of students reporting various other ethnicities (n = 19; such as mixed, other, Caribbean Black, Native American).

**Procedure**

A convenience sample of student participants was recruited from both upper and lower division courses in order to survey enough students from each grade level to obtain as nearly as possible a representative sample of the college’s population. Course areas that were surveyed included undergraduate introductory sociology and psychology courses and a variety of upper division courses across all six colleges, all randomly selected. The participants represented 44 different majors across all six colleges out of 52 possible majors on campus.

This research was approved by the University’s committee for the Protection of Human Subjects. Participation was voluntary and no incentives for participation were offered. Five students declined to participate. Students completed the questionnaires during class time; class instructors were not present. The researchers obtained informed consent, distributed the survey, and were present to answer any questions. Students placed their responses in a box with a small opening at the top. To ensure anonymity, student names were never recorded or requested.

**Survey**

**Demographics.** Respondents indicated their sex, age, ethnic background, college major, year in school, sexual orientation, and marital status (e.g., married and living with spouse).

**Anti-gay prejudice.** Students responded to two statements (see Table 1) assessing moral judgment about same-sex relationships and negative affective response to same-sex relationships, two primary components of sexual prejudice associated with HIV contraction (Herek, 2000). They responded to the statements using a 4-point Likert-type scale ranging from 1 (agree strongly) to 4 (disagree strongly). Items were averaged to form a single anti-gay prejudice score with higher scores reflecting more negative attitudes. The correlation between the two items is .75, p < .001. Table 1 presents the frequencies of student responses to the anti-gay prejudice items. A majority of students (59%) strongly agreed with the statement “Sex between 2 men is just plain wrong.” Similarly, 41% strongly agreed with the statement “I think male homosexuals are disgusting.”

**Perceived vulnerability.** Participants responded to a statement measuring their perception of vulnerability to HIV infection: “What do you think your chances are of getting HIV/AIDS?” This item

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**Table 1:** Frequency (Percentage) of Responses to Survey Items

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex between two men is just plain wrong</td>
<td>99 (60%)</td>
<td>25 (15%)</td>
<td>26 (16%)</td>
<td>15 (9%)</td>
</tr>
<tr>
<td>I think male homosexuals are disgusting</td>
<td>68 (41%)</td>
<td>47 (28%)</td>
<td>24 (14%)</td>
<td>28 (17%)</td>
</tr>
</tbody>
</table>
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was measured on a 5-point Likert-type response scale that ranged from 1 (no chance) to 5 (very high).

Sexual risk behaviors. Students answered questions assessing sexual behaviors associated with risk for sexually transmitted diseases (STDs) in general, as well as unwanted pregnancy. Two dichotomous, yes/no items assessed whether or not the respondent had sex while under the influence of either alcohol or drugs in the past 12 months. Respondents also indicated how many sexual partners they had in the past 12 months by choosing a range of numbers: 1, 2–3, 4–5, 6–10, or more than 10. The item was coded so that higher numbers represent more partners.

The survey also assessed inconsistency in condom use during oral, anal, and vaginal types of sexual activity. The response options for these items asked students to indicate how often they used a condom on a scale ranging from 0 (never) to 4 (always). The option to respond never had this kind of sex was coded as missing data. Due to high numbers of missing data on the questions asking about anal and oral sex, only the item assessing condom use during vaginal sex was used in the analyses. Follow-up questions assessed the respondent’s reasons for using or not using condoms. Participants were provided a list of possible reasons (e.g., condoms not available, trust my partners, drunk or high) and indicated whether or not each reason applied to them; thus, respondents could indicate multiple reasons for not using condoms.

HIV-specific protective behaviors. Students also responded to items assessing behaviors associated with reduced risk of contracting HIV. Students answered the question: “Have you talked with your sex partner(s) about the chances of infecting each other with HIV?” Responses included options for not discussed with any partners, discussed with some partners, and discussed with all partners. Students also responded to the question “Have you ever been tested for HIV?” Follow-up questions assessed how many times in the past year the participant had been tested for HIV and their reasons for being tested or not being tested.

Results

Table 2 includes descriptive statistics and correlations between all variables.

Perceived Vulnerability and Sexual Risk Behaviors

When participants were asked to assess their chances of becoming infected with HIV/AIDS, 75% (n = 126) indicated that they perceive some risk of infection, even if slight, and 25% (n = 41) perceived themselves to be at no risk of becoming infected. Eight percent (n = 14) of the sample indicated that they perceived their level of risk as being either high or very high.

The relationship between perceived vulnerability and sexual risk behaviors were assessed. Students who had more sexual partners perceived themselves to be at greater risk for HIV infection, r = .39, p < .001. This is especially important as approximately half (49%, n = 80) of the sample reported having had multiple sexual partners over the past year. Students who reported having sex under the influence of alcohol (48%, n = 80, M = 2.72, SD = 1.15) did not perceive their risk to be higher than those who reported they had not had sex while under the influence of alcohol (M = 2.56, SD = 1.23, t(163) = 0.87, p = .38). Moreover, students’ perception of risk for HIV infection was not related to their use of condoms, r = .02, p = .86. This also is an important finding, as only 21% percent (n = 39) of respondents stated that they always use a condom during vaginal intercourse and 12% (n = 23) stated they never use a condom during intercourse.

Perceived Vulnerability and HIV-specific Protective Behaviors

Thirty-four percent (n = 43) of participants had been tested for HIV at some time in the past. Of those who were tested, the majority (n = 29, 67%) reported that the testing was part of routine medical care, while another 28% (n = 12) reported they were tested after having unprotected sex. Perceived vulnerability to HIV infection was related to whether or not students had ever been tested for HIV, r = .21, p = .008. Students who had been tested for HIV (M = 2.46, SD = 0.88) rated themselves as more vulnerable to HIV infection than those who denied having been tested (M = 2.05, SD = 1.001; t(98.37) = -2.86, p = .01). Of those not tested, the majority (73%) responded that they had not been tested because they did not perceive themselves to be at risk of infection.

Half (50%, n = 83) of the participants in this sample indicated that they had not talked with any of their sexual partners in the past 12 months about the chances of infecting each other with HIV. Perceived risk was not related to whether respondents talked with their partners about HIV infection, r = .015, p = .84.
Anti-Gay Prejudice and Perceived Vulnerability
A regression analysis was used to determine whether anti-gay prejudice was associated with perceived vulnerability to HIV infection after controlling for sexual risk behaviors (see Table 3). Of the sexual risk behaviors, only “number of sexual partners” was correlated with perceived vulnerability; thus this was the only variable controlled for in the regression. As hypothesized, anti-gay prejudice predicted perceived vulnerability over and above the number of sexual partners $R^2 = .19$, $\Delta R^2 = .04$, $F(1,148) = 8.30$, $p = .004$.

Anti-gay Prejudice and HIV-Specific Protective Behaviors
As predicted, an inverse relationship was identified between anti-gay prejudice and being tested for HIV/AIDS ($r = -.17$, $p = .02$), indicating that individuals who are prejudiced against gay men are less likely to undergo testing for HIV/AIDS. The predicted inverse relationship was not found between anti-gay prejudice and talking to sexual partners about the possibility of HIV infection, $r = .09$, $p = .21$.

Discussion
This study evaluated the hypothesis that, regardless of an individual’s sexual behavior, anti-gay prejudices may lower his or her perceived vulnerability and reduce the likelihood of engaging in HIV protective behaviors. Consistent with previous research (e.g., Randolf et al., 2009), higher risk sexual behaviors were evident at significant rates. For example, the majority of the sample reported engaging in sexual activity with multiple partners in the past year. Of these sexually active college students, less than a quarter reported consistent condom use during intercourse.

Findings from the current research indicated that a majority of college students are concerned that at least some personal vulnerability exists for contracting HIV. However, student’s evaluation of their vulnerability to HIV infection was unrelated to their engagement in higher risk sexual behaviors. Only the number of sexual partners in the past year correlated with ratings of perceived vulnerability. In short, these findings are consistent with those of previous reports indicating that college students express minimal concern about HIV infection despite engaging in behaviors known to increase risk for infection (e.g., Boone & Duran, 2009; Davis et al., 2007; Opt & Loffredo, 2004; Opt, Loffredo, Knowles, & Fletcher, 2007; O’Sullivan et al., 2006; Teague, 2009). People, especially young adults, are motivated to minimize their anxiety about the dangers in life, engaging in self-serving cognitions such as illusory invulnerability (Thompson, Kyle, Swan, Thomas, & Vrungos, 2002). This tendency to estimate one’s vulnerability as low may allow individuals to avoid behaviors that are recommended for safe sex but generally considered uncomfortable and potentially embarrassing, such as condom use and talking to partners about sexually transmitted infections.

We examined whether ratings of vulnerability were related to enactment of HIV-specific protective behaviors. The Health Beliefs Model (Becker 1974) explains that those who evaluate the risk to their health as low are not likely to take preventive action, perhaps exposing them to greater risk. As predicted, vulnerability was related to whether or not participants had ever been tested for HIV. However, it was unrelated to whether they had talked to some or all partners about the risk of HIV transmission. Testing was often reported to have occurred as part of routine medical care; thus it may have been easier for those who recognized risk to obtain HIV testing. Talking to one’s partner about HIV, even for those who acknowledge some risk of transmission, may be hindered by embarrassment, fear of negative responses, from the partner.

### TABLE 2

<table>
<thead>
<tr>
<th>Variables</th>
<th>$M$ (SD) or n (%)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Anti-gay prejudice</td>
<td>3.09 (.99)</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>2. Perceived vulnerability</td>
<td>2.19 (.94)</td>
<td>-.17</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>3. Sex influence of alcohol</td>
<td>80.00 (48%)</td>
<td>-.02</td>
<td>.21</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>4. Sex influence of drugs</td>
<td>25.00 (15%)</td>
<td>-.05</td>
<td>.18</td>
<td>.37</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>5. Number of partners*</td>
<td>1.74 (.97)</td>
<td>.09</td>
<td>.39</td>
<td>.30</td>
<td>.22</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>6. Condom use</td>
<td>3.23 (1.30)</td>
<td>.04</td>
<td>.01</td>
<td>-.01</td>
<td>-.16</td>
<td>-.06</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>7. Talk with partner</td>
<td>76.00 (45%)</td>
<td>-.09</td>
<td>-.03</td>
<td>-.15</td>
<td>-.14</td>
<td>.07</td>
<td>.07</td>
<td>—</td>
</tr>
<tr>
<td>8. HIV tested</td>
<td>56.00 (34%)</td>
<td>-.17</td>
<td>.21</td>
<td>.08</td>
<td>-.05</td>
<td>.12</td>
<td>-.05</td>
<td>—</td>
</tr>
</tbody>
</table>

Note. Frequencies represent those reporting they had sex under the influence of alcohol in the past year, had sex under the influence of drugs in the past year, talked to at least 1 partner about HIV, and having been tested for HIV. *Number of partners represents the mean score of a scaled response—not the actual number of partners. $p < .05$; ** $p < .01$, one-tailed.
and even difficulty acknowledging the intention to have sexual intercourse (Ryan, Franzetta, Manlove, & Holcombe, 2007).

As predicted, higher levels of anti-gay prejudice predicted less perceived risk of HIV infection after controlling for the number of sexual partners. There are a number of possible explanations for this relationship, including the role of the representativeness heuristic in estimating vulnerability. Those who exhibit anti-gay prejudice are more likely to view HIV as a gay-male disease and judge themselves as dissimilar and apart from those in the high-risk “category” as well as perceive themselves as only having a minimal risk for HIV (Boone & Duran, 2009; Mickler, 1993).

Another possible explanation is that variables such as sexual conservatism or religiosity contribute both to increased negative attitudes about gay men as well as higher rates of safe sexual behavior, such as abstinence and monogamy, which reduce actual vulnerability. Future research should investigate beliefs such as sexual conservatism that are related to sexual prejudice and other social stereotypes that may be cognitive barriers hindering HIV prevention efforts.

Anti-gay prejudice was also evaluated for its relation with engagement in protective behaviors such as HIV/AIDS testing and talking to sexual partners about the risk of HIV/AIDS infection. Students who expressed higher levels of anti-gay prejudice against gay men were found to be less likely to undergo HIV/AIDS testing. Anti-gay prejudice may make it even more difficult, embarrassing, or threatening for an individual to engage in preventive behaviors, such as HIV testing, out of fear for negative social consequences (Brooks et al., 2005).

Although this study adds to our understanding of the attitudes contributing to college students’ perceived risk for HIV infection, several weaknesses inherent in the methodology of the current study may limit the generalizability and interpretation of the results. Although some of the hypothesized associations were statistically significant, the amount of variance predicted by anti-gay prejudice is small. The small convenience sample suggests that this research should be replicated and may not generalize to young adults outside of the college environment. Another limitation of this research is the reliance on single items with limited response options to measure key variables. It is possible the restricted range on some of our measures may have limited our ability to detect potential relationships between anti-gay attitudes, perceived vulnerability, and behavior. Future research should include the use of multiple-item scales which may measure these concepts with greater reliably and sensitivity. Additionally, future research should control for contextual factors that may be related to vulnerability estimates and decisions of whether to enact safe sex behaviors, such as the length of relationship, and presumptions of monogamy. Finally, we acknowledge that problems such as recall bias, social desirability, and self-selection are a constant challenge with self-report methods.

Interventions that incorporate methods to reduce anti-gay prejudice and address the misconception that HIV is a “gay disease” may reduce cognitive barriers to implementing safe sex practices. We concur with Valdiserri’s (2002) statement that, “To underestimate the insidious power of stigma is to risk the very success of effective HIV prevention and care programs” (p. 341).

**TABLE 3**

<table>
<thead>
<tr>
<th>Predictor Variable</th>
<th>b</th>
<th>t</th>
<th>p</th>
<th>Adjusted R²</th>
<th>Change Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of sexual partners</td>
<td>.409*</td>
<td>5.811</td>
<td>.001</td>
<td>.15</td>
<td>F(1,148) = 7.12, p = .008</td>
</tr>
<tr>
<td>Anti-gay prejudice</td>
<td>-.203*</td>
<td>-2.882</td>
<td>.004</td>
<td>.18</td>
<td>8.30, .004</td>
</tr>
</tbody>
</table>

References


**Author Note.** Laura C. Spiller, Department of Psychology, Midwestern State University; Beverly Stiles, Department of Sociology, Midwestern State University; David Carlston, Department of Psychology, Midwestern State University; Laura Hise, Department of Psychology, Midwestern State University.

This study includes research conducted for Laura Hise’s master’s thesis.

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