# When Sex Equals AIDS: Symbolic Stigma and Heterosexual Adults' Inaccurate Beliefs About Sexual Transmission of AIDS

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**Abstract**

*Data from an experiment embedded in a national telephone survey of heterosexual, English-speaking U.S. adults (N = 1,283) were used to examine the relationship between manifestations of symbolic stigma and erroneous beliefs about AIDS transmission. Each respondent was presented with three scenarios describing a hypothetical sexual encounter between a protagonist and an HIV-negative or HIV-positive partner in which condoms were or were not used. The partner's sex and the protagonist's sex and sexual orientation were experimentally manipulated. Nearly all respondents knew that AIDS could be contracted through unprotected sex with a person with AIDS. A substantial minority erroneously believed it could be contracted through sex with an uninfected partner, and significantly more respondents believed that a homosexual or bisexual man who had sex with another (uninfected) man risked contracting AIDS compared to respondents who were asked about a heterosexual encounter. Inaccurate beliefs about HIV transmission through unprotected sex were predicted by socioeconomic status (lower educational level and income), gender (being female), race (being black), religiosity, personal concern about contracting AIDS, and lack of knowledge about HIV transmission through casual contact. With other variables statistically controlled, sexual prejudice was a significant predictor of inaccurate beliefs about HIV transmission through protected sex but not unprotected sex.* [1]

Stopping the spread of a communicable disease requires interrupting the process whereby it is transmitted from one person to another. The social construction of an illness, however, inevitably affects this task. If the disease or some component of the transmission process is stigmatized, the sick are subjected to negative consequences such as personal rejection and social shunning, loss of employment and housing, deprivation of personal liberties, and even violence (Goffman 1963; for historical examples, see Brandt 1987; Rosenberg 1987). People with the disease or at risk for it often take preemptive steps to avoid enactments of stigma (Scambler 1989). For example, they may refrain from identifying themselves publicly, which makes difficult the task of reaching them with effective treatments and appropriate preventive interventions.

The stigma attached to a communicable disease can also affect how the members of society understand its transmission, particularly when already-stigmatized groups are perceived to be disproportionately vulnerable to illness. The latter groups may face heightened stigma even while society underestimates the likelihood of transmission among people outside the so-called risk groups. In the 1832 U.S. cholera epidemic, for example, prostitutes and their customers were widely considered to be at high risk because excessive sexual activity was viewed as leaving "its devotees weakened and 'artificially

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stimulated,' their systems defenseless against cholera" (Rosenberg 1987:41). Many members of the upper and middle classes explained the poor's susceptibility to cholera as a consequence of idleness and intemperance when, in reality, it resulted chiefly from living in crowded and unsanitary conditions without clean water. In the case of Black Americans, who suffered disproportionately from both poverty and cholera, victim blaming was complemented by racism. Charles E. Rosenberg (1987) noted, "Whether he was free or slave, [White] Americans believed, the Negro's innate character invited cholera. He was, with few exceptions, filthy and careless in his personal habits, lazy and ignorant by temperament. A natural fatalist, moreover, he took no steps to protect himself from disease..." (Rosenberg 1987:60).

The AIDS epidemic provides a contemporary example of how stigma can affect popular perceptions of an illness and ultimately interfere with public health goals. *AIDS-related stigma* — defined here as the social devaluing of people perceived to have AIDS or HIV as well as the individuals, groups, and communities with which they are associated — has been a significant problem since AIDS was first recognized in the United States (e.g., Herek and Glunt 1988; Herek et al. 1998). It has been manifested in discrimination and physical violence against people with AIDS and people with HIV (hereafter PWAs and PWHIVs, respectively), negative feelings toward them, expressions of discomfort about them and a wish to avoid them, and support for policies to isolate them from the rest of the population (e.g., Gostin 1990; Herek 2002a; Herek, Capitanio, and Widaman 2002; Zierler et al. 2000).

AIDS-related stigma (hereafter referred to as AIDS stigma or HIV stigma) arises from multiple sources. As a lethal, disfiguring, and communicable disease with mysterious origins and no effective treatments, it was perhaps inevitable that AIDS would be regarded as an "abomination of the body" (Goffman 1963:4) and would evoke some degree of *instrumental stigma* (Herek 1999; Herek et al. 1998). Individual enactments of instrumental stigma are based on personal concerns about protecting one's own health and well-being. In addition, because the epidemic in the United States disproportionately affected disliked sectors of the population, especially gay and bisexual men, AIDS was also regarded from the start as a "blemish of individual character" (Goffman 1963:4). As Rosenberg's (1987) discussion of the treatment of Blacks, immigrants, and prostitutes during the 1832 cholera epidemic illustrates, the stigma associated with a disease is compounded when members of powerless and disliked groups succumb to it disproportionately; it then provides a means for indirectly expressing hostility toward such groups. Similarly, AIDS stigma has served as a vehicle for expressing hostility toward sexual minorities and injecting drug users (Capitanio and Herek 1999; Herek 2000b; Herek and Capitanio 1998 1999a; Pryor, Reeder, and Landau 1999; Pryor, Reeder, and McManus 1991; Pryor, Reeder, Vinacco, and Kott 1989), a phenomenon labeled *symbolic stigma* (Herek 1999; Herek et al. 1998). In this case, symbolic stigma involves a synergy between the stigma attached to AIDS as an illness and the stigma attached to the groups linked to AIDS in popular perceptions, especially gay and bisexual men and injecting drug users. Enactments of AIDS stigma often are motivated by hostility toward sexual minorities and drug users; enactments of sexual stigma and drug-related stigma are often rationalized with references to AIDS.

The social psychological processes associated with symbolic AIDS stigma foster sexual prejudice (i.e., negative attitudes toward sexual minorities; Herek 2000a, 2004) in at least two ways. First, stigma leads to stereotyping, whereby marked individuals (i.e., people labeled because of their perceived differences from the norm) are assumed to possess various undesirable characteristics (Link and Phelan 2001). In the United States, stereotypes about homosexuality have often incorporated images of illness and danger (Herek 1991) which resonate with beliefs that gay people are inherently sick and spread disease. Thus, antigay stereotypes may facilitate an equating of AIDS with

homosexuality and foster heterosexuals' perception that gay people pose a menace to society through their sexual behavior.

Second, once activated, stereotypes provide a rationale for believing that those in the stigmatized outgroup are fundamentally different from the rest of the population (Link and Phelan 2001). Ingroup members tend to exaggerate differences between their own group and the stigmatized outgroup while minimizing the latter's heterogeneity (Brewer and Brown 1998; Devine, Plant, and Harrison 1999). In the case of AIDS, this focus on intergroup differences may influence heterosexuals' beliefs about their own vulnerability to infection. Because they exaggerate the outgroup's homogeneity, they may regard all homosexual conduct as a vector for AIDS while harboring more nuanced beliefs about the risks of AIDS transmission through heterosexual sex. Indeed, as a consequence of overestimating ingroup-outgroup differences, they may perceive themselves as so unlike gay people that they fail to recognize that HIV can be transmitted through heterosexual conduct. In this manner, the operation of symbolic stigma may hinder effective AIDS prevention among heterosexuals.

As early as 1985, more than 90 percent of national poll respondents in the United States knew that AIDS can be contracted through unprotected sexual intercourse and by sharing needles (Singer, Rogers, and Corcoran 1987). Since then, the proportion of adults correctly answering questions about the risk associated with unprotected sex and sharing needles has been consistently high (e.g., Herek and Capitanio 1993; Rogers, Singer, and Imperio 1993), a pattern widely assumed to show that most U.S. adults know how AIDS is transmitted. However, many adults continue to believe that AIDS can be spread through casual social contact, such as sharing a drinking glass with a PWHIV (Herek et al. 2002; Lentine et al. 2000), which suggests that their seeming knowledge about sexual transmission of HIV is not based on a clear understanding of the mechanism by which AIDS is transmitted from one person to another. Lack of knowledge about casual contact is correlated with both negative attitudes toward PWHIVs and antigay attitudes (Herek 2002a; Herek and Capitanio 1999a; Lentine et al. 2000; Price and Hsu 1992; Stipp and Kerr 1989).

Moreover, many people incorrectly believe that AIDS can be contracted during sex even when neither partner is infected (Herek and Capitanio 1999a).[2] This conflation of sex with AIDS is especially pronounced in beliefs about the risks posed by sex between two men. In a 1991 U.S. telephone survey, for example, approximately 46 percent of respondents in a national probability sample believed that an uninfected homosexual man was "almost sure to become infected" or had "a fairly strong chance" of becoming infected through a single sexual encounter with another *uninfected* man in which condoms were not used (Herek and Capitanio 1993). Similarly, in a 1997 national telephone survey roughly 25 percent of respondents believed a healthy man could get AIDS through a single sexual encounter with another uninfected man even if they used condoms (Herek and Capitanio 1999a). In the latter study, respondents with higher levels of sexual prejudice were more likely than others to believe incorrectly that sex between two uninfected men posed a risk for AIDS (Herek and Capitanio 1999a).

This association between misinformation about HIV transmission and sexual prejudice suggests symbolic stigma is operating: Beliefs about HIV appear to serve as a vehicle for expressing antigay attitudes. However, alternative explanations are also plausible. Misinformation might reflect a tendency to overestimate risk

[2] AIDS can be contracted during a sexual encounter only when three conditions are met: (a) one of the participants is infected with HIV; (b) they engage in sexual acts capable of introducing HIV-infected blood or semen into the uninfected participant's body; and (c) the introduction of the infected blood or semen actually occurs because, for example, they do not use condoms. HIV transmission is impossible if any of these conditions are absent, that is, if sexual partners are both HIV-negative, if they engage in forms of sex that do not introduce infected blood or semen into the partner's body, or if they use condoms effectively.

based on general concerns about protecting one's own health and well-being (a manifestation of instrumental stigma) or simple lack of knowledge. Inaccurate beliefs might also result from skepticism about medical and scientific explanations of HIV transmission (Herek and Capitanio 1994). Even in the realm of symbolic stigma, such beliefs may have sources other than sexual prejudice. If they reflect general traditional attitudes about sexuality, they might be more strongly related to religiosity or political conservatism than to attitudes toward specific sexual minority groups. Because previous research has not assessed whether the risks posed by sexual activity are overestimated for heterosexual as well as homosexual conduct, it remains unknown whether such misapprehensions are specific to the sexual behavior of a stigmatized group (especially gay and bisexual men) or whether they extend more generally to all sexual acts.

Identifying the roots of popular misconceptions about AIDS transmission is important for effectively responding to them in AIDS education and stigma-reduction efforts. If such misconceptions simply reflect a knowledge deficit, they could be addressed in public education campaigns by providing more detailed and explicit information about HIV, its transmission, and the groups it has affected. If inaccurate beliefs about AIDS are expressions of stigma, however, reversing them will require directly grappling with the attitudes and concerns at their foundation. If misapprehensions reflect instrumental stigma, the appropriate focus may be personal anxieties about contracting AIDS. If they reflect symbolic stigma, interventions may have to address negative attitudes toward sexual minorities or more general religious and political values.

The present study examined the extent to which heterosexuals in the United States understand how AIDS is transmitted sexually and how their beliefs about HIV transmission are affected by sexual prejudice and a variety of other factors related to HIV stigma. Employing an experimental design embedded in a national telephone survey, we assessed knowledge about AIDS transmission through sexual contact by presenting each respondent with a series of three hypothetical scenarios involving sexual behavior and asking whether AIDS could be transmitted in each situation. In one scenario, a healthy protagonist engaged in unprotected sex with an infected partner; consequently, transmission of AIDS could occur. In the other two scenarios, sexual behavior occurred but AIDS transmission was impossible because neither sexual partner was infected. To assess whether accuracy of knowledge about transmission was affected by the specific type of sexual behavior in question, we randomly assigned participants to receive a version of the scenarios depicting either a heterosexual, homosexual, or bisexual protagonist engaging in sex with either a male or female partner. We also assessed the impact of antigay attitudes and other variables relevant to symbolic and instrumental stigma on knowledge about AIDS. We tested four hypotheses.

### *Hypothesis 1: Misinformation Related to Male-Male Sex*

We hypothesized that a substantial proportion of U.S. adults incorrectly believe that sexual intercourse between two uninfected people poses a risk of AIDS transmission, and these erroneous judgments occur mainly in regard to male homosexuality. Thus, we expected that sex between two uninfected men would be erroneously assumed to pose a risk for AIDS more often than sex between an uninfected man and woman. We did not make specific predictions as to whether this difference is elicited mainly by the labels attached to the sexual actors (homosexual or bisexual) or by the fact that they are engaging in male-male sex. We designed the experiment to test both explanations.

### *Hypothesis 2: Misinformation Related to Demographic Groups*

We hypothesized that misconceptions about HIV would be differentially related to respondents' socioeconomic status, race, gender, and age. We briefly discuss each of these variables in turn.

### *Socioeconomic Status*

Groups with greater access to information about current events and more highly developed skills for understanding and utilizing such information were expected to display more accurate information about HIV transmission (e.g., Price and Hsu 1992). Accordingly, we expected respondents with higher socioeconomic status — operationalized as higher educational and income levels — to harbor fewer misconceptions about the sexual transmission of HIV than respondents with lower SES.

### *Race*

Survey research has shown that African Americans are more likely than their White counterparts to overestimate the risks of HIV transmission through casual social contact (Herek and Capitanio 1993). This pattern may partly reflect group differences in education and income but it holds even when those differences are statistically controlled. It has been explained partly as reflecting a widespread belief among African Americans that the AIDS epidemic is a government plot targeting the Black population, as well as general distrust concerning the accuracy of AIDS information promulgated by the government (Herek and Capitanio 1994; Turner 1993). Based on these considerations, we expected Blacks to be more likely than Whites and other racial and ethnic groups to express inaccurate beliefs about HIV transmission, but we also expected that effect to be largely diminished when education, income, and distrust in government information about AIDS were statistically controlled.

### *Gender*

In previous research, gender has been significantly correlated with various manifestations of AIDS stigma, with men more likely than women to stigmatize people with HIV and AIDS. When gender and race are considered simultaneously, White women are the group least likely to support coercive measures against PWAs or to say they would avoid PWAs in social situations (e.g., Herek and Capitanio 1993). However, some research suggests that the direction of gender differences in AIDS stigma may depend on HIV transmission route, at least for Whites. In one national survey, White women reacted more negatively to a bisexual man with AIDS than to a heterosexual man or woman or a gay man; by contrast, White men reacted most negatively to a gay man with AIDS (Herek and Capitanio 1999a). The former pattern may reflect women's greater subjective sense of vulnerability to contracting HIV from a bisexual man. The latter pattern is consistent with research showing that heterosexual men generally display higher levels of sexual prejudice than heterosexual women (Kite and Whitley 1998), with White women more tolerant than White men, Black men, and Black women (Herek and Capitanio 1995). Yet, previous research has not recorded significant gender differences in HIV knowledge (Herek and Capitanio 1993). Thus, we expected gender differences, if any, to reflect less misinformation among women than men, although women might overestimate the risk of transmission involving a bisexual man. The strength of the latter effect, if observed, should diminish when the respondent's subjective sense of vulnerability to HIV disease is controlled statistically. In addition, previously reported differences in sexual prejudice and AIDS-related attitudes among White and Black women and men suggest that gender and race should be examined in concert.

### *Age*

Younger heterosexuals are more likely than their older counterparts to be sexually active and thus to have a direct interest in obtaining accurate information about sexual transmission of HIV. In addition, younger adults tend to express more positive attitudes toward homosexuality than older adults (Herek 2000a), suggesting that HIV-related beliefs and opinions might be used less frequently by younger adults to symbolically express antigay attitudes. Thus, we expected younger adults to be less likely than their older counterparts to harbor misinformation about sexual transmission of HIV.

### *Hypothesis 3: Misinformation Related to Sexual Prejudice*

Our third and fourth hypotheses focus on how AIDS-related beliefs may be indicative of symbolic and instrumental stigma. As already noted, previous research has shown that misconceptions about HIV transmission between uninfected men are associated with sexual prejudice, a finding consistent with studies showing a strong correlation between enactments of HIV stigma and antigay attitudes (Herek and Capitanio 1999a). Hypothesis 3 predicted that sexual prejudice will be similarly associated with errors in judgments about HIV transmission in the present study. Because this association should be most evident for questions that directly link AIDS transmission with male homosexuality, we expected a significant interaction between scenario version (i.e., depicting homosexual versus heterosexual sex) and sexual prejudice.

### *Hypothesis 4: Misinformation Related to Other Indicators of Symbolic and Instrumental Stigma*

Hypothesis 4 predicted that, even after the effects of demographic group membership and sexual prejudice were statistically controlled, beliefs about the risks of sexual transmission of AIDS would be associated with other indicators of the operation of symbolic stigma (religiosity, political ideology), instrumental stigma (beliefs about casual contact, subjective sense of risk for AIDS, distrust of expert opinion about transmission), and general AIDS stigma (attitudes toward PWAs). Several of these variables have already been discussed. Of those remaining, religiosity and political beliefs are potential indicators of symbolic stigma. Many highly religious individuals condemn sexual behavior outside of marriage and consider it worthy of punishment (e.g., Smith 1994). We expected such condemnation to translate into a belief that all nonmarital sexual behavior — homosexual and heterosexual alike — leads to negative consequences such as disease. Therefore, we predicted an association between religiosity and inaccurate beliefs about HIV transmission through sexual conduct. Because religious condemnation of homosexuality is closely linked to conservative political values, we also expected political ideology to be correlated with inaccurate beliefs about HIV transmission. Beliefs about transmission of HIV through casual contact are related to instrumental concerns about contracting HIV (Herek 2000b). Because knowledge about one aspect of HIV transmission is likely to be correlated with other AIDS knowledge, we expected more misconceptions about the sexual transmission of AIDS among respondents who also harbored misconceptions about HIV transmission through casual social contact.

## Method

Data were collected in a national telephone survey conducted between September 1998 and May 1999 by the Survey Research Center at the University of California at Berkeley. All interviews employed computer-assisted telephone interviewing (CATI) technology. No limit was set on the number of recontact attempts for each number. The median interview duration was 44 minutes.

### *Sample*

The sampling frame was the population of adults (at least 18 years of age) residing in households with telephones in the 48 contiguous states. Within households, respondents were selected at random from the English-speaking adult residents. Data were collected simultaneously from two samples, both drawn with a list-assisted random-digit dialing (RDD) procedure (Casady and Lepkowski 1993). One sample consisted of 666 respondents who had previously participated in a 1997 survey on AIDS and stigma and consented to be recontacted for a follow-up interview. (For details about the 1997 survey, see Capitanio and Herek 1999; Herek and Capitanio 1999a, 1999b; Herek et al. 2002.) The completion rate for follow-up interviews was 78 percent. The second sample consisted of 669 new respondents and had a response rate of 58 percent using Response Rate Formula 2 of the American Association for Public Opinion

Research (1998). The mean age of respondents was 46 years (range = 18-91).

The two samples did not differ in terms of gender (56 percent female for the combined samples), race and ethnicity (82 percent non-Hispanic White), education (median education of some college without a degree), or income (median household income of $40-50,000).[3] Nor did response distributions differ between the two samples for any of the dependent variables or the measure of sexual prejudice. Consequently, data from the samples were combined. Only self-identified heterosexuals (*N* = 1,283) were included in the analyses reported below.[4]

## *Measures*

### *Beliefs About Sexual Transmission of AIDS*

Three brief scenarios were read to each respondent in which different hypothetical individuals who did not have AIDS were described as having sex with another person. Three variables were experimentally manipulated: (a) protagonist's sex (male or female), (b) protagonist's sexual orientation label (heterosexual, bisexual, or homosexual), and (c) sex of protagonist's partner (male or female). Because of practical limitations on the sample size and considerations of statistical power, a full-factorial design was impractical. Instead, five experimental conditions were created using the most plausible and theoretically relevant combinations of the variables: (a) a heterosexual woman having intercourse with a male sexual partner (hereafter referred to as the HET-FM condition); (b) a heterosexual man with a female sexual partner (HET-MF condition); (c) a bisexual man with a female sexual partner (BI-MF condition); (d) a bisexual man with a male sexual partner (BI-MM condition); and (e) a homosexual man with a male sexual partner (HOM-MM condition).

The partner's health status and the type of sexual conduct described in each scenario were identical across experimental conditions. The protagonist in Scenario A was always described as having unprotected sex (i.e., sex without a condom) with a person who has "the AIDS virus." Scenario B always depicted unprotected sex with a healthy partner and Scenario C always depicted protected sex with a healthy partner. To underscore that each scenario should be evaluated independently, the protagonists in Scenarios B and C were each explicitly described as being a different person from the protagonist in the previous scenario(s). Whereas the activity depicted in Scenario A carried a high risk of HIV-infection for the protagonist, infection was impossible in Scenarios B and C because they explicitly included the proviso that "we know for sure that neither [partner] is infected with the AIDS virus." The experimental design is summarized in Table 1. The exact wording of the scenarios is provided in the Appendix.

*[Insert Table 1 about here]*

The three scenarios were read sequentially to all respondents, each followed by a question about the likelihood of AIDS transmission occurring as a consequence of the sexual behavior depicted in that hypothetical situation. After Scenario A, the follow-up question was "How likely do you think it is that this healthy [man/woman] will get AIDS from having intercourse that one time?" For Scenarios B and C, the follow-up question was "How likely do you think it is that at least one of them will get AIDS from having intercourse that one time?" All questions offered five response options: "very likely," "somewhat likely," "somewhat unlikely," "very unlikely to get AIDS," and "impossible to get AIDS from having intercourse that one time."

The order of presentation was designed so that

[3] More detailed information about the sample and data collection procedures is reported elsewhere (Herek 2002b; Herek et al. 2002).

[4] Respondents' sexual orientation was assessed with the following item: "Now I'll read a list of terms people sometimes use to describe themselves: (a) *heterosexual* or *straight*; (b) *homosexual*, *gay*, *lesbian* [the last choice was included only for female respondents]; and (c) *bisexual*. As I read the list again, please stop me when I get to the term that best describes how you think of yourself."

each successive scenario changed only one aspect of the hypothetical situation. Scenario A (unprotected sex with an infected partner) was intended to be an "easy" question for respondents to answer because it provided multiple cues that the encounter could transmit HIV. Scenario B altered one aspect of the situation (the partner was described as not infected) while keeping the sexual behavior (unprotected sex) unchanged. Scenario C added another alteration, this time to the type of sex (from unprotected to protected). This sequence was selected to highlight the contrast between Scenarios B and C. Even if respondents missed the distinction between an infected and uninfected partner (Scenario A versus B), the wording of Scenario C provided the additional cue that sex with the uninfected partner included condom use.

Most respondents were expected to correctly answer the question for Scenario A (in which a healthy person has unprotected sex with an infected individual). We were primarily interested in responses to the remaining two scenarios. Because both partners described in Scenarios B and C were uninfected, sexual transmission of AIDS was impossible. Accordingly, a response that AIDS transmission was "impossible" or "very unlikely" was considered correct and scored as 0. Responses that transmission was "very likely," "somewhat likely," or "somewhat unlikely" were considered incorrect and scored as 1.

### *Demographic Variables*

To enhance the interpretability and comparability of the parameter estimates and odds ratios arising from the logistic regression analyses (described below), the variables of education, income, sex, and race were coded so that their values ranged from 0 to 1. Education was coded as 0 = high school diploma or less, 0.5 = some college (without a degree), and 1.0 = college degree (Mean = 0.49, s.d. = 0.42). Household income for the previous year was coded as 0 = $30,000 or less, 0.33 = $30,000 to 49,999, 0.67 = $50,000 to $70,000, 1 = more than $70,000 (Mean = 0.47, s.d. = 0.38). Respondent sex was scored as 0 = male, 1 = female (Mean = 0.55, s.d. = 0.5). Race was expressed in a dummy variable, with 1 = Black and 0 = non-Black (Mean = 0.10, s.d. = 0.3).[5] Respondent's chronological age was divided by 10, yielding a measure of the number of decades lived (Mean = 4.5, s.d. = 1.5). Consequently, the odds ratio associated with age represented the amount of change predicted in the dependent variable for every additional decade a respondent lived.[6]

### *Sexual Prejudice*

Attitudes toward "men who are homosexual," "women who are lesbian, or homosexual," "men who are bisexual," and "women who are bisexual" were measured with ratings on separate feeling thermometers, each ranging from 0 to 100. Higher thermometer ratings indicate warmer, more favorable feelings toward the target whereas lower ratings indicate colder, more negative feelings (Herek and Capitanio 1999b). The four thermometer ratings were highly intercorrelated (Median $r$ = .79, all $r$s > .72). They were combined into a measure of attitudes toward sexual minorities ($\alpha$ = .95) by summing them, dividing the total by 4 to retain the thermometer metric, and then dividing by 100, which yielded a score that ranged from 0

[5] Most of the sample (93%) was either non-Hispanic White or Black, so the dummy variable for Black race was highly correlated with a dummy variable for White race ($r$ = -.73). Because previous research suggests that Black Americans are more likely than their White counterparts to express misconceptions about HIV transmission through casual contact, and to avoid problems of multicollinearity in the logistic regression analyses, only the variable indicating Black race (with non-Black as the index category) was used in the analyses reported here.

[6] Three additional demographic variables were initially included in the analyses because they have been shown in previous research to be associated with AIDS-related attitudes as well as attitudes toward homosexuality (e.g., Herek 1991, 2002a): marital status, type of current residence location (rural, small town, urban, suburban), and geographic area of residence. These variables were not correlated with beliefs about transmission in exploratory analyses and were dropped from subsequent analyses.

(coldest, or least favorable) to 1 (warmest, or most favorable). The mean scale score was 0.47 (s.d. = 0.24).

***Other Variables Related to AIDS Stigma***

Attitudes toward PWAs were measured with a single feeling thermometer using the same format and coding as described above, which yielded a score ranging from 0 (least favorable) to 1 (most favorable; Mean = 0.57, s.d. = 0.23). Religiosity was measured by responses to the question "How important is religion in your life?" (1 = very important, 0.67 = somewhat important, 0.33 = not too important, 0 = not at all important; Mean = 0.75, s.d. = 0.29).[7] Political ideology was measured with a branching question widely used in survey research (e.g., Knight 1999), in which respondents initially classified themselves as liberal, conservative, or moderate, and then indicated the strength of their ideological stance. This yielded a 7-point scale ranging from strongly conservative to strongly liberal. Consistent with the coding of other variables, scale responses were transformed to range from 0 (= strongly conservative) to 1 (strongly liberal), with 0.5 = moderate with neither conservative nor liberal leanings (Mean = 0.47, s.d. = 0.33).

Personal concern about getting AIDS was measured with a question used in previous national surveys (e.g., Herek and Capitanio 1998), "How worried are you about getting AIDS or becoming infected with the AIDS virus yourself? (1 = very worried, 0.67 = somewhat worried, 0.33 = not too worried, 0 = not at all worried; Mean = 0.25, s.d. = 0.3). Trust in official information about how AIDS is transmitted also was measured with an item from previous surveys (Herek and Capitanio 1994), "Scientists and doctors can be trusted to tell us the truth about AIDS." Disagreement was coded as 1, agreement was coded as 0 (Mean = 0.29 , s.d. = 0.45).

Finally, a 3-item *Casual Contact Transmission Beliefs (CCTB) scale* was used to measure respondents' tendency to overestimate the risks of HIV transmission through casual social contact. Based on past survey research (e.g., Herek and Capitanio 1997), it comprised respondents' self-reported beliefs about the likelihood "that a person could get AIDS or AIDS virus infection" by sharing a drinking glass, being coughed or sneezed on, and using public toilets. Respondents rated the likelihood of transmission through each type of casual contact using the same five response alternatives reported above for the sexual transmission scenarios, which were translated into numerical values for scoring purposes (ranging from 5 for "very likely" to 1 for "impossible to get AIDS"). These values were summed and divided by 3 to yield a scale score ($\alpha$ = .80). Higher scores indicate a greater tendency to overestimate the risks posed by casual contact. To facilitate interpretation of odds ratios, we subtracted 1 from the score and divided the resultant value by 4, yielding scores that ranged from 0 (impossible) to 1 (very likely; Mean = 0.4 , s.d. = 0.25).

***Data Analysis***

The data analysis procedures were designed to evaluate how responses to Scenario B and Scenario C (dichotomized as correct vs. incorrect) were related both to situational factors (created by the experimental manipulation) and individual factors (demographic characteristics, attitudes, etc.). For each scenario, we first examined the relationship between responses to the transmission question and the experimental conditions (Hypothesis 1). Then, controlling for

[7] Although this variable does not directly measure the content of a respondent's religious beliefs, those who assigned greater importance to the role of religion in their life were significantly more likely to be affiliated with a conservative religious denomination than with another denomination or no religion, $\underline{X}^2$ (df = 15, $n$ = 1067) = 324.13 ($p$ < .001). Those who reported that religion is "very important" were disproportionately likely to belong to a fundamentalist or evangelical Christian denomination (43%) and disproportionately unlikely to be Jewish (< 2%), affiliated with a liberal Protestant denomination (< 1%), or not affiliated with any religious denomination (< 2%). The proportions of Catholics (30%) and mainline Protestants (23%) reporting that religion is "very important" did not depart significantly from what would be expected, based on their prevalence in the sample.

these effects, we systematically evaluated the effects of demographic characteristics (Hypothesis 2), sexual prejudice (Hypothesis 3), other variables related to symbolic and instrumental stigma (Hypothesis 4), and theoretically relevant interaction terms (including the interaction predicted by Hypothesis 3). By using logistic regression, we were able to test all of the hypotheses with a single analysis for each scenario. That analysis evaluated a series of models, each building on the previous one.

*[Insert Table 2 about here]*

We began by testing the effects of the experimental manipulation in Scenario B. Hypothesis 1 predicted that incorrect responses would be more likely when the scenario attached a label of homosexual or bisexual to the protagonist or specified that a male protagonist engaged in sex with another man. Based on this hypothesis, four *a priori* contrasts were specified to test differences among the five experimental conditions (see Table 2). Contrast 1 tested for an effect of the protagonist's gender, holding sexual orientation constant. It compared ratings of transmission risk for heterosexual women and heterosexual men (Version HET-FM vs. Version HET-MF). Because beliefs about heterosexual transmission — regardless of whether it is framed in terms of risk to a woman or a man — are not likely to express stigma, significant effects were not expected for Contrast 1. Contrasts 2 and 3 tested whether incorrect beliefs about transmission were affected by how the protagonist's sexual orientation was labeled, holding constant the type of sexual activity. Contrast 2 compared beliefs about the risks associated with heterosexual intercourse for a heterosexually-labeled versus bisexually-labeled protagonist (Versions HET-FM and HET-MF vs. Version BI-MF). Contrast 3 compared the perceived risks associated with homosexual intercourse for a bisexually-labeled versus homosexually-labeled male protagonist (Version BI-MM vs. Version HOM-MM). To the extent that the protagonist's sexual orientation label affected responses, more incorrect responses were expected for a bisexual protagonist than for a heterosexual (Contrast 2), and more incorrect responses were expected for a homosexual protagonist than for a bisexual (Contrast 3). Finally, Contrast 4 tested whether incorrect beliefs about transmission were affected by whether the protagonist engaged in heterosexual or homosexual intercourse, regardless of sexual orientation label. It compared the ratings of perceived risk for heterosexual intercourse (Versions HET-FM, HET-MF, and BI-MF) to that for homosexual intercourse (Versions BI-MM and HOM-MM).

Next, while controlling statistically for the effects of the experimental manipulation, we sequentially evaluated Hypotheses 2, 3, and 4. In a second logistic regression equation, the demographic variables specified in Hypothesis 2 — educational level, income, sex, race (Black versus non-Black), and age — were added to the planned contrasts described above. This equation tested whether any of the demographic variables were associated with incorrect responses after the effects of the experimental manipulations had been statistically controlled. A third equation tested whether sexual prejudice (measured by the combined thermometer scales score) was significantly related to transmission knowledge for Scenario B once experimental condition and demographic factors were controlled. This model evaluated the association of sexual prejudice with all responses to Scenario B; whether sexual prejudice was differentially linked with responses to scenarios depicting male-male sex was tested in a subsequent equation (see below). The fourth equation tested whether — with experimental condition, demographic variables, and sexual prejudice controlled — transmission knowledge was predicted by any of the other measures relevant to symbolic and instrumental stigma: religiosity, political ideology, Casual Contact Transmission Beliefs scores, personal concerns about infection, distrust of AIDS experts, and attitudes toward PWAs.

Finally, a fifth equation added multiplicative terms to test for specific interaction effects. Four interaction terms were entered on the basis of a priori hypotheses. (1) Hypothesis 3 predicted that respondents with negative attitudes toward

sexual minorities were especially likely to give incorrect responses for the scenario depicting homosexual intercourse; this interaction was operationalized as the product of Contrast 4 and sexual prejudice scores. (2) Because respondents might be more familiar with the risks faced by someone of their same gender, we tested whether perceptions of male and female respondents were differentially affected by a heterosexual protagonist's gender; this was operationalized as the product of Contrast 1 and respondent sex. (3) Because male and female heterosexuals differ in their responses to homosexuals versus bisexuals (Herek 2002b), we tested for an interaction between respondents' gender and whether the protagonist was a bisexual man or homosexual man; this was operationalized as the product of Contrast 3 and respondent sex. (4) As noted above, findings in previous research suggest that gender and race should be examined in concert. Accordingly, we included an interaction term for respondent sex and race, coded so that 1 = Black female respondents.

The analyses for Scenario C (protected sex) employed the same strategy as for Scenario B with one exception. As already noted, the follow-up question for Scenario C might be considered "easier" to answer correctly than the question for Scenario B because it contained two pieces of information capable of cueing the correct response: (1) the fact that neither partner was infected and (2) the fact that they used condoms. Respondents who answered the Scenario B question correctly were expected to answer the Scenario C question correctly as well and, consequently, the variables that predicted correct responses to Scenario B should also predict Scenario C responses. The interesting question, therefore, is whether any of the independent variables exert an effect on Scenario C responses beyond their effect on Scenario B responses. To address this question, Scenario C equations included responses to Scenario B as a mediator variable (Baron and Kenny 1986). In all other respects, the analysis of responses to Scenario C was the same as for Scenario B.

## Results

### *Knowledge About Transmission*

Nearly all respondents (98.3 percent) knew that the hypothetical protagonist in Scenario A could contract AIDS through unprotected sexual intercourse with an HIV-infected person (95% Confidence Interval [CI] = 97.6, 99.0). Responses to the remaining two scenarios indicated considerable misinformation, supporting the first part of Hypothesis 1. For Scenario B, 34.3 percent of respondents incorrectly believed that the protagonist could get AIDS by having unprotected sexual intercourse with an uninfected person (CI = 31.7, 36.9). For Scenario C, a smaller albeit substantial proportion (20.8 percent) incorrectly answered that infection was possible if condoms were used (CI = 18.6, 23.0).

Slightly less than two thirds of the sample (63 percent) answered the questions about both Scenarios B and C correctly, whereas 18 percent answered both incorrectly. As expected, for those who responded incorrectly to only one of the items, the question for Scenario B proved to be more difficult. Sixteen percent of the sample gave a correct response to Scenario C but an incorrect response to Scenario B. By contrast, only 2.5 percent gave a correct response to Scenario B but answered the question about Scenario C incorrectly. The remaining analyses focus on Scenarios B and C.

### *Unprotected Sex with Uninfected Partner (Scenario B)*

Hypothesis 1 also predicted that erroneous judgments would be more likely for scenarios involving homosexuality than for heterosexuality. As expected, in the first logistic regression model for Scenario B, ratings of transmission risk were not affected by whether the actor was a heterosexual woman or a heterosexual man (Table 3, Contrast 1). Odds ratios were also nonsignificant for Contrasts 2 and 3, indicating that the sexual orientation label attached to the protagonist did not affect perceptions of risk. For Contrast 4, however, ratings of perceived risk

differed significantly depending on whether the protagonist engaged in heterosexual or male-male intercourse. Respondents who were asked about homosexual intercourse were significantly more likely to give an incorrect response than those who were asked about heterosexual intercourse. This pattern is evident in the upper half of Table 4, which shows that the proportions of men and women responding incorrectly were roughly ten percentage points higher when the scenario depicted homosexual intercourse than when it depicted heterosexual intercourse.

*[Insert Tables 3 and 4 about here]*

Hypothesis 2 predicted that errors in judgments about the risk of sex between two uninfected partners would be associated with education, income, gender, race, and age. The second regression model yielded support for this hypothesis (see Table 3, Model 2). With the effects of the experimental manipulation controlled, all five variables were statistically significant. They remained significant in Model 3, with sexual prejudice added. When the remaining variables were added in Model 4, all of the demographic variables except age remained significant. In Model 4, with all other variables statistically controlled, respondents with the highest educational level were only half as likely to give an incorrect response as those at the lowest educational level. Similarly, respondents with the highest annual income were less likely to answer incorrectly than those with the lowest income (OR = 0.61). Black respondents were roughly 2.7 times as likely as non-Blacks to give an incorrect response. Contrary to predictions, women respondents were about 1.5 times more likely than men to give incorrect answers.

Hypothesis 3 predicted that errors in judgments would be associated with sexual prejudice, especially for respondents who were presented with a scenario involving homosexuality. This hypothesis predicted both a main effect (with sexual prejudice affecting responses to all scenarios to some extent) and a significant interaction (with sexual prejudice having its greatest impact for scenarios depicting male-male sex). Model 3, which tested the main effect component of Hypothesis 3, did not substantially improve on the predictive power of Model 2, as indicated by the marginally significant chi-square ($C^2 = 2.72,\ p < .10$). And, as noted below, the interaction term entered in Model 5 similarly was not significant. Thus, Hypothesis 3 was not supported for Scenario B. Individual attitudes toward sexual minorities were not a major predictor of incorrect responses once other relevant variables were statistically controlled.

Hypothesis 4 predicted that six other variables related to instrumental and symbolic stigma would all be associated with knowledge about sexual transmission. However, only religiosity, personal concern, and CCTB scores contributed significantly to response variation in Model 4. Respondents who assigned a great deal of importance to religion were about twice as likely as nonreligious respondents to answer incorrectly. Respondents with the highest level of personal concern about contracting AIDS themselves were approximately 1.7 times as likely to answer incorrectly as those who were not at all concerned for their own safety. Respondents who overestimated the risks of casual contact were more than three times as likely to answer incorrectly as respondents who understood that HIV is not transmitted through casual contact.

No interaction effects were statistically significant. Therefore, Model 5 is omitted from the table.

### *Protected Sex with Uninfected Partner (Scenario C)*

As explained above, the analyses for Scenario C were designed to reveal whether any variables included in the model predict responses once their effect on Scenario B is statistically controlled. The logistic regression results for Scenario C are displayed in Table 5. Predictably, responses to Scenario B exerted a strong effect, which remained substantial in all models. In Model 5, with all other variables entered, those who answered the question for Scenario B incorrectly were about 27 times more likely than other respondents to answer the question for

Scenario C incorrectly as well.[8]

*[Insert Table 5 about here]*

Despite the substantial impact of responses to Scenario B, some additional variables emerged as significant predictors. Consistent with Hypothesis 3, attitudes toward sexual minorities emerged as a statistically significant predictor of responses in Model 3. In the final equation, with all other variables entered, respondents with the least amount of sexual prejudice (highest thermometer scores) were only about one third as likely to answer incorrectly as respondents with the strongest level of sexual prejudice (OR = 0.30). As with Scenario B, the hypothesized Sexual Prejudice × Scenario Version interaction effect in Model 5 was not significant.

In addition, significant effects emerged for income and respondent race, and the latter was qualified by a significant Race × Sex interaction. Examination of the coefficients indicates that Black respondents were significantly more likely than non-Blacks to answer Scenario C incorrectly, but this pattern held only for Black males. Indeed, whereas Black female respondents were more likely than Black males to give an incorrect response to Scenario B (60 percent of Black women answered incorrectly, compared to 55 percent of Black men), they were significantly less likely to do so for Scenario C (respectively, 31 percent and 49 percent answered incorrectly). Among Black respondents, therefore, the gender pattern for incorrect responses to Scenario C was opposite that of the rest of the sample, in which men were more likely than women to answer correctly (see lower half of Table 4). The remaining variables did not further predict responses to Scenario C beyond their effects on Scenario B responses.

[8] We examined the Variance Inflation Factor (VIF) associated with each independent variable in the final regression equation for Scenario C, which included the largest set of variables. For Race, VIF = 2.6; for the Race × Sex interaction, VIF = 2.7; tolerance = .38 for both. These values reflect the strong correlation between race and the interaction term ($r$ = .75) and may indicate some degree of multicollinearity in the final equation. For all other variables, VIF < 1.85.

## Discussion

In the present study, we used a conceptual framework based on the constructs of symbolic and instrumental stigma to guide our examination of the heterosexual public's knowledge about HIV transmission. Employing an experimental design, we considered stigma-relevant situational factors likely to influence judgments about the risk of AIDS transmission, namely, the type of sexual behavior in question and the actors' sexual orientation labels. This approach allowed us to assess the replicability of previous findings that homosexuality is equated with AIDS transmission, as well as the extent to which such misapprehensions are specific to homosexual sex.

Consistent with previous national surveys (Herek 1997; Herek and Capitanio 1999a), one third of male respondents and roughly 45 percent of female respondents incorrectly believed that a man can contract AIDS through unprotected sex with an uninfected male partner. Even if the uninfected hypothetical men used a condom, they were judged to be at risk by one fourth of the male respondents and nearly 30 percent of the female respondents. The sexual orientation label attached to the protagonist (bisexual, homosexual, heterosexual) did not affect answers but, as predicted by our first hypothesis, respondents were indeed more likely to believe that AIDS can be sexually transmitted between two uninfected men than between an uninfected man and woman.

If this pattern had occurred in response to a more ambiguous situation — e.g., if the HIV status of the hypothetical actors had been described as unknown or uncertain — it might plausibly be interpreted as indicating the use of a simple cognitive heuristic along the lines of the following: "Gay and bisexual men have been disproportionately affected by the AIDS epidemic in the United States so, all things being equal, assume that they are at greater risk than heterosexuals of contracting HIV from a sexual partner of unknown serostatus." However, the survey questions explicitly stated that the actors were *not* infected with HIV. Respondents were

better able to use this information appropriately when those actors engaged in heterosexual sex. Thus, heterosexuals in the present sample displayed a tendency to equate male homosexual sex with AIDS, suggesting that symbolic stigma affects the public's perceptions of HIV risk.

However, another sizable group of respondents equated male-female sex with AIDS. Nearly one fourth of male respondents and more than one third of female respondents incorrectly believed that a single instance of unprotected intercourse between an uninfected man and woman can cause one of the partners to develop AIDS. If a condom was used, the proportions erroneously associating AIDS with the sexual encounter dropped, but only by about ten percentage points for male respondents and 15 points for female respondents. Collapsing across experimental conditions, roughly 1 respondent in 5 incorrectly believed that sex between two uninfected individuals can transmit AIDS when condoms are used. When the partners were described as not using condoms, the proportion giving an erroneous response rose to 1 in 3.

Thus, most of the U.S. public may know that AIDS can be contracted through unprotected sex and sharing needles (Rogers et al. 1993; Singer et al. 1987), but our data suggest that many people lack a clear understanding of how HIV transmission actually occurs. Consequently, they do not accurately gauge the level of risk associated with novel situations like those presented in this experiment. They are especially likely to err when the situation involves sex between men, in which case the stigma associated with homosexuality appears to foster an equating of male-male sex with AIDS. But the risks associated with heterosexual encounters are also misjudged, albeit less often. The latter finding raises the question of whether erroneous beliefs about the sexual transmission of HIV are explained by characteristics of the individual respondent.

The logistic regression analyses for Models 2-5 enabled us to address this question. Consistent with Hypothesis 2, knowledge about AIDS transmission was predicted by key demographic variables. Accurate beliefs were more common among respondents with higher socioeconomic status, a pattern that probably reflects the greater cognitive sophistication and access to multiple information sources associated with formal education and higher income (e.g., Bobo and Licari 1989). Age initially emerged as a significant predictor of knowledge but its effect was reduced when variables related to instrumental and symbolic stigma were statistically controlled in the final regression equation. Thus, to the extent that age effects occurred, they probably resulted from age differences in the latter variables.

The effects for gender and race are not exactly as predicted and warrant comment. As shown in Table 4, the proportion of women responding incorrectly was roughly 12 percentage points higher than the proportion of men for Scenario B (unprotected sex) and roughly 5 percentage points higher for Scenario C (protected sex). This difference was statistically significant, even when other relevant variables were controlled. Thus, heterosexual women were more likely than men to believe erroneously that AIDS can be transmitted sexually even when neither partner is infected, and this pattern is not directly attributable to gender differences in other demographic characteristics, sexual prejudice, or variables related to symbolic and instrumental stigma.

Further exploration of this gender difference will be an important task for future research. We speculate that more extensive and sensitive measures of some of the constructs discussed here, especially those related to instrumental and symbolic stigma, may help to explain it. In a series of post hoc analyses, we assessed whether the predictive power of each independent variable in the logistic regression analyses differed between men and women. Although these analyses generally did not yield statistically significant gender differences, the effect for personal concern about infection (shown in Table 3, Model 4) appeared to be stronger for women whereas the effect for religiosity was greater for men. We speculate that when they are uncertain about whether or

not a particular situation poses a risk for HIV transmission, heterosexual women tend to be guided by concerns about their own vulnerability for HIV whereas heterosexual men tend to be guided by moralism and religious values. More generally, this pattern suggests that instrumental stigma may play a stronger role in the HIV-related attitudes and beliefs of heterosexual women, whereas symbolic stigma exerts a stronger influence on heterosexual men. Testing these hypotheses will require more powerful measures of both instrumental and symbolic stigma than were employed in the present study.

Blacks were more likely than non-Blacks to believe that intercourse between two uninfected people can spread AIDS. Because the number of Blacks in the present analyses was relatively small ($n$ = 128), we interpret this finding with caution. Moreover, the statistically significant interaction term for Scenario C highlights the importance of considering race and gender effects in tandem. As noted above, women generally were more likely than men to respond incorrectly to both Scenarios B and C. Among Black respondents, however, this pattern occurred only for Scenario B. For Scenario C, which depicted the hypothetical partners using a condom, Black women were substantially less likely than Black men to answer incorrectly (31 percent versus 49 percent). This reversal for Scenario C may mean that many Black women have internalized the message common in AIDS and STD prevention programs to "Use a condom every time" (e.g., Planned Parenthood Federation 2004), although the large number of incorrect responses to Scenario B suggests that many do not clearly understand the transmission mechanism for AIDS.

Despite the gender difference, both Black women and men were more likely than non-Blacks to answer incorrectly, and this effect was significant even when education, income, and distrust of AIDS experts were statistically controlled. Here again, the distinction between instrumental and symbolic stigma may be useful for framing future research to explain this pattern. Previous studies have suggested that AIDS stigma differs between Black and White Americans, reflecting the two groups' different experiences of the AIDS epidemic (Capitanio and Herek 1999). AIDS stigma among African Americans has focused mainly on the threat posed by AIDS to the Black community and has been driven substantially by concerns about infection (i.e., instrumental stigma). By contrast, stigma among White Americans has tended to reflect personal dislike and negative attitudes toward the social groups principally affected by the epidemic, especially gay men (i.e., symbolic stigma; Herek and Capitanio 1993, 1997). Even in the realm of symbolic stigma, differences have been observed between Whites and Blacks, with condemnation of homosexuality the main influence for the former and hostility toward injecting drug users a more important factor for the latter (Capitanio and Herek 1999).

African Americans continue to be at disproportionate risk for AIDS (Centers for Disease Control and Prevention 2004). It is reasonable to hypothesize, therefore, that their judgments about the danger of infection posed by even a hypothetical sexual encounter reflect a greater tendency to err on the side of caution than is the case for Whites. Future research should further investigate whether Blacks' greater overestimation of the risk of AIDS transmission in ostensibly risk-free situations results mainly from instrumental stigma, i.e., their concerns about infection and their desire to avoid potential sources of HIV. Such concerns may even foster an unwillingness to accept the stated facts of a hypothetical scenario and to believe instead that, despite an interviewer's assurances to the contrary, one can never be absolutely certain that a potential sexual partner is uninfected.

Whereas Hypothesis 1 focused on the situational manipulation and predicted more erroneous responses in the conditions portraying male-male sex than in those portraying male-female sex, Hypothesis 3 focused on the individual respondent's preexisting level of sexual prejudice. It predicted that errors in judgments, especially about the risk of male-male sex, would be associated with sexual prejudice. Consistent with Hypothesis 3, sexual prejudice was

associated with inaccurate beliefs about both male-male and male-female sex in Scenario C (protected sex). This was not the case, however, for Scenario B (unprotected sex). Moreover, the expected interaction effect (between Contrast 4 and sexual prejudice scores) was not statistically significant for either scenario. This pattern raises two questions: Why was sexual prejudice significantly linked to erroneous judgments about both heterosexual and male homosexual sex, and why only for Scenario C?

We address the latter question first. It is helpful to recall that few respondents who correctly answered the question for Scenario B subsequently gave a wrong response to Scenario C. Nearly everyone with only one incorrect response gave it for Scenario B. The logistic regression analyses for Scenarios B and C, therefore, contrasted somewhat different groups. For Scenario B, the analyses effectively compared respondents who answered both items *correctly* with those who answered at least one item *incorrectly*. In the final equation, membership in the latter category was predicted by race, gender, socioeconomic status, knowledge about HIV transmission through casual social contact, personal concern about getting AIDS, religiosity, and type of scenario. For Scenario C, in contrast, the logistic regression analysis effectively compared respondents who answered both items *incorrectly* with those who answered at least one *correctly*. Being in the former group was predicted mainly by answering the question about Scenario B incorrectly. Respondents also were more likely to be in that group if their thermometer scores indicated heightened sexual prejudice. In addition, incorrect responses to both scenarios were predicted by low income, being Black and male, and being assigned to the experimental condition that asked about homosexual intercourse rather than heterosexual intercourse.

Thus, one factor distinguishing the respondents who least understood how AIDS is transmitted — those who equated sex and AIDS even when condoms were used — was their high level of sexual prejudice. Returning to the first question posed above, it is appropriate to ask why such prejudice was significantly linked to erroneous judgments about both heterosexual and male-male sex, rather than just to the latter. The answer, we suspect, is that the linkage between male homosexuality and AIDS is so firmly established in American society that sexual prejudice affects even HIV-related beliefs that are unrelated to homosexual conduct. This interpretation is consistent with previous findings that attitudes toward homosexuality predict reactions to non-homosexual people with AIDS, such as HIV-infected schoolchildren (Pryor et al. 1989, 1991). Thus, symbolic stigma operates not only through a linkage between sexual prejudice and negative reactions to PWAs (regardless of their sexual orientation). It apparently also operates through a linkage between sexual prejudice and beliefs about AIDS transmission, even through heterosexual sex. In addition to equating homosexuality with disease, which is a prominent theme in contemporary antigay rhetoric (Herek 1991; Herman 1997), heterosexuals who are strongly prejudiced against gay and bisexual people also are more likely to believe that heterosexual intercourse can result in AIDS, even when such an outcome is impossible.

As predicted by Hypothesis 4, other factors also influenced knowledge about transmission. Not surprisingly, respondents who believed that AIDS could be contracted through sex with an uninfected person also tended to believe that it could be contracted through sharing a drinking glass and other forms of casual contact. High levels of religiosity were linked to inaccurate beliefs about sexual transmission of AIDS through homosexual and heterosexual intercourse alike, suggesting that the operation of symbolic stigma in AIDS knowledge extends beyond sexual prejudice to more general ideological systems. The fact that self-described liberalism-conservatism was not a significant predictor suggests that these systems are mainly based on moral judgments rather than general political beliefs. Instrumental stigma also appears to play a role in AIDS knowledge, as indicated by the association between inaccurate beliefs

and high levels of personal concern about contracting AIDS. As noted above, religiosity may be somewhat more important for men's knowledge and personal concern more important for women's knowledge, but both variables exert some effect on both genders.

It is important to recognize the limitations of the present study. Because of the nature of the telephone interviews, participants had a relatively brief time in which to respond to hypothetical individuals and situations that may have been quite novel to them. Given an opportunity for more extensive consideration, more respondents might have answered correctly. Yet, apart from the experimental manipulations, all respondents received the same questions. Because respondents were randomly assigned to item versions, the clear differences in response patterns can be attributed only to the type of sex (heterosexual versus male homosexual) depicted in the questions.

The use of a probability sample, which can reasonably be assumed to represent the U.S. English-speaking adult population at the time of the survey, is an important strength of the present study. Like any public opinion poll, it provides only a snapshot of attitudes and beliefs at a specific moment. Whether the same pattern will be observed in future surveys remains an empirical question. However, the consistency of the current findings with previous research in the 1990s (Herek and Capitanio 1993, 1999a) suggests they are indicative of a longstanding pattern.

Respondents' failure to differentiate sex — especially male-male sex — from AIDS has disturbing implications. As noted earlier, it may reflect a tendency among some respondents to exaggerate the differences heterosexuals and gay men, perhaps to the point of failing to recognize that HIV is transmitted through male-female sex. In addition, people who erroneously equate sexuality with AIDS probably also question the value of safer sex interventions. They may be inclined to oppose funding for such programs, even though the latter's effectiveness is widely recognized ("Interventions to prevent HIV risk behaviors" 1997). Such opposition may have important consequences for public policy. The fact that misconceptions are stronger concerning male-male sex suggests that the public health benefits of interventions targeting gay and bisexual men are particularly vulnerable to skepticism. Such doubt may foster support for government restrictions on the types of outreach that AIDS prevention programs are allowed to initiate (e.g., Russell 2003).

A clear need exists for public health campaigns that explain exactly how AIDS is transmitted: that it is caused by a virus and can be contracted only when the virus moves from an infected person to a healthy individual. Understanding this process, rather than simply learning rote answers to specific questions about AIDS transmission, will better equip the public to prevent HIV infections and make better judgments about AIDS policy. The present findings suggest, however, that misconceptions about AIDS transmission do not result entirely from a knowledge deficit. Beliefs about HIV are also influenced by symbolic and instrumental stigma. The former injects prejudice and moralism into discussions of AIDS, the latter allows personal concerns about infection to override epidemiological facts. Both types of stigma help to perpetuate the belief that sex equals AIDS, especially when that sex occurs between two men. Thus, correcting misconceptions about AIDS transmission will require more than simply disseminating accurate and detailed information about HIV. It also will require confronting the public's personal anxieties about contracting AIDS, their negative attitudes toward sexual minorities, and the values that promote the equation of sex with disease.

## References

American Association for Public Opinion Research. 1998. *Standard Definitions: Final Dispositions of Case Codes and Outcome Rates for RDD Telephone Surveys and in-Person Household Surveys*. Ann Arbor, MI: Author.

Baron, Reuben M. and David A. Kenny. 1986. "The Moderator-Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations." *Journal of*

*Personality and Social Psychology* 51:1173-82.

Bobo, Lawrence and Frederick C. Licari. 1989. "Education and Political Tolerance: Testing the Effects of Cognitive Sophistication and Target Group Affect." *Public Opinion Quarterly* 53:285-308.

Brandt, Allan M. 1987. *No Magic Bullet: A Social History of Venereal Disease in the United States Since 1880*. Expanded ed. New York: Oxford University Press.

Brewer, Marilynn B. and Rupert J. Brown. 1998. "Intergroup Relations." Pp. 554-94 in *The Handbook of Social Psychology, Vol. 2 (4th Ed.)*, Eds. Daniel T. Gilbert, Susan T. Fiske, and Gardner Lindzey. Boston, MA: McGraw-Hill.

Capitanio, John P. and Gregory M. Herek. 1999. "AIDS-Related Stigma and Attitudes Toward Injecting Drug Users Among Black and White Americans." *American Behavioral Scientist* 42:1148-61.

Casady, Robert J. and James M. Lepkowski. 1993. "Stratified Telephone Survey Designs." *Survey Methodology* 19:103-13.

Centers for Disease Control and Prevention. 2004. "HIV/AIDS Among African Americans in the United States." Accessed 24 Aug 2004. Available at http://www.cdc.gov/hiv/pubs/Facts/ afam.htm

Devine, Patricia G., E. A. Plant, and Kristen Harrison. 1999. "The Problem of 'Us' Versus 'Them' and AIDS Stigma." *American Behavioral Scientist* 42:1212-28.

Goffman, Erving. 1963. *Stigma: Notes on the Management of Spoiled Identity*. Englewood Cliffs, NJ: Prentice-Hall.

Gostin, Lawrence O. 1990. "The AIDS Litigation Project: A National Review of Court and Human Rights Commission Decisions, Part II: Discrimination." *Journal of the American Medical Association* 263:2086-93.

Herek, Gregory M. 1991. "Stigma, Prejudice, and Violence Against Lesbians and Gay Men." Pp. 60-80 in *Homosexuality: Research Implications for Public Policy*, Eds. John C. Gonsiorek and James D. Weinrich. Newbury Park, CA: Sage.

———. 1997. "The HIV Epidemic and Public Attitudes Toward Lesbians and Gay Men." Pp. 191-218 in *In Changing Times: Gay Men and Lesbians Encounter HIV/AIDS*, Eds. Martin P. Levine, Peter Nardi, and John Gagnon. Chicago: University of Chicago Press.

———. 1999. "AIDS and Stigma." *American Behavioral Scientist* 42:1106-16.

———. 2000a. "The Psychology of Sexual Prejudice." *Current Directions in Psychological Science* 9:19-22.

———. 2000b. "The Social Construction of Attitudes: Functional Consensus and Divergence in the U.S. Public's Reactions to AIDS." Pp. 325-64 in *Why We Evaluate: Functions of Attitudes*, Eds. Gregory R. Maio and James M. Olson. Mahwah, NJ: Lawrence Erlbaum.

———. 2002a. "Thinking About AIDS and Stigma: A Psychologist's Perspective." *Journal of Law, Medicine, and Ethics* 30:594-607.

———. 2002b. "Gender Gaps in Public Opinion About Lesbians and Gay Men." *Public Opinion Quarterly* 66:40-66.

———. 2004. "Beyond "Homophobia": Thinking About Sexual Stigma and Prejudice in the Twenty-First Century." *Sexuality Research and Social Policy* 1(2):6-24.

Herek, Gregory M. and John P. Capitanio. 1993. "Public Reactions to AIDS in the United States: A Second Decade of Stigma." *American Journal of Public Health* 83:574-77.

———. 1994. "Conspiracies, Contagion, and Compassion: Trust and Public Reactions to AIDS." *AIDS Education and Prevention* 6:365-75.

———. 1995. "Black Heterosexuals' Attitudes Toward Lesbians and Gay Men in the United States." *Journal of Sex Research* 32:95-105.

———. 1997. "AIDS Stigma and Contact With Persons With AIDS: The Effects of Personal and Vicarious Contact." *Journal of Applied Social Psychology* 27:1-36.

———. 1998. "Symbolic Prejudice or Fear of Infection? A Functional Analysis of AIDS-Related Stigma Among Heterosexual Adults." *Basic and Applied Social Psychology* 20:230-241.

———. 1999a. "AIDS Stigma and Sexual Prejudice." *American Behavioral Scientist* 42:1130-1147.

———. 1999b. "Sex Differences in How Heterosexuals Think About Lesbians and Gay Men: Evidence From Survey Context Effects." *Journal of Sex Research* 36:348-60.

Herek, Gregory M., John P. Capitanio, and Keith F. Widaman. 2002. "HIV-Related Stigma and Knowledge in the United States: Prevalence and Trends, 1991-1999." *American Journal of Public Health* 92:371-77.

Herek, Gregory M. and Eric K. Glunt. 1988. "An Epidemic of Stigma: Public Reactions to AIDS." *American Psychologist* 43:886-91.

Herek, Gregory M., L. Mitnick, Scott Burris, Margaret Chesney, Patricia Devine, Mindy T. Fullilove, Robert Fullilove, Herbert C. Gunther, Jeffrey Levi, Stuart Michaels, Alvin Novick, John Pryor, Mark Snyder, and Timothy Sweeney. 1998. "AIDS and Stigma: A Conceptual Framework and Research Agenda." *AIDS and Public Policy Journal* 13(1):36-47.

Herman, Didi. 1997. *The Antigay Agenda: Orthodox Vision and the Christian Right*. Chicago: University of Chicago Press.

Interventions to Prevent HIV Risk Behaviors. 1997. *NIH Consensus Statement* 15(2):1-41.

Kite, Mary E. and Bernard E. Whitley, Jr. 1998. "Do Heterosexual Women and Men Differ in Their Attitudes Toward Homosexuality? A Conceptual and Methodological Analysis." Pp. 39-61 in *Stigma and Sexual Orientation: Understanding Prejudice Against Lesbians, Gay Men, and Bisexuals*, Ed. Gregory M. Herek. Thousand Oaks, CA: Sage.

Knight, Kathleen. 1999. "Liberalism and Conservatism." Pp. 59-158 in *Measures of Political Attitudes*, vol. 2, Eds. John P. Robinson, Phillip R. Shaver, and Lawrence S. Wrightsman. San Diego: Academic Press.

Lentine, D. A., J. C. Hersey, V. G. Iannacchione, G. H. Laird, K. McClamroch, and L. Thalji. 2000. "HIV-Related Knowledge and Stigma: United States, 2000." *Morbidity and Mortality Weekly Report* 49:1062-64.

Link, Bruce G. and Jo C. Phelan. 2001. "Conceptualizing Stigma." *Annual Review of Sociology* 27:363-85.

Planned Parenthood Federation of America. 2004. "Five Steps to a Healthier Sex Life" [Web Page]. Accessed 24 Aug 2004. Available at http://www.plannedparenthood.org/sti/FIVE-STEPS.HTM

Price, Vincent and Mei-ling Hsu. 1992. "Public Opinion About AIDS Policies: The Role of Misinformation and Attitudes Toward Homosexuals." *Public Opinion Quarterly* 56:29-52.

Pryor, John B., Glenn D. Reeder, and Steven Landau. 1999. "A Social-Psychological Analysis of HIV-Related Stigma: A Two-Factor Theory." *American Behavioral Scientist* 42:1193-211.

Pryor, John B., Glenn D. Reeder, and Julie McManus. 1991. "Fear and Loathing in the Workplace: Reactions to AIDS-Infected Co-Workers." *Personality and Social Psychology Bulletin* 17:133-39.

Pryor, John B., Glenn D. Reeder, R. Vinacco, Jr., and T. L. Kott. 1989. "The Instrumental and Symbolic Functions of Attitudes Toward Persons With AIDS." *Journal of Applied Social Psychology* 19:377-404.

Rogers, Theresa F., Eleanor Singer, and Jennifer Imperio. 1993. "AIDS: An Update." *Public Opinion Quarterly* 57:92-114.

Rosenberg, Charles E. 1987. *The Cholera Years: The United States in 1832, 1849, and 1866*. Chicago: University of Chicago Press.

Russell, Sabin. 14 Jun 2003. "Funds for S.F. AIDS Program in Peril." *San Francisco Chronicle*, pp. A1, A15.

Scambler, Graham. 1989. *Epilepsy*. London: Routledge.

Singer, Eleanor, Theresa F. Rogers, and Mary Corcoran. 1987. "The Polls: AIDS." *Public Opinion Quarterly* 51:580-595.

Smith, Tom W. 1994. "Attitudes Toward Sexual Permissiveness: Trends, Correlates, and Behavioral Connections." Pp. 63-97 in *Sexuality Across the Life Course*, Ed. Alice S. Rossi. Chicago: University of Chicago Press.

Stipp, Horst and Dennis Kerr. 1989. "Determinants of Public Opinion About AIDS." *Public Opinion Quarterly* 53:98-106.

Turner, Patricia A. 1993. *I Heard It Through the Grapevine: Rumor in African-American Culture*. Berkeley, CA: University of California Press.

Zierler, Sally, William E. Cunningham, Ron Andersen, Martin F. Shapiro, Sam A. Bozzette, Terry Nakazono, Sally Morton, Stephen Crystal, Michael Stein, Barbara Turner, and Patti St. Clair. 2000. "Violence Victimization After HIV Infection in a U.S. Probability Sample of Adult Patients in Primary Care." *American Journal of Public Health* 90:208-15.

## Appendix: Item Wording for the Experimental Manipulations

**1. Unprotected Sex with Infected Partner.** We're also interested in knowing what you think the chances are that certain types of people will get AIDS in certain types of situations. How about if…

… a **heterosexual woman** who is definitely NOT infected with the AIDS virus has sexual intercourse with a **man** who DOES have the AIDS virus? [*Version HET-FM*]

… a **heterosexual man** who is definitely NOT

infected with the AIDS virus has sexual intercourse with a **woman** who DOES have the AIDS virus? [*Version HET-MF*]

… a **bisexual man** who is definitely NOT infected with the AIDS virus has sexual intercourse with a **woman** who DOES have the AIDS virus? [*Version BI-MF*]

… a **bisexual man** who is definitely NOT infected with the AIDS virus has sexual intercourse with a **man** who DOES have the AIDS virus? [*Version BI-MM*]

… a **homosexual man** who is definitely NOT infected with the AIDS virus has sexual intercourse with a **man** who DOES have the AIDS virus? [*Version HOM-MM*]

Suppose they have sex only one time and they DON'T use a condom (rubber)? How likely do you think it is that this healthy [man/woman] will get AIDS from having intercourse that one time — very likely, somewhat likely, somewhat unlikely, very unlikely to get AIDS, or is it impossible to get AIDS from having intercourse that one time?

**2. Unprotected Sex with Uninfected Partner.** Now think of a different...

...**heterosexual woman** and a different **man**. [*Version HET-FM*]
...**heterosexual man** and a different **woman**. [*Version HET-MF*]
...**bisexual man** and a different **woman**. [*Version BI-MF*]
...**bisexual man** and a different **man**. [*Version BI-MM*]
...**homosexual man** and a different **man**. [*Version HOM-MM*]

Suppose that both of them are healthy — that is, we know for sure that NEITHER is infected with the AIDS virus. Now suppose they have sexual intercourse with each other only one time and they DON'T use a condom (rubber). How likely do you think it is that at least one of them could get AIDS from having intercourse that one time?

**3. Protected Sex with Uninfected Partner.** Now think of a different...

...**heterosexual woman** and a different **man**. [*Version HET-FM*]
...**heterosexual man** and a different **woman**. [*Version HET-MF*]
...**bisexual man** and a different **woman**. [*Version BI-MF*]
...**bisexual man** and a different **man**. [*Version BI-MM*]
...**homosexual man** and a different **man**. [*Version HOM-MM*]

...who are also both healthy — that is, we know for sure that NEITHER is infected with the AIDS virus. Suppose they have sexual intercourse with each other only one time and they use a condom (rubber). How likely do you think it is that at least one of them will get AIDS from having intercourse that one time?

Table 1

Description of the Experimental Design

| | | | Scenario A | | Scenario B | | Scenario C | |
|---|---|---|---|---|---|---|---|---|
| **Experimental Condition** | **Protagonist's Sex and Sexual Orientation** | **Partner's Sex** | **Partner's Health Status** | **Type of Sexual Behavior** | **Partner's Health Status** | **Type of Sexual Behavior** | **Partner's Health Status** | **Type of Sexual Behavior** |
| **HET-FM** | Heterosexual female | Male | Infected | Unprotected | Uninfected | Unprotected | Uninfected | Protected |
| **HET-MF** | Heterosexual male | Female | | | | | | |
| **BI-MF** | Bisexual male | Female | | | | | | |
| **BI-MM** | Bisexual male | Male | | | | | | |
| **HOM-MM** | Homosexual male | Male | | | | | | |

Table 2

Weights Associated with Contrasts

| Contrast | Scenario Version | | | | |
|---|---|---|---|---|---|
| | HET-FM | HET-MF | BI-MF | BI-MM | HOM-MM |
| 1. Heterosexual female vs. male | 1 | -1 | 0 | 0 | 0 |
| 2. Heterosexual intercourse, heterosexuals vs. bisexual male | 1 | 1 | -2 | 0 | 0 |
| 3. Homosexual intercourse, homosexual male vs. bisexual male | 0 | 0 | 0 | -1 | 1 |
| 4. Heterosexual vs. homosexual intercourse | -1 | -1 | -1 | 1.5 | 1.5 |

Version HET-FM = Heterosexual female protagonist, heterosexual intercourse
Version HET-MF = Heterosexual male protagonist, heterosexual intercourse
Version BI-MF = Bisexual male protagonist, heterosexual intercourse
Version BI-MM = Bisexual male protagonist, homosexual intercourse
Version HOM-MM = Homosexual male protagonist, homosexual intercourse

Table 3

Comparison of Four Models for Predicting Inaccurate Responses To Scenario B (Knowledge About Possibility of AIDS Transmission Through Unprotected Sexual Intercourse Between Uninfected People)

| | Model 1 | | Model 2 | | Model 3 | | Model 4 | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Predictor | B | SE | B | SE | B | SE | B | SE | Odds Ratio | 95% CI |
| Intercept | -.69 | .06 | -.96 | .25 | -.79 | .27 | -1.98 | .41 | .--- | --- |
| Contrast 1 | 0.08 | .10 | 0.09 | .11 | 0.10 | .11 | 0.10 | .11 | 1.11 | 0.89 - 1.38 |
| Contrast 2 | -0.07 | .06 | -0.08 | .06 | -0.07 | .06 | -0.05 | .06 | 0.95 | 0.84 - 1.08 |
| Contrast 3 | 0.02 | .10 | 0.01 | .10 | 0.01 | .10 | 0.04 | .11 | 1.05 | 0.85 - 1.29 |
| Contrast 4 | 0.16[b] | .05 | 0.18[c] | .05 | 0.18 | .05[c] | 0.18 | .06 | 1.20[c] | 1.08 - 1.34 |
| Race (Black) | .-- | .-- | 1.20[c] | .21 | 1.19 | .21[c] | 0.99 | .23 | 2.69[c] | 1.72 - 4.20 |
| Gender | .-- | .-- | 0.39[b] | .14 | 0.42 | .14[b] | 0.43 | .14 | 1.53[b] | 1.16 - 2.03 |
| Income | .-- | .-- | -0.56[b] | .19 | -0.53 | .19[b] | -0.49 | .19 | 0.61[b] | 0.42 - 0.89 |
| Education | .-- | .-- | -0.79[c] | .17 | -0.75 | .17[c] | -0.69 | .18 | 0.50[c] | 0.36 - 0.71 |
| Age (Decades) | .-- | .-- | 0.12[b] | .04 | 0.12 | .04[b] | 0.08 | .05 | 1.09 | 0.99 - 1.20 |
| Attitudes Toward Sexual Minorities | .-- | .-- | .-- | .-- | -.47 | .29 | -0.13 | .36 | 0.88 | 0.44 - 1.79 |

*(table continues)*

Table 3 (continued)

| | Model 1 | | Model 2 | | Model 3 | | Model 4 | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Predictor | B | SE | B | SE | B | SE | B | SE | Odds Ratio | 95% CI |
| Casual contact Beliefs (CCTB) | .-- | .-- | .-- | .-- | .-- | .-- | 1.22 | .29 | 3.39[c] | 1.92 - 6.00 |
| Religiosity | .-- | .-- | .-- | .-- | .-- | .-- | 0.71 | .27 | 2.04[b] | 1.19 - 3.50 |
| Concern About Infection | .-- | .-- | .-- | .-- | .-- | .-- | 0.53 | .24 | 1.69[a] | 1.06 - 2.70 |
| Attitudes Toward PWAs | .-- | .-- | .-- | .-- | .-- | .-- | 0.06 | .37 | 1.06 | 0.52 - 2.17 |
| Political Ideology | .-- | .-- | .-- | .-- | .-- | .-- | 0.01 | .22 | 1.01 | 0.66 - 1.55 |
| Distrust of AIDS Experts | .-- | .-- | .-- | .-- | .-- | .-- | -0.29 | .15 | 0.75 | 0.56 - 1.01 |
| Model $X^2$ | 11.81[a] | | 117.59[c] | | 120.31[c] | | 156.78[c] | | | |
| df | 4 | | 9 | | 10 | | 16 | | | |
| change $X^2$ | .-- | | 105.77[c] | | 2.72 | | 36.48[c] | | | |
| change df | .-- | | 5 | | 1 | | 6 | | | |

*Note*. The table reports the parameter estimate (B) and associated standard error (SE) for each predictor in each model. For Model 4, the odds ratio and its estimated range (95% confidence interval) are reported. Model 1 = Experimental variables (actor's sex and sexual orientation, sex of partner). Model 2 = Model 1 + demographic variables. Model 3 = Model 2 + sexual prejudice. Model 4 = Model 3 + casual contact transmission beliefs, AIDS-related attitudes, concern about infection, trust, religiosity, and political ideology. After deleting cases with missing data on any variables, $n = 1137$. [a]$p < .05$ [b]$p < .01$ [c]$p < .001$

Table 4

Percentage of Respondents Incorrectly Believing Infection Is Possible by Respondent Gender and Type of Sexual Activity

| | Respondent Gender | |
|---|---|---|
| Type of Sexual Activity | Men | Women |
| Scenario B: Unprotected sex (no condoms) | | |
| Homosexual (male-male) | 33.0% (*n* = 220) | 45.7% (*n* = 268) |
| Heterosexual | 23.9% (*n* = 343) | 35.6% (*n* = 448) |
| Difference | 9.1 | 10.1 |
| Scenario C: Protected sex (with condoms) | | |
| Homosexual (male-male) | 24.4% (*n* = 220) | 29.2% (*n* = 267) |
| Heterosexual | 14.3% (*n* = 343) | 19.0% (*n* = 448) |
| Difference | 10.1 | 10.2 |

Table 5

Comparison of Five Models for Predicting Inaccurate Responses To Scenario C (Knowledge About Possibility of AIDS Transmission Through Protected Sexual Intercourse Between Uninfected People), Controlling for Responses to Scenario B

| | Model 1 | | Model 2 | | Model 3 | | Model 4 | | Model 5 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Predictor | B | SE | B | SE | B | SE | B | SE | B | SE | Odds Ratio | 95% CI |
| Intercept | -3.20 | .19 | -2.90 | .38 | -2.51 | .57 | -3.16 | .59 | -3.20 | .60 | .--- | .--- |
| Scenario B | 3.35[c] | .22 | 3.31[c] | .22 | 3.31[c] | .22 | 3.26[c] | .23 | 3.29[c] | .23 | 26.91[c] | 17.26 - 41.97 |
| Contrast 1 | -0.28 | .15 | -0.26 | .16 | -0.22 | .16 | -0.24 | .16 | -.19 | .16 | 0.83 | 0.61 - 1.14 |
| Contrast 2 | -0.02 | .08 | -0.03 | .09 | 0.00 | .09 | 0.00 | .09 | .00 | .09 | 1.00 | 0.85 - 1.20 |
| Contrast 3 | 0.15 | .14 | 0.16 | .14 | 0.18 | .14 | 0.19 | .14 | .17 | .14 | 1.19 | 0.90 - 1.57 |
| Contrast 4 | 0.19[b] | .07 | 0.19[b] | .07 | 0.19[a] | .07 | 0.17[a] | .08 | .18[a] | .08 | 1.19[a] | 1.03 - 1.39 |
| Race (Black) | .-- | .-- | 0.26 | .26 | 0.23 | .26 | 0.13 | .28 | 1.31[b] | .44 | 3.72[b] | 1.56 - 8.86 |
| Gender | .-- | .-- | -0.18 | .19 | -0.14 | .19 | -0.19 | .20 | .12 | .21 | 1.13 | 0.74 - 1.71 |
| Income | .-- | .-- | -0.57[a] | .26 | -0.50 | .27 | -0.49 | .27 | -.54[a] | .27 | 0.59[a] | 0.34 - 1.00 |
| Education | .-- | .-- | 0.17 | .24 | 0.28 | .25 | 0.23 | .25 | .32 | .26 | 1.37 | 0.83 - 2.26 |
| Age (Decades) | .-- | .-- | -0.01 | .06 | -0.02 | .06 | -0.04 | .06 | -.06 | .07 | 0.94 | 0.83 - 1.07 |
| Attitudes Toward Sexual Minorities | .-- | .-- | .-- | .-- | -0.96[a] | .39 | -0.98[a] | .49 | -1.19[a] | .50 | 0.30[a] | 0.12 - 0.80 |

*(table continues)*

Table 5 (continued)

| Predictor | Model 1 B | Model 1 SE | Model 2 B | Model 2 SE | Model 3 B | Model 3 SE | Model 4 B | Model 4 SE | Model 5 B | Model 5 SE | Model 5 Odds Ratio | Model 5 95% CI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Casual contact Beliefs (CCTB) | .-- | .-- | .-- | .-- | .-- | .-- | 0.41 | .38 | .42 | .39 | 1.52 | 0.71 - 3.40 |
| Religiosity | .-- | .-- | .-- | .-- | .-- | .-- | 0.56 | .40 | .58 | .40 | 1.78 | 0.81 - 3.92 |
| Concern About Infection | .-- | .-- | .-- | .-- | .-- | .-- | 0.43 | .31 | .46 | .32 | 1.58 | 0.85 - 2.92 |
| Attitudes Toward PWAs | .-- | .-- | .-- | .-- | .-- | .-- | 0.64 | .48 | .62 | .48 | 1.85 | 0.72 - 4.75 |
| Political Ideology | .-- | .-- | .-- | .-- | .-- | .-- | -0.46 | .30 | -.41 | .30 | 0.66 | 0.37 - 1.19 |
| Distrust of AIDS Experts | .-- | .-- | .-- | .-- | .-- | .-- | -0.27 | .21 | -.34 | .22 | 0.71 | 0.47 - 1.09 |
| Race × Sex | .-- | .-- | .-- | .-- | .-- | .-- | .-- | .-- | -2.02[c] | .56 | 0.13[c] | 0.04 - 0.40 |
| Model $X^2$ | 393.09[c] | | 400.05[c] | | 406.03[c] | | 418.05[c] | | 431.42[c] | | | |
| df | 5 | | 10 | | 11 | | 17 | | 18 | | | |
| change $X^2$ | .-- | | 6.96 | | 5.98[a] | | 12.03 | | 13.36[c] | | | |
| change df | .-- | | 5 | | 1 | | 6 | | 1 | | | |

*Note*. The table reports the parameter estimate (B) and associated standard error (SE) for each predictor in each model. For Model 5, the odds ratio and its estimated range (95% confidence interval) are reported. Model 1 = Responses to Scenario B and experimental variables (actor's sex and sexual orientation, sex of partner). Model 2 = Model 1 + demographic variables. Model 3 = Model 2 + sexual prejudice. Model 4 = Model 3 + casual contact transmission beliefs, AIDS-related attitudes, concern about infection, trust, religiosity, and political ideology. Model 5 = Model 4 + Race × Sex interaction term. After deleting cases with missing data on any variables, $n = 1137$. [a]$p < .05$ [b]$p < .01$ [c]$p < .001$