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Title: Gay = STIs? Exploring gay and lesbian sexual health stereotypes and their implications for prejudice and discrimination

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Abstract

Gay men and lesbian women face health inequities as well as disparate treatment from healthcare providers. Stereotypes surrounding sexual health might contribute to these disparities. In five studies (*N*=1858), we explored sexual health stereotypes about gay men and lesbian women and their implications in prejudice/discrimination. In Studies 1, 2A, and 2B, we found people *explicitly* associated gay men with promiscuity and sexually transmitted infections (STIs) more than lesbian women or straight men/women. In *implicit* association tests, both gay men and lesbian women were more associated with promiscuity and STIs than straight counterparts. Studies 3A and 3B showed that these associations have consequences: people expressed more prejudice and discrimination towards gay men and lesbian women with STIs versus those with non-STIs or straight counterparts with either disease type. Taken together, the current research identifies some psychological factors that may underpin health disparities and healthcare barriers for gay and lesbian people.

Keywords: gay, lesbian, stereotypes, sexual health, intergroup relations, prejudice

Words: 149

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Introduction

In a focus group discussion of young Black men who have sex with men, one participant said the following when commenting on his previous experience with physicians: "They're like so focused on STDs [sexually transmitted diseases] and stuff instead of like the pain, or what you're really going through. They just wanna test you, make sure you ain't got no STDs." Another participant said: "Right when you say you're gay it's like, STD check! Like right away it's like, I didn't come here for that. I gotta itch right here. Like, you know I got an itch on my head, do an STD check? What? No!" (Quinn et al., 2019). As these examples show, sexual minority men are well aware of the stereotypes that surround them regarding sexually transmitted infections (STIs) and believe these stereotypes influence the care they receive.

In fact, both gay men and lesbian women disproportionately face many health issues and healthcare discrimination (Institute of Medicine, 2011) compared to their heterosexual counterparts. For instance, compared to the U.S. population as a whole, gay men have higher rates of STIs like gonorrhea and syphilis, and lesbian women are more likely to be obese. Furthermore, gay and lesbian populations also face disparities beyond physical health, as they have higher rates of mental health issues such as suicide, depression, and substance use (Lim et al., 2014). These disparities in health outcomes are coupled with disparities in healthcare experiences (Lambda Legal, 2010). Gay men and lesbian women are often concerned about how disclosing their sexual minority identity will affect relationships with their healthcare providers (Eliason & Schope, 2001; Mattocks et al., 2015; Smith & Turell, 2017; Tiemann et al., 1998), including the potential for experiencing discriminatory behaviors. There seems to be a basis for this fear, as healthcare professionals are often not well-educated about the health issues of gay and lesbian patients and often hold negative attitudes about these patients (Lim et al., 2014).

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Stereotypes of Gay Men and Lesbian Women

The biases and stereotypes healthcare providers have about their gay and lesbian patients likely have implications for the treatment decisions they make (Fallin-Bennett, 2015; Sabin et al., 2015), making it important to understand their content. However, much of the social psychological literature exploring health-related stereotypes and attitudes towards gay men and lesbian women is outdated. Given that there have been rapid positive shifts in the public's attitudes towards these groups over time (Charlesworth & Banaji, 2019), it is possible that these stereotypes and attitudes towards gay men and lesbian women are also changing, and in a positive manner. The extant literature suggests that stereotypes of gay men and lesbian women more broadly often reflect a gender inversion assumption (Kite & Deaux, 1987), which is that gay men tend to be more feminine in their hobbies, personality traits, and preferences while lesbian women tend to be more masculine (Blashill & Powlishta, 2009). In the context of health, however, gender inversion does not seem to be the underlying mechanism for stereotype content, as there are unique stereotypes that associate gay people (primarily gay men) with promiscuity (Calabrese et al., 2018; Golub et al., 2017; Ross, 2002; Watts & O'Byrne, 2019), risky sexual behaviors (e.g., having sexual intercourse without condoms), and carrying various STIs.

Men are generally seen as more sexual (Levant et al., 2010) and permissive of casual sexual encounters than women (Petersen & Hyde, 2010), gay men are seen as especially promiscuous (Ross, 2002). These stereotypes have consequences, as representations of gay men as promiscuous may engender prejudice and discrimination against gay men, for example, by predicting opposition to gay rights (Pinsof & Haselton, 2017). Furthermore, previous research has shown a link between promiscuity and disease (Murray et al., 2013), suggesting that stereotypes about gay men's promiscuity and sexual diseases might mutually reinforce one another.

For example, gay men are perceived as a health threat to the community (Cottrell & Neuberg, 2005) and associated with AIDS (Hegarty & Pratto, 2001) as well as unprotected or unsafe sex (Calabrese et al., 2018). When presented with a list of diseases, participants most strongly linked

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AIDS, anorexia, hepatitis C, herpes, and HIV (most of which are STIs) with gay men; this association is bi-directional, as the people participants presumed to be gay men were the ones they also assumed would have STIs (Fasoli et al., 2018). While these associations are rooted in reality (i.e., gay men indeed experience higher rates of STIs), there are structural factors (e.g., negative healthcare experiences) that can make these associations self-fulfilling prophecies. Furthermore, previous research shows that people hold these associations even when they are not rooted in reality: for instance, gay and lesbian couples are perceived as having a higher risk of acquiring HIV than heterosexual couples participating in exactly the same sexual practices (Carnaghi et al., 2011).

A limitation of the previous research on sexual stereotypes is that much of it lacks specificity. Many studies have focused on stereotypes about, and attitudes towards, "homosexuals," a term that theoretically includes lesbian women. However, there is reason to expect that in practice "homosexuals" has been widely interpreted as referencing gay men (Black & Stevenson, 1984; Haddock et al., 1993). Despite open-ended responses about stereotypes of "homosexuals" reflecting differing stereotypes for lesbian women and gay men (Kite & Deaux, 1987), there is significantly less literature specifically assessing stereotypes about lesbian women in any domain (Eliason et al., 1993; Wilkinson, 2006). The existing work specifically on sexual health and promiscuity stereotypes of lesbian women has yielded mixed results regarding their similarity to those of gay men. As an example, one study found that lesbian women were less associated with STIs than heterosexual women, but more associated with stereotypically "male" diseases (e.g., alcoholism, heart disease; Fasoli et al., 2018), in line with gender inversion theory (Kite & Deaux, 1987).

Additionally, lesbian women are more implicitly associated with promiscuity than their heterosexual counterparts (Pinsof & Haselton, 2016). Research examining open-ended responses suggests that there are subgroups of lesbian women, such as "studs" or "butch lesbians," who are seen as "sexually deviant" or "hypersexual" (Geiger et al., 2006), but neither the sexually deviant or hypersexual stereotype has been fully corroborated in subsequent research (Brambilla et al., 2011). Lesbian women themselves have reported feeling stereotyped based on their alignment with

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"butch" and "femme" gender presentations, the stereotype of femme-presenting lesbian women being that they are sexually seductive/receptive and partner with butch-presenting women (and not with other femme-presenting women; Levitt et al., 2003) and the stereotype of butch-presenting lesbian women being that they are sexually dominant and partner with femme-presenting women (and not with other butch-presenting women; Levitt & Hiestand, 2004). Again, subsequent research about the actual sexual behavior of butch- and femme-presenting lesbian women did not support these stereotypes (Walker et al., 2012). There is a clear need for research that explicitly disaggregates "homosexual" by gender in order to identify stereotypes that may be specific to lesbian women and distinct from those of gay men, especially in the realm of sexual health.

The Current Research

In five studies, we investigated the content of sexual health-related stereotypes of gay men, lesbian women, and straight women and men and the impact of these beliefs on discriminatory behaviors towards gay men and lesbian women. Study 1 explored the prevalence and content of stereotypes about sexual health and promiscuity through explicit ratings and scales. Studies 2A and 2B extended and added granularity to Study 1 by exploring sexual health and promiscuity stereotypes through open-ended responses and implicit association tests (IATs). Finally, Studies 3A and 3B examined the downstream consequences of these sexual health stereotypes. As the opening quotes demonstrate, stereotypes around the sexual health practices of gay men and lesbian women can lead to differential treatment by others; thus, we included a behavioral measure of discrimination toward gay men (Study 3A) and lesbian women (Study 3B) as well as a measure of prejudice. By including both a measure of prejudice and discrimination, we further investigated whether attitudes and actions towards gay men and lesbian women with stereotypical diseases have moved in tandem toward less bias, or if they have diverged.

Our research adds modern data to the existing literature on sexual health stereotypes of gay men, which is largely informed by the AIDS crisis of the 1980s and 1990s. Furthermore, we add to

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nascent research on sexual health stereotypes of lesbian women and begin to disaggregate sexual health stereotypes of gay "people" by studying sexual health stereotypes of gay men and lesbian women separately. In addition, we examine the implication of these stereotypes on prejudice and discrimination. We utilize a mixed-methods approach by analyzing qualitative and both explicit and implicit quantitative data in a series of five studies. Zero-order correlation, regression, and pairwise comparison tables for each study can be found in supplementary materials. All preregistrations, study materials, supplementary materials, datasets, and data analysis scripts are publicly available on OSF via https://osf.io/gjtac (Study 1), https://osf.io/bne5x (Study 2), and https://osf.io/snd64 (Study 3). For full transparency, we note that we deviated from our pre-registration plan by removing two planned moderators, social dominance orientation (Ho et al., 2015) and attitudes towards gay men and lesbian women (Herek, 1984), from the main text analyses. These analyses can be found in supplementary materials on OSF.

Study 1

Existing work has primarily focused on gay men in isolation. In Study 1 we examined stereotypes for gay men, lesbian women, and straight men and women. We had two hypotheses. First, we expected people would be more likely to associate men with promiscuity and poorer sexual health compared to women, replicating Petersen and Hyde (2010). More importantly, we expected that sexual orientation would moderate this effect such that people would rate gay men as the most promiscuous and as having the poorest sexual health compared to straight men as well as lesbian and straight women. Based on the existing conflicting evidence about stereotypes of lesbian women, we expected lesbian women would be rated as more being promiscuous and having poorer sexual health than straight women. However, previous research only assessed beliefs about lesbian women relative to straight women (Pinsof & Haselton, 2016). There is no research examining lesbian women

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in comparison to straight women and gay and straight men, and the groups included in the comparison set may matter (Chang & Cikara, 2018).

Method

Participants

In a pilot sample of 50 participants, $d = 0.20$ was the smallest effect size we found in pairwise *t*-tests on key study measures. Using this effect size, we conducted a power analysis using G*Power 3.1 (Faul et al., 2009) which indicated that obtaining 199 participants was sufficient to have 80% power at an alpha value of .05 for a within-subjects *t*-test. Accounting for participants who might fail attention checks, we recruited a new sample of 250 participants. We only allowed participants who had a 95% approval rating on Amazon Mechanical Turk and currently resided within the U.S. to view our study. Ultimately, we recruited 252 participants from Amazon MTurk through TurkPrime (Litman et al., 2016) and compensated them $1.00 USD for their time. After excluding 20 participants whose duration of participation was ± 2.5 SDs from the mean duration (as we pre-registered), who requested exclusion of their data, and/or who failed the attention check in the sexual health stereotype measure described below, our final sample included 232 participants[1] (M_{age} = 35.70, SD_{age} = 9.59; 57% male, 40% female, and 3% another identity; 86% heterosexual, 7% bisexual, 5% gay/lesbian, and 2% another identity; and 77% White, 8% Black, 3% Asian, 3% Hispanic/Latinx, and 9% another identity).

[1]Patterns of results were not affected when removing data from non-heterosexual participants. Thus, we retained them for increased statistical power.

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Procedure

We told participants this study was about "social groups in America." After consenting, participants completed a stereotype ranking and a promiscuity measure in a fixed order. Next, participants completed the Attitudes Toward Gay Men[2] (ATG; Herek, 1984) and Social Dominance Orientation (SDO; Ho et al., 2015) scales in a randomized order before reporting demographic information and reading the debriefing. While we pre-registered ATG and SDO analyses, for the sake of space, we report those analyses in supplementary materials.

Measures

Stereotype Ranking Measure. Participants read 15 scenarios in a randomized order and ranked gay men, lesbian women, straight men, and straight women in terms of which target group was the most (rank = 1) to the least (rank = 4) likely to experience that scenario. Three scenarios regarding sexual health were the focal items (i.e., having "risky" sex, acquiring HIV, and having an STI), while the other 11 scenarios (e.g., going to the mall with friends, working in a cubicle, etc.) were filler items to deter participants from guessing the study was about sexual health stereotypes. The last scenario was an attention check in which participants had to rank the numbers 1-4 in ascending order. We reversed the ranks during analysis such that higher numbers indicated a greater expectation of the target experiencing a given scenario.

Promiscuity Measure. We adapted the Brief Sexual Attitudes Scale (BSAS; Hendrick et al. (2006) to capture participants' perceptions of how promiscuous each target group was. This five-item scale had responses ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The promiscuity measure was administered four times, once for each target group (i.e., gay men, straight men,

[2] When we ran Study 1, we were particularly interested in stereotypes around gay men and therefore did not include sexual prejudice measures that included lesbian women. However, the patterns of results below made us question the role of these assumptions about lesbian women, which is in part why we ran the subsequent Studies 2B and 3B focused on lesbian women specifically, which included sexual prejudice measures focused on lesbian women.

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straight women, and lesbian women). The scale asked participants to imagine they were a member of the target group and indicate how much they agreed or disagreed with various statements like "I, a [gay man], do not need to be committed to a person to have sex with them." By adapting the scale in this way (i.e., asking participants to imagine they were a member of the target group instead of asking participants for their attitudes directly), we were better able to assess what participants believed a prototypical member of our target groups (i.e., gay men, straight men, straight women, or lesbian women) was like (for a similar adaptation of racial identification such that participants answered the scale as if they were a member of the target group, see Wilkins, Kaiser, & Rieck, 2010). Responses to each of the five items were averaged together to give one promiscuity score for each social group, with higher numbers indicating more presumed promiscuity on behalf of the target. The four iterations of this scale were reliable: gay men: $\alpha = .94$, $M = 3.65$, $SD = 1.17$; lesbian women: $\alpha = .92$, $M = 3.27$, $SD = 1.13$; straight women: $\alpha = .93$, $M = 2.99$, $SD = 1.17$; and straight men: $\alpha = .93$, $M = 3.78$, $SD = 1.12$.

Results

Statistical Analyses

Although we pre-registered that we would run a linear regression model for the stereotype ranking measure, the measure was on an ordinal scale and repeated within participant. Thus, we used the *clmm* function from the ordinal package in *R* (Christensen & Christensen, 2015) to run a multilevel ordinal regression on all items in the stereotype ranking measure (including the filler scenarios to better account for within-subject variance[3]), regressing target rank onto the interaction between scenario, target gender, and target sexual orientation including a participant random intercept. To make post-hoc comparisons easier, we imposed the "equidistant" threshold criteria in the model. We built the model hierarchically, moving through the main effects model to the three-way model. At each step, the more complicated model was a better predictor of the data.

[3] Patterns of results were not affected when excluding the filler scenarios.

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We separately analyzed promiscuity responses using a multilevel linear regression where target gender and sexual orientation predicted participants' promiscuity responses, including a participant random intercept. For all planned comparisons between means and slopes, significance levels were adjusted to account for multiple comparisons with the *emmeans* package (Lenth & Lenth, 2018) in *R*.

Stereotype Ranking Measure

In line with hypotheses, there was a significant main effect of target gender, χ^2 (1, N = 12300) = 573.88, $p < .001$, and target sexual orientation, χ^2 (1, N = 12300) = 197.35, $p < .001$, on participants' beliefs about the likelihood of the targets engaging in various behaviors. More importantly, this was qualified by a significant two-way interaction, χ^2 (1, N = 12300) = 1076.36, $p < .001$ (Figure 1). To interpret this interaction, we examined pairwise comparisons between each of the targets for our focal scenarios: engaging in risky sexual behavior, acquiring HIV, and having an STI.

For the likelihood of engaging in risky sexual behavior, pairwise comparisons on the estimated marginal means of sexual orientation for each gender group showed straight (M = 1.83) and lesbian women (M = 1.79) were seen as equally likely to engage in risky sexual behavior, z = 0.47, p = .966, while straight men (M = 2.87) were seen as more likely than both lesbian, z = 11.70, $p < .001$, and straight women, z = 11.52, $p < .001$. Gay men (M = 3.56) were seen as significantly more likely to engage in risky sexual behavior than all other target groups: lesbian women, z = 23.05, $p < .001$, straight women, z = 22.92, $p < .001$, and straight men, z = 8.94, $p < .001$. For the likelihood of acquiring HIV, straight women (M = 1.95) were seen as more likely to acquire HIV than lesbian women (M = 1.69), z = 3.17, p = .008, and straight men (M = 2.63) were seen as more likely than both lesbian, z = 10.40, $p < .001$, and straight women, z = 7.63, $p < .001$. Again, gay men (M = 3.82) were seen as more likely to acquire HIV than all other target groups: lesbian women, z = 32.29, $p < .001$, straight women, z = 27.34, $p < .001$, and straight men, z = 16.96, $p < .001$. The pattern for the

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likelihood of having an STI mimicked that of the HIV measure. Among target women, straight women (M = 1.96) were seen as more likely to have an STI than lesbian women (M = 1.71), z = 2.90, p = .019, and straight men (M = 2.63) were seen as more likely than both lesbian, z = 11.57, p < .001, and straight women, z = 9.12, p < .001. Finally, gay men (M = 3.61) were seen as more likely to have an STI than all other target groups: lesbian women, z = 25.29, p < .001, straight women, z = 21.46, p < .001, and straight men, z = 10.36, p < .001.

Promiscuity Measure

As hypothesized, there was a significant main effect of target gender on participants' perceptions of promiscuity, $F(1, 672) = 128.83$, p < .001. Participants reported that men (M = 3.71, SD = 1.15) were overall more likely to be promiscuous than women (M = 3.13, SD = 1.16), $t(469) = 11.49$, p < .001, d = 0.51. More importantly, the two-way interaction was significant, $F(1, 672) = 16.35$, p < .001 (Figure 2). While lesbian women (M = 3.27, SD = 1.13) were seen as significantly more likely to be promiscuous than straight women (M = 2.99, SD = 1.17), $t(234) = 3.95$, p < .001, d = 0.25, there was no difference in perceived promiscuity of gay (M = 3.65, SD = 1.17), and straight men (M = 3.78, SD = 1.12), $t(234) = -1.84$, p = .254, d = 0.11.

Discussion

In Study 1, participants ranked gay and straight men and women according to who were most (to least) likely to engage in risky sexual behavior, acquire HIV, and have STIs. Participants also indicated how promiscuous they thought each of these groups were. Supporting our first hypothesis, participants ranked men as more promiscuous and more likely to experience negative sexual health outcomes (i.e., risky sexual behavior, HIV, and STIs) than women.

Our second hypothesis was that target sexual orientation would moderate the influence of target gender, which it did, albeit not entirely as anticipated. Participants reported gay men as the group most likely to engage in risky sex and have negative sexual health outcomes but there was no difference in participants' perceptions of gay and straight men's promiscuity. The least amount of variance was present in the stereotype ranking measure for gay men as a target group (i.e., the 95%

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confidence intervals were most narrow; Figure 1), suggesting that people were much more in agreement about rankings for gay men than any other group. Conversely, it was straight women who were more associated with HIV and STIs than lesbian women, but there were no differences in association with risky sex between lesbian and straight women. Further, lesbian women were seen as more promiscuous than straight women.

Taken together, these findings support that explicit stereotypes linking gay men with promiscuity and negative sexual health outcomes are prevalent in society today and add to the limited literature on sexual health and promiscuity stereotypes for lesbian women. While Study 1 adds promising data to a limited evidence base, there is a possibility that responses on some of the self-report measures were skewed. For example, the promiscuity measure had participants answer as if they were a gay or straight man or women. Given that the majority of our participants were straight, this measure might have caused participants to use themselves to answer for straight targets and draw on stereotypes to answer for gay and lesbian targets. Study 2 addresses potential issues in self reports by examining stereotypes using implicit measures and open-ended responses. Open-ended responses allow us to examine the spontaneous associations participants have between sexual orientation, gender, and sexual health stereotypes without biasing their responses in any one direction while implicit measures give us a window to assess the strength of these associations on a more unconscious, automatic level.

Studies 2A and 2B

Studies 2A and 2B extend and provide further exploration on the work of Study 1 showing associations between gay men/lesbian women and sexual health constructs. Specifically, we explored open-ended and implicit content of sexual health stereotypes in Studies 2A and 2B. We had similar hypotheses as in Study 1, such that participants would indicate more negative stereotypes about sexual health and promiscuity with men compared to women, and gay men especially. In the open-ended measure, we expected similar findings as in Study 1; participants would respond with

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words regarding sexual health outcomes and promiscuity with more frequency, and thus with more negative valence, for gay men than for other target groups. We also anticipated that promiscuity would be mentioned more frequently for lesbian women than for straight women while STIs would be mentioned more frequently in relation to straight women than lesbian women. In the implicit measure, we expected gay and lesbian targets to be more quickly associated with stimuli regarding STIs and promiscuity, compared to straight targets.

Method

Participants

Because previous research exploring implicit attitudes towards gay men found medium effect sizes (Lai et al., 2014), we conducted a power analysis utilizing a medium effect size which indicated that 158 participants were needed to conduct an *F*-test with 80% power at an alpha value of .05. To account for participant exclusions and low response yields on the qualitative measure, we planned to recruit 200 participants. In Study 2A, due to higher than expected sample size attrition from the analysis requirements for IATs, we deviated slightly from our pre-registered sample size and expanded our recruitment efforts to include an additional 20 participants. In total, 217 participants (M_{age} = 35.88, SD_{age} = 9.95; 60% male, 38% female, and 2% another identity; 82% heterosexual, 14% bisexual, 4% gay/lesbian, and 2% another identity; and 70% White, 13% Black, 10% Asian, and 7% Hispanic/Latinx) who had at least a 95% approval rating on Amazon MTurk and resided in the U.S. participated through TurkPrime and received $2.50 USD compensation for their time. In Study 2B, where only IATs were conducted, we recruited 200 participants[4] exactly (M_{age} = 37.60, SD_{age} = 10.55; 56% male, 39% female, and 4% another identity; 70% heterosexual, 22% bisexual, 4% gay/lesbian, and 4% another identity; and 66% White, 22% Black, 4% Asian, 3%

[4] Patterns of results were not affected when removing data from non-heterosexual participants. Thus, we retained them for increased statistical power.

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Hispanic/Latinx, and 5% another identity) using the same inclusion criteria, recruitment process, and payment as Study 2A.

Procedure

We told participants this study was about "social groups in America." After providing consent, participants completed an open-ended sexual stereotype measure separately for each of the four social groups (i.e., gay men, lesbian women, straight women, and straight men) in a randomized order (Study 2A only). Next, participants completed two IATs (Promiscuity and STI) for either gay men (Study 2A) or lesbian women (Study 2B) in a randomized order. Participants ended the study by providing demographic information, receiving their IAT results, and reading the debriefing.

Measures

Sexual Stereotype Open-Ended Response. We asked participants to list and discuss any stereotypes they believed exist in society "regarding the sexual health or sexual practices" for each of the four social groups. This measure was meant to capture participants' spontaneous sexual health beliefs without providing any anchors. This measure was present only in Study 2A.

Implicit Association Tests (IATs). An IAT measures implicit associations between concepts by comparing reaction speeds during various categorization tasks. The faster one can categorize two concepts together, the more they are presumed to be implicitly associated with one another (Greenwald et al., 1998). We administered two IATs exploring participants' implicit associations between "homosexuality" (either gay men in Study 2A or lesbian women in Study 2B) and promiscuity/STIs.

The promiscuity IAT was adapted from Pinsof and Haselton (2016) and measured participants' associations between the concept of gay/straight (Study 2A) or lesbian/straight (Study 2B) and the attribute of promiscuity/monogamy. Gay stimuli were adopted from Pinsof and Haselton (2016) and included the word "gay," photographs of two men embracing, and clip art of two men

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together while the straight stimuli included the word "straight," photographs of a man and woman embracing, and clip art of a man and a woman together (Nosek et al., 2007; see supplementary materials). Lesbian stimuli similarly included the word "lesbian," photographs of two women embracing, and clip art of two women together. Promiscuity/monogamy stimuli were all text-based and included the words *casual sex, horny, hook-up, one-night stand,* and *lustful* for the promiscuity category and *married, devoted, faithful, loving,* and *matrimony* for the monogamy category.

The STI IAT explored participants' associations between the concept of (gay or lesbian) homosexuality/heterosexuality and the attribute of STIs/non-STIs, adapted from Fasoli et al. (2018). The sexual orientation stimuli were identical to the stimuli utilized in the promiscuity IAT although with different category labels. The disease stimuli for this IAT were all text-based and included: *herpes, AIDS, HIV, syphilis, chlamydia,* and *gonorrhea* for the STIs category and *epilepsy, diabetes, cancer, heart disease, arthritis,* and *asthma* for the non-STIs category.

For all IATs, we told participants to classify the words and images into groups as quickly but as accurately as possible. Participants completed a total of seven blocks. The first block consisted of participants categorizing sexual orientation stimuli. The categories "Heterosexual"/"Straight" and "Homosexual"/"Gay" (Study 2A) or "Homosexual"/"Lesbian" (Study 2B) were randomized to be displayed on either the left or right side of the screen. We told participants to press the "e" key if the word presented in the center of the screen belonged to the left category or the "i" key if the word belonged to the right category. In the second block, participants categorized either the promiscuity/monogamy attribute or the STIs/ non-STIs attribute depending on the IAT, again using the "e" or the "i" key. In the third and fourth blocks, participants categorized both the concepts and the attributes at the same time, either in a congruent (e.g., categorizing Gay/Lesbian and Promiscuous using the same key) or incongruent (e.g., categorizing Gay/Lesbian and Monogamous using the same key) way. The fifth block switched the side of the concept categories; if participants had originally sorted gay/lesbian stimuli on the left, in this block, participants would sort them to the

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right. Blocks six and seven again had participants classify both sexual orientation and promiscuity, but this time utilizing the condition (congruent or incongruent) to which participants had not yet been exposed. The third and sixth blocks were practice; we only used the data from the fourth and seventh blocks for analysis.

For all seven blocks, if an incorrect classification was made, the software displayed a red "X" in the center of the screen and participants needed to make the correct classification before continuing to the next stimuli. If participants were faster to categorize the congruent blocks than the incongruent blocks, they were considered to have more strongly associated gay/lesbian stimuli with promiscuity or STIs. We utilized the *D* scoring algorithm, recommended by Greenwald et al. (2003) to calculate IAT effect sizes. We removed trials that had response latencies that were either above 10000 *ms* or under 300 *ms* before calculating mean response latencies for each block. In addition, we excluded data from participants who had response latencies under 300 *ms* for >10% of trials. Next, the mean response latency in the incongruent trial was subtracted from the mean response latency in the congruent trial to calculate a *D* score, where a higher value indicates a stronger implicit association between gay/lesbian stimuli and promiscuity/STIs. Exclusions based on these guidelines yielded 81 participants excluded in Study 2A and 93 participants excluded in Study 2B. Although the proportion of participants with excluded IAT data exceeds that which is standard in the literature, this was presumed to be due to the nature of participants completing multiple IATs at the same time. Inclusion of excluded IAT data did not yield significantly different IAT results (mean IAT *D* scores with full IAT data inclusion were within the reported 95% confidence intervals).

Results

Statistical Analyses

Stereotype Open-Ended Response. We analyzed the open-ended response measures in two ways. First, we analyzed the sentiment polarity, or overall positivity or negativity, of the responses using the *R* package sentimentr (Rinker, 2019). We then used a linear regression to examine the

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effects of target sexual orientation and gender on participant sentiment. Second, we analyzed the most frequently reported words for each social group by creating word clouds using the *R* package "wordcloud" (Fellows et al., 2018). We used identical stopwords (i.e., words excluded from analyses due to commonality, such as "the" and "which") for each group when creating the word clouds, except when unique stopwords were appropriate (e.g., we included the stopword "gay men" when creating the word cloud for gay men, because it was frequent in responses, but not in an informative way, but we did not use "gay men" as a stopword for any other groups). We used chi-square tests to analyze the frequency of participants' reports of the five most reported words. We presumed that the words participants would spontaneously generate would relate to promiscuity and STIs and expected these words to be reported with high frequency. No participant responses were excluded from these analyses.

IATs. We used *t*-tests to determine whether the IAT *D* scores were significantly different from zero.

Stereotype Open-Ended Response Measure

Participant responses were on average 19.2 words long and took an average of 85.0 seconds to complete. Sample participant responses included (emphasis added) "Lesbian women tend to be more masculine and dominant in their relationships with other women," "I think most stereotypes about straight women relate with them being uninterested in sex, sexual gatekeepers, and the more promiscuous members of this group being 'slutty'," "[Straight men] do not like to use condoms. Some [are too] pushy when trying to get a woman to have sex," and "Gay men are constantly horny. Gay men don't take proper precautions when having sex. They only care about pleasure."

Sentiment Analysis. For participants' sentiment when describing the sexual health and sexual practices of target groups there were main effects of target gender, $F(1, 554) =$

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11.65, $p < .001$ and target sexual orientation, $F(1, 557) = 78.71$, $p < .001$, but no interaction effect, $F(1, 554) = 0.46$, $p = .496$. Participants used more negative sentiment to describe men ($M < 0.01$, $SD = 0.24$) than women ($M = 0.06$, $SD = 0.24$), $t(734) = 2.87$, $p = .004$, as well as to describe gay targets ($M = -0.04$, $SD = 0.23$) than straight targets ($M = 0.10$, $SD = 0.24$), $t(735) = -7.83$, $p < .001$. We conducted planned contrasts comparing the valence of descriptions of each target group to that of every other target group individually and found significant differences for all groups in an additive fashion. Participants used the most negatively valenced words when describing the sexual health stereotypes about gay men ($M = -0.04$) and the most positively valenced words when describing those about straight women ($M = 0.10$). Outside of these extremes, participants did not use more words of either positive or negative valence for lesbian women ($M = -0.01$) and used relatively more positively valenced words when describing straight men ($M = 0.07$).

Word Cloud Analysis. The most frequent words reported by participants for the sexual health of each target social group are displayed in Figures 3 (stratified by target group) and 4 (stratified by the fifteen most frequently reported words). The five most frequently mentioned words across all four groups were STDs and/or STIs ($n = 109$), partners ($n = 108$), promiscuous ($n = 92$), relationships ($n = 81$), and HIV and/or AIDS ($n = 78$) (as seen in Figure 4). We conducted chi-square tests for the five most frequently mentioned words to determine significant differences in word frequency by target group. The words "partners," $X^2(3) = 7.71$, $p = .052$, and "relationships," $X^2(3) = 4.30$, $p = .23$, were not mentioned with a significantly different frequency among target groups.

For the remaining three words ("STDs"/"STIs," "promiscuous," and "HIV"/"AIDS") there were significant differences among the target groups, STDs/STIs: $X^2(3) = 41.24$, $p < .001$, promiscuous: $X^2(3) = 72.96$, $p < .001$, HIV/AIDS: $X^2(3) = 127.14$, $p < .001$. Pairwise comparisons revealed that there

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were only significant differences between target groups for gay men such that these terms were mentioned more frequently when describing gay men than when describing straight men, lesbian women, or straight women, STDs/STIs: all *p*s < .001, all Cramér's *V*s > 0.28, promiscuous: all *p*s < .001, all Cramér's *V*s > 0.28, HIV/AIDS: all *p*s < .001, all Cramér's *V*s > 0.35. For all three terms, there were no other significant differences between the other target groups, STDs/STIs: all *p*s > .999, all Cramér's *V*s < 0.009, promiscuous: all *p*s > .624, all Cramér's *V*s < 0.06, HIV/AIDS: all *p*s > .065, all Cramér's *V*s < 0.12.

Implicit Association Tests (IATs)

Gay Men (Study 2A). The mean Promiscuity IAT *D* score was 0.37 (*SD* = 0.48; 95%CI [.29,.45]) and significantly differed from zero, $t(144) = 9.40$, $p < .001$, $d = 1.10$. Similarly, the mean STI IAT *D* score was 0.37 (*SD* = 0.44, 95%CI [0.30,0.44] and significantly differed from zero, $t(144) = 9.95$, $p < .001$, $d = 1.17$, supporting our hypothesis that (male) homosexuality was implicitly associated with promiscuity and STIs. Scores on the two IATs were correlated, $r = .30$, $p < .001$.

Lesbian Women (Study 2B). The mean Promiscuity IAT *D* score was 0.16 (*SD* = 0.48; 95%CI [.09,.23]) and significantly differed from zero, $t(104) = 4.56$, $p < .001$, $d = 0.47$. Similarly, the mean STI IAT *D* score was 0.14 (*SD* = 0.45, 95%CI [0.08,0.20] and significantly differed from zero, $t(107) = 4.45$, $p < .001$, $d = 0.45$, supporting our hypothesis that (female) homosexuality was implicitly associated with promiscuity and STIs. Scores on the two IATs were correlated, $r = .28$, $p < .001$.

Discussion

Participants responded to open-ended measures (Study 2A) asking about stereotypes about the sexual health and sexual practices of gay/straight men/women as well as completed measures assessing their implicit associations between gay men (Study 2A)/lesbian women (Study 2B) and (1) promiscuity and (2) STIs. Incorporating both open-ended and implicit measures in this work synergistically increases our understanding of how people implicitly see the sexual health practices of straight men and women, gay men, and lesbian women. In line with our hypotheses, and

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replicating findings from Study 1, participants reported more negative sexual health stereotypes for gay men than any other target group. Not only was the average valence of the responses about stereotypes for gay men more negative than for all other target groups, but the content of the responses was significantly different. Participants spontaneously described gay men with the words "STDs" and "STIs," "promiscuity," and "HIV/AIDS," more frequently than other groups. While the average valence of responses about stereotypes for lesbian women was more positive than for gay men, it was more negative than for both straight women and straight men, highlighting the overall lower status of gay men/lesbian women targets compared to straight targets.

Additionally, these associations were present implicitly, as participants more strongly associated promiscuity and STIs with both gay men and lesbian women than their heterosexual counterparts on the IATs. The implicit associations between promiscuity and STIs were roughly twice as strong for gay men as for lesbian women. While the gay and lesbian IATs were not administered in the same sample, comparisons of the 95% confidence intervals of the effect size support this assertion. The 95% confidence intervals for both promiscuity and STI IATs with gay stimuli ([.29,.45] and [0.30,0.44], respectively) exclude the 95% confidence intervals for IATs with lesbian stimuli ([.09,.23] and [0.08,0.20], respectively), suggesting that lesbian women are not as associated with negative health stereotypes as gay men.

Connecting findings from Studies 1, 2A, and 2B suggests that although gay men and straight men are perceived as equally promiscuous, there may be a presumption about the type of sex gay men have that drives the association of gay men with poor sexual health outcomes. Additionally, stereotypes about lesbian women seem to be mixed. On one hand, the words used to describe stereotypes about the sexual health and sexual practices of lesbian women were more negatively valenced than the words used to describe straight women and straight men. However, the frequency with which participants spontaneously described stereotypes about lesbian and straight women as

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including promiscuity and STIs did not differ, suggesting that the negativity associated with lesbian women might not necessarily be rooted in stereotypes about sexual health.

Studies 3A and 3B

Studies 1, 2A, and 2B suggest that potentially harmful stereotypes around sexual health are prevalent for gay men and lesbian women, albeit less so, and participants implicitly associate these targets with STIs. An outstanding question is what the implications of these stereotypical health outcomes are when they are made explicit for gay men and lesbian women. While some research suggests that people can identify individuals with STIs based on facial cues alone—without any other explicit information about the individuals (Tskhay, Wilson, & Rule, 2016)—our findings in Studies 1, 2A, and 2B imply that knowing that someone is gay/lesbian may cause others to make assumptions about their STI status, which may result in compounded prejudice and discrimination. In other words, are gay men and lesbian women with STIs evaluated and/or treated differently than their straight counterparts? Lesbian and gay couples are evaluated more negatively than straight couples, even when engaged in the same behaviors (Carnaghi et al., 2011), so we might assume that they will be evaluated more negatively when they have STIs as well. In Studies 3A and 3B, we investigated prejudice toward, and discrimination against, gay men (Study 3A) and lesbian women (Study 3B) by having participants distribute a finite amount of money amongst various hypothetical patients requesting donations for their healthcare situations. These patients differed in their sexual orientation (i.e., straight or gay/lesbian) and the type of disease they had (i.e., either an STI or a non-STI).

In both studies, we expected main effects of sexual orientation and disease type such that participants would distribute less money to, and report more prejudice toward, gay/lesbian patients and patients with STIs. We also hypothesized an interaction between disease type and sexual orientation such that participants would allocate the least amount of funding to, and report the most prejudice toward, gay men and lesbian women patients with STIs. While our more explicit

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measures of association between lesbian women, promiscuity and STIs were mixed, we believe this is because lesbian women were being compared in the same set as gay men. Given past work showing that gay men are seen as the prototype for gay people in general (Black & Stevenson, 1984; Haddock et al., 1993), including gay men in comparisons with lesbian women might reduce the salience of lesbian women's sexuality. However, when the comparison is only straight women, as in the following study, the salience of lesbian women's sexuality might be heightened, increasing the likelihood that they are more associated with the disease and will thus face discrimination. Indeed, the results from Study 2B show this effect, as lesbian women were implicitly associated more with promiscuity and STIs compared to straight women.

Method

Participants

Based on an effect size (f = 0.16) found in a pilot sample of 50 participants (not included in the final analysis), we conducted a power analysis which indicated that we needed 644 participants to conduct an F-test with 80% power at an alpha value of .05. Accounting for participants who might fail attention checks, we planned to recruit 700 participants from the Harvard Digital Lab for the Social Sciences (DLABSS; Strange et al., 2019), an online, volunteer laboratory for human subjects research based in Cambridge, MA. However, we needed to end recruitment after obtaining 669 participants in Study 3A and 678 participants in Study 3B due to time constraints.

After excluding data for participants who requested exclusion (Study 3A: n = 2; Study 3B: n = 7) and who failed either of two attention checks (Study 3A: n = 70; Study 3B: n = 59), our final sample size in Study 3A was 597 participants (M_{age} = 52.77, SD_{age} = 16.82; 60% male, 37% female, and 3% another identity; 86% heterosexual, 5% bisexual, 4% gay/lesbian, and 5% another identity; 87% White, 2% Black, 1% Asian, 1% Hispanic/Latinx, and 9% another identity) and in Study 3B was 612

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participants[5] (M_{age} = 56.17, SD_{age} = 16.33; 61% male, 37% female, and 2% another identity; 84% heterosexual, 6% bisexual, 4% gay/lesbian, and 6% another identity; 88% White, 2% Black, 2% Asian, 2% Hispanic/Latinx, and 6% another identity). Participant attrition after the IAT segment of Study 3A occurred due to the design of switching platforms from Qualtrics to Project Implicit to administer the IAT. Thus, demographic information was available for 468 of 597 participants (78.4%) in Study 3A. Because of the sharp attrition due to the IAT in Study 3A, we decided to eliminate the IAT for Study 3B.

Procedure

We told participants this study examined how people make decisions related to healthcare. We presented participants with four patient vignettes, in a random order, and asked them to indicate their emotions and attitudes for each patient. After responding to all four vignettes, participants completed the funding allocation measure, the IAT (Study 3A only), and finally read the debriefing. Discussion of covariates for these studies is included in supplementary materials for space reasons.

Measures

Patient Vignettes. Participants were told they would read about and hear from patients who were requesting financial support to deal with their personal healthcare issues. Each vignette provided general information about a patient's healthcare situation, a picture of the patient (randomized from a set of 10 computer-generated images of White men (Study 3A) or White women (Study 3B); see supplementary materials for images), and a written statement from the patient. The four patients described in the vignettes varied in their sexual orientation (gay or straight) and the nature of the disease they had acquired (sexually transmittable: gonorrhea/HIV, or non-sexually transmittable: heart disease/diabetes). Participants read about four patients, one from each of the

[5] Patterns of results were not affected when removing data from non-heterosexual participants for Study 3A nor 3B. Thus, we retained them for increased statistical power.

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four possible combinations of sexual orientation and disease in a randomized order. Patient diseases were explicitly mentioned in the vignettes and patient sexual orientation was alluded to by mentioning the patient's partner as either a "wife" or a "husband." The vignettes presented both STIs and non-STIs as something the patient ostensibly had control over. In all vignettes, the patients were portrayed as culpable for acquiring the diseases they had, having not engaged in known health-preserving/-promoting actions. A sample vignette is included below for a straight, non-STI condition:

> Meet Shane. After a lifetime of poor eating habits and not exercising enough, Shane has been diagnosed with Type 2 diabetes. He works hard to make sure he can afford his insulin injections and blood sugar medications. Although he is fortunate to have health insurance, recently the cost of his insulin doubled. This new cost is making it hard for Shane and his wife to afford the medications and treatments on top of rent and bills. Shane writes: "My wife and I would really appreciate any financial help to pay for insulin to control my diabetes while we adjust our health care plan."

Prejudice Measure. This was meant to capture the extent of negative valence/prejudice in participants' affect and attitudes towards each of the patients in the vignettes. In total, five items were included: empathy, blame, anger, disgust, and friendliness (Herek & Capitanio, 1999; Philip et al., 2014). Two items (empathy and friendliness) were reverse coded so that higher numbers represented increased patient negativity. Each item had responses ranging from 1 (*Not at all*) to 7 (*A lot*). Sample items included "How much do you feel this person is to blame for their condition?" and "How empathetic do you feel towards this person?"

Because an exploratory factor analysis revealed that all five items loaded onto one factor in Study 3A (loading values for these items ranged from .50 to .77), $\chi^2(5) = 83.49$, $p < .001$, and in Study 3B (loading values ranged from .57 to .74), $\chi^2(5) = 80.77$, $p < .001$, we analyzed data on only the composite measure rather than the five individual items. Responses on each item were averaged into one score, such that a higher score corresponded with more prejudice. Each participant filled

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out this scale four times, once for each patient vignette; the four iterations of this scale were left unaggregated, meaning each participant had four scores for this measure, one for each of the four vignettes presented (Study 3A: all αs > .77; Study 3B: all αs > .76).

Funding Allocation Measure. Participants were given a virtual sum of $500 and were asked to distribute the money however they wished amongst each of the four patients who were requesting donations for medical care; thus, they were able to give between $0 and $500 to each patient, but the total sum donated to the four patients combined must have equaled $500.

Covariates. Covariate scales were identical to those presented in Study 1, with the exception that the ATG subscale was used in Study 3A and the ATL (Herek, 1984; Attitudes Toward Lesbians) subscale was used in Study 3B. The IAT in Study 3A was identical to the STI IAT presented in Study 2A and the mean IAT score was D = 0.68 (SD = 0.48, 95%CI [0.62,0.74]).

Results

Statistical Analyses

We used a multilevel linear regression to examine the effects of target sexual orientation and disease on each dependent variable (the funding measure and the prejudice measure) separately. We controlled for within-subject variance by including a participant random intercept and reported results from the fully saturated models. For all planned comparisons between means and slopes, significance levels were adjusted to account for multiple comparisons using the Tukey method with the emmeans package in *R*.

Prejudice Measure

Study 3A. As hypothesized, there were significant main effects of both sexual orientation, $F(1, 1469.4) = 41.02$, $p < .001$, and disease type, $F(1, 1469.4) = 6.75$, $p = .009$, on participants' prejudice toward targets. Participants reported more prejudice toward gay men targets (M = 3.51) than toward straight men targets (M = 3.27), $t(692) = 4.00$, $p < .001$, d = 0.21, and more prejudice toward targets with STIs (M = 3.44) than toward targets with non-STIs (M = 3.34), $t(980) = 2.50$, p =

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.013, d = 0.08. These main effects were qualified by a significant interaction between sexual orientation and disease type, $F(1, 1470.2) = 3.99$, $p = .046$.

The interaction between sexual orientation and disease type reveals that participants did not report different amounts of prejudice toward straight men with STIs (M = 3.28) and straight men with non-STIs (M = 3.26), $t(1469.65) = -0.43$, $p = .975$, $d = -0.04$, but participants did report more prejudice toward gay men with STIs (M = 3.60) than those with non-STIs (M = 3.43), $t(1469.65) = -3.25$, $p = .006$, $d = -0.16$. In other words, the disease type did not significantly impact levels of prejudice toward straight men but did significantly impact levels of prejudice toward gay men, such that participants reported the most prejudice toward gay men with STIs.

Study 3B. As hypothesized, there was a significant main effect of sexual orientation, $F(1, 1176) = 19.09$, $p < .001$, on participants' prejudice toward targets. Participants reported more prejudice toward lesbian women targets (M = 3.47) than toward straight women targets (M = 3.29), $t(1565.6) = 2.98$, $p = .003$, $d = 0.15$. We did not find the expected main effect of disease type, $F(1, 1176) = 0.67$, $p = .414$. The main effect of sexual orientation was qualified by a significant two-way interaction between sexual orientation and disease type, $F(1, 1176) = 9.05$, $p = .003$.

The interaction between sexual orientation and disease type revealed that participants reported more prejudice toward lesbian women with STIs (M = 3.55) than toward any other target group: lesbian women with non-STIs (M = 3.39), $t(1176) = 2.70$, $p = .035$, $d = 0.12$; straight women with non-STIs (M = 3.33), $t(1176) = 3.67$, $p = .001$, $d = 0.14$, and straight women with STIs (M = 3.24), $t(1176) = 5.22$, $p < .001$, $d = 0.15$. There were no other significant differences between target groups, all ps > .060. In other words, sexual orientation and disease type did not significantly impact levels of prejudice toward any group other than lesbian women with STIs.

Funding Allocation Measure

Study 3A. There was a significant main effect of sexual orientation, $F(1, 1909) = 50.83$, $p < .001$, and disease type, $F(1, 1909) = 41.06$, $p < .001$. On average, participants allocated 14.72 fewer

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dollars to gay men targets (M = \$110.28, SD = 79.31) than to straight men targets (M = \$139.72, SD = 101.76) and allocated 13.23 fewer dollars to targets with STIs (M = \$111.77, SD = 91.76) than to targets with non-STIs (M = \$138.23, SD = 91.15). However, our hypothesized interaction was not significant, $F(1, 1908) = 0.14$, $p = .708$. Altogether, there was an additive effect of disease type and sexual orientation such that gay men with STIs were allocated the least funding (M = \$97.05) and straight men with non-STIs were allocated the most funding (M = \$152.95). Gay men with non-STIs (M = \$123.51) and straight men with STIs (M = \$126.49) were allocated intermediate funding. Pairwise comparisons between gay men with STIs and each other target group revealed significant differences for all contrasts, all ps < .001, all ds ranging from 0.35 to 0.68 (Figure 5).

Study 3B. There was a significant main effect of sexual orientation, $F(1, 1569) = 25.35$, $p <$ .001. On average, participants allocated 12.42 fewer dollars to lesbian women targets (M = \$112.58) than to straight women targets (M = \$137.42). There was also a significant main effect of disease type, $F(1, 1569) = 37.71$, $p < .001$, such that participants allocated 15.15 fewer dollars to targets with STIs (M = \$109.85) than to targets with non-STIs (M = \$140.15). However, our hypothesized interaction was not significant, $F(1, 1568) = 2.20$, $p = .138$ (Figure 5). Altogether, there was an additive effect of disease type and sexual orientation such that lesbian women with STIs were allocated the least funding (M = \$97.42) and straight women with non-STIs were allocated the most funding (M = \$152.58). Straight women with STIs (M = \$122.27) and lesbian women with non-STIs (M = \$127.73) were allocated intermediate funding. Pairwise comparisons between lesbian women with STIs and each other target group revealed significant differences for all contrasts, all ps < .001, all ds ranging from 0.34 to 0.57 (Figure 5).

Discussion

In Studies 3A and 3B, participants distributed a finite amount of money amongst hypothetical patients who were either gay or straight men (Study 3A) or women (Study 3B) and had diseases that were either STIs or non-STIs. Additionally, participants reported their affect and

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attitudes toward each of these hypothetical patients. Supporting our hypothesis for the prejudice measure, participants reported more prejudicial affect and attitudes toward gay patients (both men and women) than straight patients; interestingly, the expected main effect of disease type was found in target men (i.e., participants reported more prejudice toward men with STIs than men with non-STIs) but not in target women. We found significant interaction effects for both Studies 3A and 3B as hypothesized. In Study 3A, the interaction effect revealed that disease type had no impact on prejudice reported between straight men (i.e., those with STIs or non-STIs), but did for gay men such that the most prejudice was reported toward gay men with STIs. In Study 3B, the interaction effect revealed the most prejudice was reported toward lesbian women with STIs and there were no other significant differences between any other target groups.

Regarding discrimination, in line with our hypotheses, participants gave less money to gay and lesbian patients and less money to patients with STIs. Although we hypothesized an interaction effect, and did not find one, the additive effects of disease type and sexual orientation resulted in gay men and lesbian women with STIs receiving the least funding from participants of all target groups presented. In other words, there was not a synergistic effect of disease type and sexual orientation on discrimination as there was for the prejudice measure.

General Discussion

Gay men and lesbian women face health disparities relative to their heterosexual counterparts as well as prejudice based on assumptions about their sexual practices. The goal of this research was to examine the nature of sexual health-specific stereotypes towards gay men and lesbian women as well as the role of these assumptions in prejudice and discrimination. In Studies 1, 2A, and 2B, we found that gay men were more closely associated with risky sexual behavior and STIs than straight men, lesbian women, or straight women, and more closely associated with promiscuity than straight or lesbian women. Furthermore, participants implicitly associated gay men and lesbian women more strongly with promiscuity and STIs than their straight counterparts. These associations

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were even prevalent in open-ended measures such that the terms "promiscuity," "STIs," and "disease" were reported more frequently for gay men than for the other groups. Moreover, the overall valence of participants' descriptions of stereotypes about the sexual health of gay men was more negative than that of descriptions for the other groups we studied, while the valence of responses about the sexual health of lesbian women was significantly more negative than responses about both straight men and straight women.

In Studies 3A and 3B, we assessed whether gay men and lesbian women with an STI or non-sexually transmitted disease would be treated differently than their straight counterparts. We found that participants felt the most prejudice, and were the most discriminatory, towards gay people with STIs compared to straight people with STIs as well as compared to either gay or straight people without STIs. Thus, associating gay people with STIs may have consequences for how others treat them. For example, to the extent that people associate gay men and lesbian women with STIs, they may view them as "dirty" or "contaminated" (Oaten et al., 2009; Shepherd & Gerend, 2014) and consequently discriminate against them in contexts such as healthcare, employment, and housing.

These studies suggest several inquiries of thought and directions for future research. We highlight two here. The first deals with the relationship between sexual behaviors and sexually transmitted diseases by gender. Our finding in Study 1 that explicitly gay and straight men were seen as equally promiscuous is seemingly inconsistent with other findings, such as gay men being more strongly associated with STIs and risky sexual behavior (Study 1), gay men being more implicitly associated with promiscuity (compared to straight men; Study 2A), and "promiscuity" being mentioned more frequently for gay than straight men (Study 2A). This inconsistency was present for lesbian women as well, as lesbian women were seen as more promiscuous than straight women (Studies 1 and 2B), were viewed as similarly likely to have risky sex and less likely to have an STI or to acquire HIV (Study 1) explicitly but more strongly associated with STIs implicitly (Study 2B).

Taken together, these findings suggest that people may infer different correlates and consequences of promiscuity for the sexual behavior and sexual health of women as compared to

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men. Although gay men and straight men were seen as equally promiscuous, gay men were more likely to be associated with risky sex and STIs. In other words, gay men are seen to be more risky and more likely to be exposed to STIs than straight men engaging in similar amounts of sex, matching previous research (Calabrese et al., 2018; Fasoli et al., 2018). Furthermore, these associations manifested differently across explicit and implicit methods of assessment, suggesting that there might also be disassociations between implications of being seen as promiscuous and the specific way we asked these measures. For example, our explicit measure in Study 1 focused on actually having the disease or engaging in risky sexual behaviors while the implicit measures[6] in Studies 2A and 2B tested associations. The open-ended responses in Study 2A did not tease apart associations from sexual behaviors. Future research should more systematically investigate the connection between explicit and implicit attitudes around promiscuity and sexually transmitted diseases for gay men and lesbian women.

The second direction for future inquiry deals with the differences in sexual health stereotypes for gay men and lesbian women. The results of Studies 1 and 2B suggest that sexual health stereotypes of lesbian women differ from gay men, but our research did not investigate how and why they differ. One possible explanation is that lesbian women are evaluated differently depending on the other groups being considered concurrently. For example, if the comparison set includes only lesbian women and straight women, lesbian women may be viewed as "women who are gay" (sexual orientation salient within the category "women"), whereas if the comparison set additionally includes gay and straight men, lesbian women may be viewed as "gay people who are women" (gender salient within the category "gay"). Thus, the relative salience of lesbian women's sexual orientation versus their gender may shift how they are viewed, namely as more similar to

[6] Of note, the stimuli utilized in the implicit measures in Studies 2A and 2B are adapted from previous research which may not most appropriately operationalize the construct of promiscuity. Future research could investigate alternative operationalizations of promiscuity in this context.

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straight women if their gender is salient, and more different from them (and more similar to gay men) if their sexual orientation is salient.

All three studies asked participants to make comparisons across social groups, and in Studies 1 and 2, gay men were included in these comparisons. Given the robustness of associations of gay men with promiscuity, risky sexual behavior, and HIV and other STIs, we must consider that the inclusion of gay men in the comparisons may have inflated the perceived similarity of the other groups with which they were contrasted. It may be the case that if gay men had not been salient, the contrast between straight and lesbian women may have been more pronounced. The results of Study 3B, in which lesbian and straight women with STIs/non-STIs were the only groups compared, and lesbian women patients were the targets of significantly more discrimination than straight women offer provisional support for this hypothesis. The comparison between lesbian and straight women may also be the most relevant for how lesbian women are treated in their day-to-day interactions, as other people are likely to categorize them as women, making their sexual orientation salient, if/when it is disclosed or presumed. Future research should investigate this possibility.

However, our experiments do not allow us to rule out the possibility that there are stereotypes that are uniquely related to lesbian women that we overlooked. We asked whether stereotypes associated with gay men are also associated with lesbian women. We did not ask the reverse question, which is are stereotypes associated with lesbian women also associated with gay men. For example, one of the most prevalent sexual behavior stereotypes of lesbian women is that they are not very interested in sex (Nichols, 2004), suggesting that the discriminatory behaviors they are most likely to experience related to their sexual health may be ones of omission: for example, a physician neglecting to offer counsel about safe sex practices, declining to test for STIs, or misdiagnosing an STI as some other type of problem. Behaviors like this are not clearly reflected in the measures or vignettes we used, which were, admittedly, initially designed with gay men in mind. Thus, future research should include outcomes that are more specific to lesbian women, for

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example, rating how likely a lesbian woman is to "be disinterested in sex" or "be celibate", as well as asking about sexually transmitted diseases most associated with (lesbian) women, such as HPV.

Limitations

There are several limitations to our work. We outline two additional ones to the caveats mentioned above. First, our findings are likely most relevant to gay men and lesbian women who are white and may be less applicable to gay men and lesbian women of color. In Study 1, participants responded to prompts referencing gay and straight women and men without explicitly mentioning race, which likely led participants to base their responses on white people, who tend to be the implicit default when race is not specified (Devos & Banaji, 2005; Hegarty, 2017; Merritt & Kok, 1995). In Study 2, the IAT stimuli for the gay/lesbian category included pictures, and the pictures of people were of white individuals. In Study 3, the hypothetical patients' vignettes were accompanied by photos, all of which were of white individuals. Given that gender stereotypes vary by race (Ghavami & Peplau, 2013; Wade & Harper, 2020) and racial stereotypes are gendered (Galinsky et al., 2013; Hall et al., 2015; Johnson et al., 2012), and that conceptualizations of gender are intertwined with those of sexuality (Blashill & Powlishta, 2009; Ghavami & Peplau, 2018; Kite & Deaux, 1987; McCreary, 1994), it is likely that stereotypes of gay men and lesbian women may also vary by race, as recent research has indicated (Petsko & Bodenhausen, 2019; Preddie & Biernat, 2020). Future research on stereotypes about the sexual health of gay men and lesbian women should investigate the potentially unique aspects of these stereotypes for members of specific racial groups (Calabrese et al., 2018).

Finally, for these studies we recruited participants without focusing on their sexual orientation or age. Regarding sexual orientation, though some gay, lesbian, and bisexual individuals participated in all three studies, the majority of participants were straight and the patterns of results for all studies held when data from sexual minority participants were excluded. The attitudes of gay men and lesbian women toward other gay men and lesbian women are similar to those of straight people to some degree (Cohen et al., 2009; Salvati et al., 2016; Salvati et al., 2018), but it is likely

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that gay men and lesbian women also have stereotypes of their own groups that differ from those held by the general population (Worthen, 2013), and research focused on them would provide an important element to our understanding of these stereotypes. Regarding age, the mean ages of participants in Studies 3A and 3B were notably higher than in Studies 1, 2A, and 2B. Given that older generations may have stronger associations between gay people and promiscuity and sexual health issues, future research should examine the impact of participant age on held stereotypes examined in this work as well as their implications for prejudice and discrimination.

Conclusion

As our opening example demonstrates, gay men and lesbian women are well aware of the stereotypes they face due to their sexual orientation and this knowledge likely lowers their willingness to see healthcare providers, further leading to poorer health outcomes. In this research, we add to the relatively dated literature on sexual health stereotypes of gay men and the relatively limited literature on sexual health stereotypes of lesbian women. To our knowledge, this work beginning to disaggregate sexual health stereotypes of gay "people" by lesbian women and gay men in a robust mixed methods approach has not been done to date. Taken together, the current research suggests that these stereotypes are prevalent in society and might underpin the healthcare barriers and health disparities faced by gay men and lesbian women. We encourage healthcare providers to consider the stereotypes they hold about sexual minorities and whether these stereotypes influence the care they provide.

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Figures

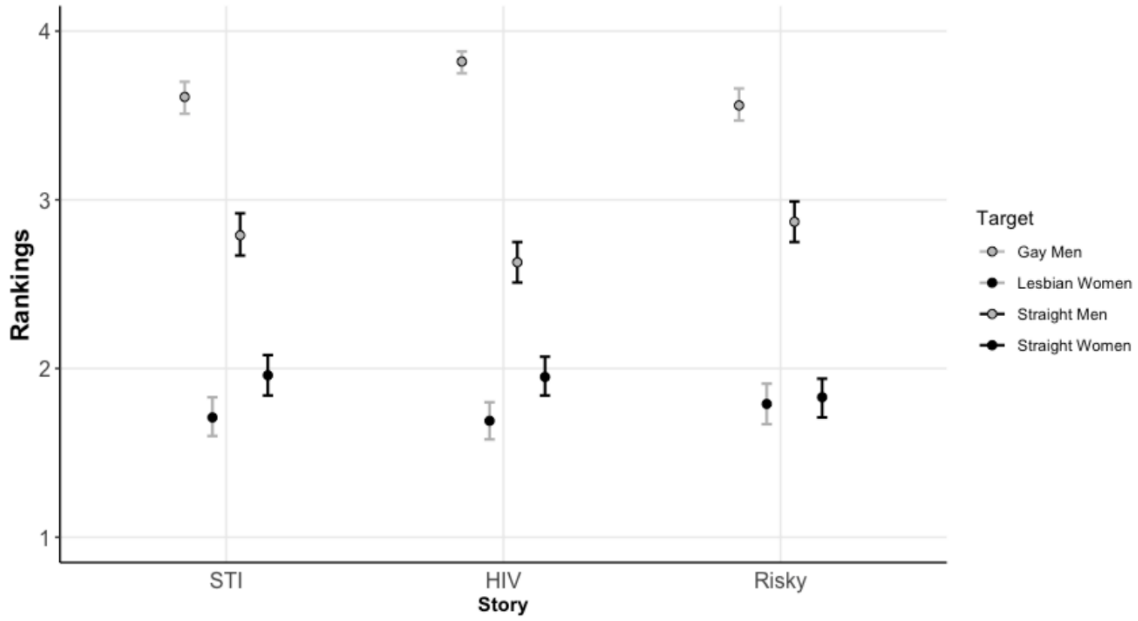


Figure 1: The effect of target gender and sexual orientation on participants' rankings of target group likelihood of having an STI, acquiring HIV, and engaging in risky sexual behavior.

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Figure 2: *The effect of target gender and sexual orientation on presumed promiscuity ratings.*

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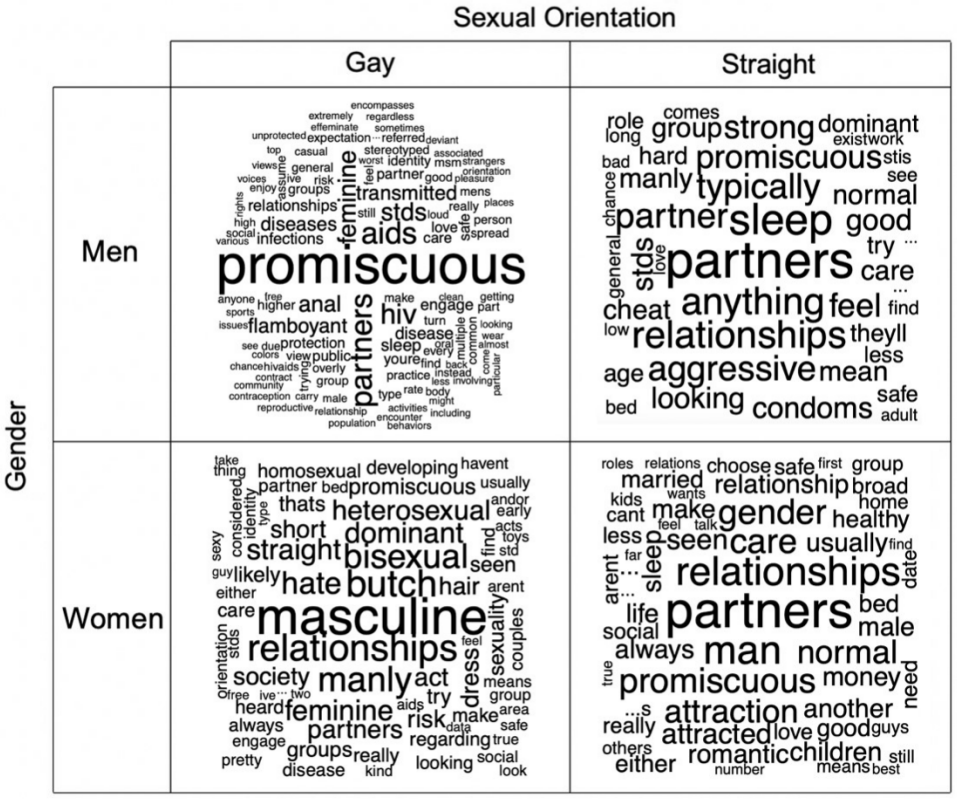


Figure 3: Word clouds of participant open-ended responses regarding sexual health stereotypes of gay and straight men and women. Larger words were mentioned more frequently than smaller words. Note. The relative size of words for each target group reflects the frequency with which the word was reported for that group; there is no relationship between the relative size of the words across different target groups.

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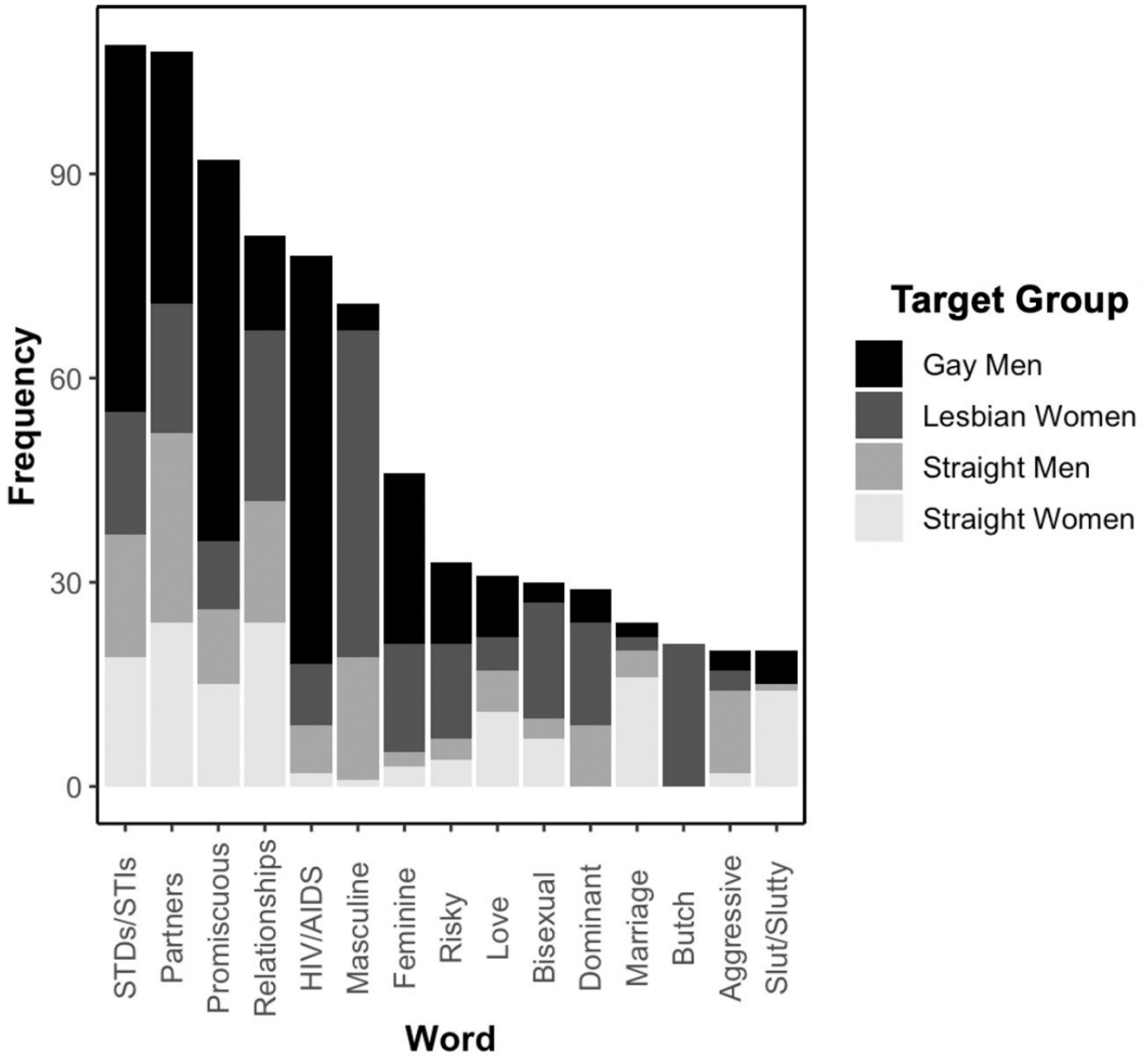


Figure 4: Most frequently mentioned words regarding sexual health stereotypes stratified by target group.

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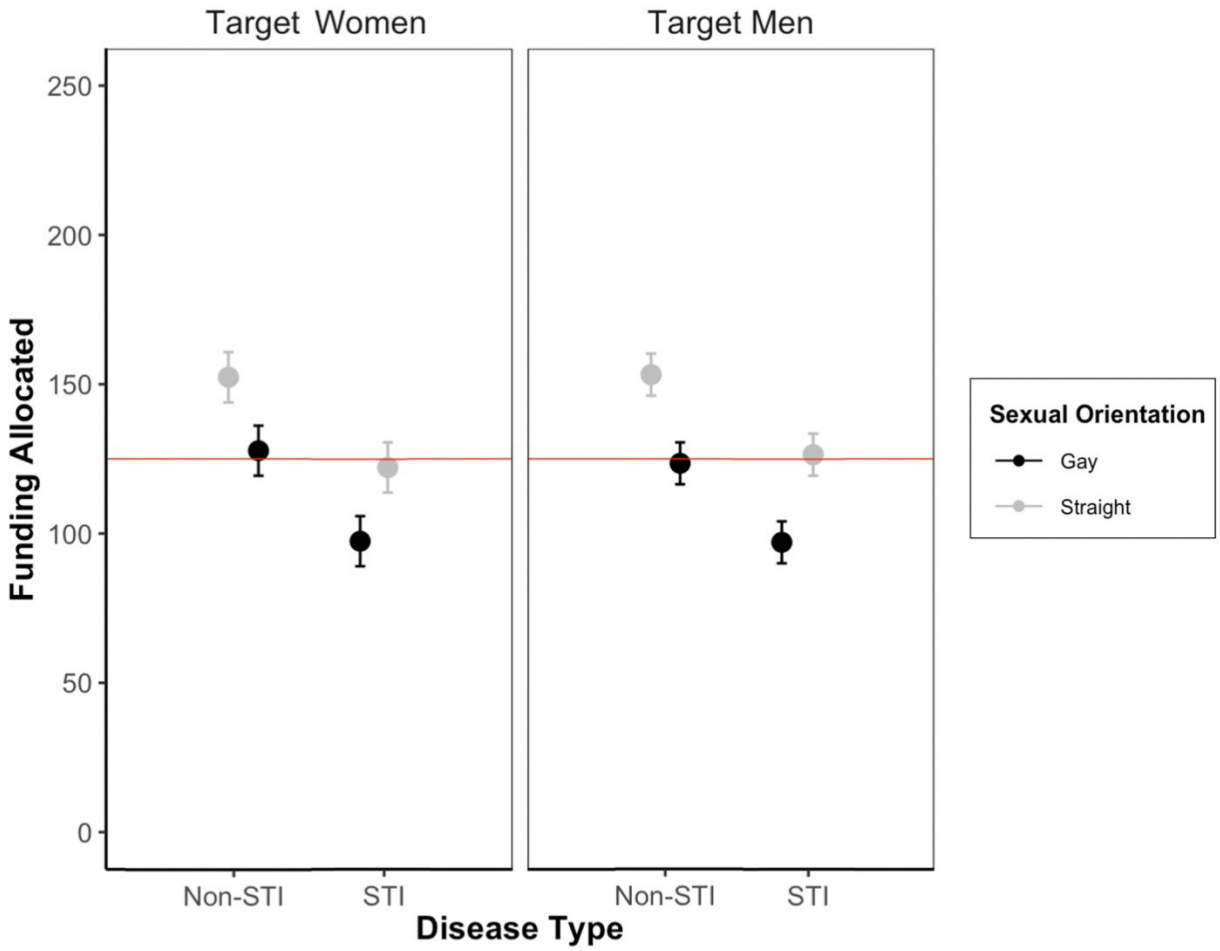


Figure 5: *The effect of target sexual orientation and disease type on funding allocated in Studies 3A and 3B.* **Note.** *The horizontal line indicates the value ($125) at which all patients would receive an equal amount of funding.*

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