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## Age Cohort Differences in the Effects of Gay-Related Stigma, Anxiety and Identification with the Gay Community on Sexual Risk and Substance Use

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### Abstract

Different cohorts of gay/bisexual men experience unique developmental factors given their distinct socio-historical contexts. This study examined the moderating effects of age on three psychosocial predictors of HIV risk behavior and substance use. Analyses drew on data from a study of substance using HIV-negative and unknown status gay/bisexual men (N = 302) at risk for HIV infection. Anxiety was a strong independent predictor of sexual risk and substance use, and its effects on the sex risk outcomes were moderated by age, such that older and more anxious participants had more frequent instances of sexual risk. Identification with the gay community protected against HIV risk, and its effects on sex risk outcomes were moderated by age, such that younger participants who identified with the gay community reported less sexual risk. Understanding HIV risk within socio-historical contexts is essential in tailoring prevention by taking into account recipients’ ages.

## Keywords

Sexual risk; Substance use; Anxiety; Stigma; Gay community; Gay and bisexual men

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## Introduction

Gay and bisexual men continue to be disproportionately affected by HIV infection, accounting for 54% of new infections in the US, with an increase from 57% in 2005 to 71% in 2009 in 13–24 year olds [1–3]. Risk taking remains prevalent among this group, with a recent meta-analysis reporting a 26% prevalence rate of unprotected anal sex acts between HIV-positive (HIV+) gay/bisexual men and their partners of unknown or HIV-negative (HIV-) status [4]. Young gay/bisexual men, in particular, are reporting more sexual risk behavior than in previous years, with 13–29 year-olds in the US accounting for the highest recent increase in incident HIV infections [5–8]. Younger gay/bisexual individuals are also more likely to use drugs than both their heterosexual peers and older cohorts of gay/bisexual men [9]. Drug use is associated with a host of sexual risk factors including unprotected anal sex [10–13], sex under the influence of drugs and alcohol [14], and multiple sex partners [12, 15].

Given the persistent presence of the epidemic and gay/bisexual men's disproportionate and increasing sexual risk, more information is needed regarding psychosocial predictors and moderators of HIV risk, such as gay/bisexual stress and mental health factors that may vary by age cohort. Due to the changing nature of the HIV/AIDS epidemic and social context since its emergence in the 1980s, different age groups of gay/bisexual men are likely to report being differentially affected by various HIV risk factors. For example, younger gay/bisexual men may be able to manage perceived gay-related stigma more successfully due to increased support systems in comparison to 20 or 30 years ago, and in turn present different patterns of association between this factor and sexual risk compared to older generations of gay/bisexual men.

Different life periods, such as adolescence, emerging adulthood (between the ages of 18 and 29), or later adulthood present unique developmental characteristics, possibly unfolding under distinct socio-historical circumstances, that set them apart from each other, making investigations across age cohorts particularly important for intervention purposes. For example, emerging adulthood is a period during which individuals have attained adult status legally and physically, but may not yet have assumed the roles and responsibilities of full adulthood [16–18]. Attitudes and behaviors surrounding sexual risk and substance use are still being crystallized, with the co-occurrence of these behaviors being highly normative [19]. Furthermore, youth may engage in sex before they have enough motivation or skills to protect themselves [20], while the number of partners and lack of condom use both peak during emerging adulthood [21]. While gay/bisexual men face unique challenges at each stage of lifespan development [22], each age cohort of gay/bisexual men encounters these developmental challenges in unique socio-historical contexts. Prevention efforts must consider the influence of these contextualized developmental experiences on gay/bisexual men's risk profiles as these experiences inform individual and societal narratives surrounding sexual identity and risk behavior [23]. By investigating the influence of age on the impact of both mental health and gay/bisexual stress on HIV risk behavior, prevention efforts can maximally address the unique experiences of different cohorts of gay/bisexual men.

Mental health factors, including anxiety, are commonly investigated as HIV risk correlates among gay/bisexual men, with mixed results across age groups [24]. Mental health has been

shown to increase gay/bisexual men's vulnerability to HIV infection [8, 25, 26], as anxiety and depression (independently and together) can affect not just risk behavior but also decisions around condom use. Some investigations demonstrate a negative association between trait anxiety and HIV risk, suggesting that high anxiety may motivate some individuals to fear and avoid HIV risk behaviors [27, 28]. Conversely, other data show a positive relationship between anxiety and HIV risk [29]. Given these equivocal findings, a meta-analysis of the association between measures of anxiety and HIV risk found a very weak effect size across studies [30]. Studies of young gay/bisexual men have more consistently found that anxiety predicts HIV risk, as it has been shown to be associated with higher numbers of sexual partners and encounters, substance abuse symptoms [31], and unprotected anal intercourse over-and-above social support and communication about condom use [32]. Anxiety may impair decision-making capacities and therefore abilities to adhere to personal health goals. However, the relative influence of anxiety on HIV risk across age groups is yet to be elucidated.

Stress factors, such as gay-related stigma, show clearer patterns of relationship with HIV risk across age groups [33]. Experiencing sexual orientation-based stigma from close others fuels self-stigma, anticipated stigma, and unassertive interpersonal behavior, all of which have been shown to be associated with HIV risk behavior [32, 34]. Sexual orientation stigma shows clear longitudinal associations with HIV risk behavior, such as unprotected anal sex for both young gay/bisexual men [31] and older gay men [35]. In a sample of young ethnically diverse gay/bisexual men, being ridiculed based on sexual identity was associated with anxiety, which in turn predicted number of sex partners and sexual encounters [31]. Thus, anxiety and gay-related stigma seem to covary for young gay/bisexual men, with anxiety predicting sexual risk behavior. However, the relationship between enacted stigma from close others and HIV risk has not been compared in emerging adult versus older gay/bisexual men.

Much research attests to the fact that social support protects against mental and physical health risks across the lifespan [36]. Gay/bisexual men often derive social support from the gay community, including gay friends, social organizations, and venues. There is conflicting empirical evidence regarding whether or not identification with the gay community (IGC) protects against or facilitates HIV risk differentially for younger and older gay/bisexual men. IGC may help young gay/bisexual men develop and consolidate a sexual identity and protect against risky sex, depression, and other potentially negative mental health consequences of heterosexism and homophobia [37, 38]. For older men, gay-specific social support may buffer against stressors specific to midlife, including the toll of HIV/AIDS on friendship groups, and homophobic and heterocentric attitudes [39, 40]. However, while a study of young gay/bisexual Latino men showed no relationship between gay community affiliation and sexual risk behavior [41], stronger connections to the gay community appeared to actually facilitate sexual risk in a sample of mostly partnered gay men with a mean age of 37, both inside and outside of their primary relationship [21].

Anxiety, gay-related stigma, and IGC may in fact differentially predict HIV risk for gay/bisexual men of different ages. Equivocal empirical findings suggest that these factors may play either a protective or facilitating role vis-à-vis sexual risk behavior, including sex in the context of substance use, and that these roles may vary across different age groups of gay/bisexual men. This study investigates whether or not age may moderate the relationship between anxiety, perceived gay-related stigma, and IGC and sexual risk and substance use for gay/bisexual men.

## Methods

### Participants and Procedures

This article presents baseline data collected from gay/bisexual men recruited in the New York City (NYC) metropolitan area for the Men's Health Project, a study focused on illicit drug use and sexual behavior [42, 43]. Between September 2007 and August 2010, 317 participants completed a quantitative survey. Eligible participants were male, at least 18 years of age, reported a negative or unknown HIV status, and reported at least 5 days of drug use (including cocaine, methamphetamine, gamma hydroxybutyrate, ecstasy, ketamine, or poppers) and at least one incident of unsafe anal sex with a high risk partner (HIV+ or unknown status main partner or casual partners) in the last 90 days. Participants completed baseline assessments via audio computer-assisted self-interview (ACASI) software and an interviewer-administered time-line follow back (TLFB) calendar of substance use and sexual behaviors for the past 30 days. All procedures were approved by the Institutional Review Board of the investigators' institution.

Participants were recruited through a multi-method approach implemented in diverse geographic areas of NYC using techniques previously effective in the recruitment and enrollment of substance-using gay/bisexual men [13, 44]. Both active and passive recruitment strategies were used. For active recruitment, recruiters screened potential participants for eligibility using Palm Pilots in a variety of venues catering to gay/bisexual men—including bars, clubs, sex venues, streets in predominately gay neighborhoods, and at LGBT community events. For passive recruitment, tear-off flyers and project recruitment cards were distributed to potential participants or left on premises. These cards included a project phone number to be called for eligibility screening. These recruitment approaches were supplemented with internet-based efforts (recruitment via chat rooms and banner advertisements), friendship referrals, and print advertising in gay and non-gay publications. Potential participants were recruited for a study focused on substance use and sexual behavior among gay and bisexual men, and upon the completion of the baseline assessment, were offered the option to enroll in a randomized controlled trial of a behavioral intervention. Study visits took place at a research center in NYC. Participants were compensated \$40 for a 2-hour visit.

### Measures

**Demographics**—Participants reported their age, HIV status (negative or unknown; HIV+ participants were not eligible for the study), sexual identity (gay or bisexual), race/ethnicity (Black, Latino, White, Other/Mixed; we collapsed several groups, e.g., Native American, Asian, into an Other category given the small number of participants), income (below \$30,000 and \$30,000 or above annually), education (less than college or college and above), and relationship status (in a relationship or single) using ACASI (see Table 1).

**Outcome Variables**—Sexual risk behavior (overall and under the influence of drugs/ alcohol) and number of days in which drugs were used in the previous 30 days were collected using a modified version of the TLFB [45]. Critical life events (i.e., vacations, birthdays, paycheck days, parties) were reviewed retrospectively to prompt recall of daily sex and drug use occasions, and data were recorded on a personalized calendar. The TLFB has previously demonstrated good test–retest reliability, convergent validity, and agreement with collateral reports for drug abuse [46], and for sexual behavior [47, 48], and has been previously utilized with substance-using gay/bisexual men [13, 49, 50]. Interviewers for this project received extensive training in the administration of the TLFB and demonstrated skills (as evidenced by ongoing review of audiotapes of the TLFB interviews and supervision) in the development of rapport with participants. They also received training in

remaining non-judgmental and sex-positive in order to facilitate honest self-reports and to respect the values and behaviors of all participants. Each day was coded for drug use (alone and with sex), heavy drinking (five or more drinks that day), partner number and type (main/casual), and condom use. The three outcome variables of interest for this paper included 1) total number of unprotected (high risk) anal sex acts with a casual partner or main partner of HIV+ or unknown status 2) the number of anal sex acts with these partners that took place under the influence of drugs/alcohol, and 3) the total number of days in which drugs were used in the past month.

**Predictors**—The Gay-Related Stigma Scale (GRS) [51] is a modified version of the HIV Stigma Scale [52]. The GRS is a 10-item scale ( $\alpha = 0.93$ ) that assesses perceived stigma from friends and family in relation to disclosing sexual orientation. Anxiety scores were obtained with the BSI-Anxiety Scale [53], a 6-item scale with a reliability of 0.84. We used the three items ( $\alpha = 0.72$ ) from the Identification and Involvement with the Gay Community scale (IIGC) [54] that yielded the best scale reliability to assess attitudes towards being attracted to men and identifying with the gay community: (1) It is very important to me that at least some of my friends are bisexual or gay; (2) Being gay makes me feel part of a community; (3) Being attracted to men is important to my sense of who I am.

## Data Analysis

Given the focus on predictors of sex risk behavior in conjunction with substance use, cases with no instances of sex and no drug use days in the past 30 days were removed from analyses, yielding a final sample size of 302 participants. Preliminary descriptive analyses indicated that although the three predictor variables were normally distributed, the outcomes were highly skewed. Examination of deviance values suggested that the amount of overdispersion in outcome variables exceeded the tolerance of the Poisson distribution [55], therefore negative binomial regression was employed. Z-scores were created for the three predictors (stigma, anxiety and IGC) and moderator (age). Relationship status and race/ethnicity were significantly related to high risk sex and number of drug use days, respectively, therefore regression models were adjusted for these demographic characteristics as applicable. For each outcome, main effects models were run, followed by main effects and interaction models. Tables 3, 4, and 5 present both individual models and a simultaneous model testing for moderation effects of age.

## Results

Table 1 presents demographic characteristics of the sample. The mean age was 28.8 (SD = 7.1, range 18–65). The participants' racial and ethnic distribution was diverse, reflecting NYC's composition, while over half of the sample earned \$30,000 or less annually (55%) and held less than a college education (54%). The majority of participants self-identified as being gay (91%), single (77%) and of HIV– status (95%). None of the participant demographic characteristics significantly predicted our outcomes, with the exception of Latino participants reporting more drug use days in the past month than White participants, and those in a relationship (with a main partner for at least 3 months) reporting more unprotected anal sex acts with high risk sex partners than those who were single. These demographic variables were held constant in the respective negative binomial regression models, as illustrated in Tables 3 and 5. Table 2 illustrates that, overall, there was a moderate correlational relationship among our variables of interest.

Tables 3, 4, and 5 illustrate the results of the negative binomial regression analyses. Age was not associated with total number of high risk sex acts, but it was positively associated with total number of high risk sex acts under the influence ( $B = 0.19$ ,  $\exp\beta = 1.2$ , 95% CI = 1.0–

1.5,  $P < 0.05$ ) and number of drug use days ( $B = 0.13$ ,  $\exp\beta = 1.1$ , 95% CI = 1.0–1.2,  $P < 0.01$ ). Gay related-stigma was positively associated with number of high risk sex acts ( $B = 0.17$ ,  $\exp\beta = 1.2$ , 95% CI = 1.0–1.4,  $P < 0.05$ ), but had no relationship with sex under the influence or substance use. In main effects models, anxiety was positively associated with all three outcomes: high risk sex overall and under the influence ( $B = 0.29$ ,  $\exp\beta = 1.3$ , 95% CI = 1.1–1.5,  $P < 0.001$ , and  $B = 0.33$ ,  $\exp\beta = 1.4$ , 95% CI = 1.2–1.7,  $P < 0.001$ , respectively) and number of drug use days in the past month ( $B = 0.12$ ,  $\exp\beta = 1.1$ , 95% CI = 1.0–1.2,  $P < 0.01$ ). Finally, in contrast to anxiety's relationship with the three outcomes, IGC was negatively associated with engagement in high risk sex acts ( $B = -0.19$ ,  $\exp\beta = 0.83$ , 95% CI = 0.70–0.97,  $P < 0.05$ ), high risk sex under the influence ( $B = -0.33$ ,  $\exp\beta = 0.72$ , 95% CI = 0.60–0.87,  $P < 0.001$ ) and number of drug use days ( $B = -0.14$ ,  $\exp\beta = 0.87$ , 95% CI = 0.80–0.95,  $P < 0.01$ ).

In the interaction models, age did not have a significant main effect on high risk sex overall or under the influence. However, age did interact significantly with anxiety in predicting high risk sex overall and under the influence ( $B = 0.18$ ,  $\exp\beta = 1.2$ , 95% CI = 1.0–1.4,  $P < 0.05$ , and  $B = 0.19$ ,  $\exp\beta = 1.2$ , 95% CI = 1.0–1.5,  $P < 0.05$ , respectively); age also interacted significantly with IGC in predicting high risk sex overall and under the influence ( $B = 0.20$ ,  $\exp\beta = 1.2$ , 95% CI = 1.0–1.5,  $P < 0.05$ , and  $B = 0.27$ ,  $\exp\beta = 1.3$ , 95% CI = 1.1–1.6,  $P < 0.01$ , respectively). Adding the age interactions with both anxiety and IGC significantly improved the fit of the models, as illustrated in Tables 3 and 4. Figure 1 displays the graphical representation of these interactions. Specifically, those who were older and more anxious reported more frequent high risk sex overall (Fig. 1a) and under the influence in the past month (Fig. 1b); inversely, higher IGC for those who were younger was associated with less high risk sex overall (Fig. 1c) and under the influence in the past month (Fig. 1d). Further, while age, anxiety, and IGC had significant main effects on the total number of drug use days in the past month, there were no significant interaction effects between age and the three predictors for this outcome. Lastly, stigma did not interact significantly with age for any of the three outcomes.

## Discussion

Our analyses demonstrate that anxiety and IGC have differential associations with sexual risk behavior and number of drug use days across the age range of this sample, while the effects of gay-related stigma were not related to participants' age. Anxiety was a strong independent predictor of sexual risk and substance use, and its effects on the sex risk outcomes were moderated by age, such that the positive association between anxiety and sexual risk (overall and under the influence) was stronger for older compared to younger participants. Conversely, IGC appeared protective against sexual risk and drug use, and its effects on the sex risk outcomes were also moderated by age, such that being identified with the gay community was associated with less sexual risk (overall or under the influence) for younger men, but not for older men. These findings support our postulation that a developmental and socio-historical perspective can facilitate an understanding of differential predictors of HIV risk across age cohorts of gay/bisexual men. The knowledge gained from these analyses highlights the importance of tailoring prevention efforts by taking into account the age of its recipients. However, while gay-related stigma predicted high risk sex independently, it had no relationship with high risk sex under the influence or drug use days; lastly, there was no significant interaction between perceived gay-related stigma and age for any of the outcomes.

Our finding that anxiety independently predicts sexual risk behavior is consistent with findings from more recent studies [29], but contradicts earlier evidence of anxiety being a protective factor against HIV risk behavior [27, 28]. Specifically, our results are in line with

more recent studies and showed that those who were more anxious also reported more frequent high risk sex, high risk sex while under the influence of drugs/alcohol, and number of drug use days. Anxiety, however, was associated with HIV sex risk differently when factoring in age: increased anxiety among older participants was maximally predictive of sexual risk. While the mechanisms behind this interaction between age and anxiety await further examination, this finding potentially suggests that older gay/bisexual men are more likely to cope with anxiety through high risk sex and sex under the influence, whereas young gay/bisexual men may enact different strategies for coping with anxiety. In the general population, the order of onset between anxiety and substance use is relatively well-established, with substance use serving a self-medicating function for coping with certain anxiety disorders [56, 57]. However, the causal direction between anxiety and high risk sex has not been as thoroughly studied, although daily anxious affect has been found to predict sexual risk behavior on that day [58]. The impact of age on the relationship between anxiety and risk behavior among gay/bisexual men might suggest that, left untreated over time, anxiety necessitates maladaptive coping strategies for these men, with younger anxious men not yet needing the most maladaptive strategies, including disengagement through substance use and high-risk sex. Therefore, targeting mental health–anxiety in particular—for gay/bisexual men may be promising in reducing sexual risk and sex risk under the influence of drugs/alcohol, especially for older groups of men.

The inverse relationship between IGC and both risky sex and number of drug use days in this study contradicts previous research that suggests that IGC increases the availability of sexual outlets and therefore risk behavior [21]. Other previous research has provided support for the positive aspects of being connected to the gay community in terms of exposure to HIV prevention messages and testing [59, 60]. The results of our study suggest that identifying with the gay community may protect younger generations of gay/bisexual men against HIV sex risk, which has strong implications for prevention. Given that the meaning and landscape of the gay community are fluid (as a reflection of socio-historical contexts) [61], it will be useful to continue to investigate younger gay/bisexual men’s definition of a gay ‘community’ and the mechanisms through which it may protect against risk. For now, however, prevention-related research and services might consider strengthening healthy connections to the gay community for younger gay/bisexual men, as well as continuously documenting the evolving definitions of such communities for different age cohorts of gay and bisexual men.

The fact that identifying with the gay community did not predict less engagement in high risk sex among older participants is intriguing. The changing impact of the HIV epidemic on sexual risk-related norms across cohorts of gay/bisexual men likely means that the gay community serves different functions for younger versus older gay men. It is possible that earlier generations of gay/bisexual men relied heavily on the gay community as a source of general social support and to specifically cope with the acute threat of the early HIV epidemic. Advancements in HIV/AIDS treatment and quality of life may have lessened the critical function served by the gay community for older generations of gay men and therefore its ability to either protect against or exacerbate HIV risk. This hypothesis, however, awaits empirical validation.

Equally remarkable was the finding that effects of IGC on the number of drug use days did not vary with age. As discussed previously, while both anxiety and IGC had significant independent effects on the number of drug days (the first being a risk factor and the second being a protective one), neither of their effects was moderated by age. As such, we postulate that regardless of age, substance use remains a principal target of HIV prevention efforts, which should include improvements in mental health and strengthening healthy IGC. Taking these two steps may consequently pave the way to reductions in the number of days during

which drugs/alcohol are used by gay/bisexual men of any age, which should lead to reductions in instances of unprotected anal sex, as these two behaviors often co-occur [62, 63].

Social attitudes toward gay/bisexual individuals have improved in recent years [64], which may in part explain why perceived gay-related stigma was only a significant independent predictor of high risk sex overall, but not high risk sex under the influence or substance use. While we predicted that the relationship between stigma and HIV risk behavior would vary according to participants' ages given the evolving social discourse surrounding sexual identity, behavior, and risk since the beginning of the epidemic [23], stigma as measured in this study showed a similar relationship with risk behavior regardless of age. As recent data show that improvements in social policies toward LGB individuals longitudinally predict improvements in mental health among gay/bisexual men [65], future research will ideally investigate similar health-enhancing phenomena using HIV risk behavior as an outcome. Our findings suggest that HIV prevention efforts for gay/bisexual men, regardless of age, ought to address the impact of stigma on the risk behavior of gay/bisexual men of all ages to facilitate connections to sources of support, including the gay community.

A limitation of these analyses was their cross-sectional nature. Clearly, when examined cross-sectionally, differences in risk factors across cohorts could be attributed to age-dependent developmental factors, cohort differences based on unique experiences of living during a distinct historical epoch, or both. However, even a cross-sectional investigation of different risk factors for different age groups of gay/bisexual men informs the field's ability to tailor current prevention interventions accordingly. Still, whereas our interpretation of the results assumes a unidirectional effect from risk factors to risk behavior, it is also plausible that sexual risk may in fact cause, or at least exacerbate, the psychosocial risk factors included here. For example, engaging in risky sex may heighten anxiety and perceptions of stigma while also decreasing one's IGC. Longitudinal investigations have the potential to clarify the direction of the relationships between psychosocial factors and behavioral risk outcomes. Further, the findings cannot be generalized to all gay/bisexual men, as our sample consisted of urban gay and bisexual men who reported recent drug use and unprotected anal sex. Nonetheless, this study sheds light on risk and protective factors for gay/bisexual men who are at risk for HIV infection.

Another limitation of this study is that although it is among the first to provide empirical evidence that IGC can have protective effects for young gay/bisexual men, our measure of this construct reflects a sense of IGC as opposed to behavioral connections with it, such as involvement or presence at venues and events frequented by gay/bisexual men. Therefore, while young gay/bisexual men's IGC serves as a protective factor against HIV risk, other aspects of involvement in the gay community must be considered for a more comprehensive understanding of the functions it serves and the mechanisms through which it protects against HIV risk.

This paper illustrates the fact that psychosocial factors such as anxiety and IGC are likely to have a differential impact on the HIV risk behavior of various age cohorts of gay/bisexual men. As our study also replicates previous findings that anxiety contributes to HIV sexual risk behavior across age groups, mental health professionals focusing on HIV prevention ought to continue their efforts towards reducing anxiety, attenuating its effects, and also recognizing its impact on sexual risk, especially for older individuals. Further, HIV prevention efforts need to consider strengthening gay/bisexual men's IGC, especially for younger individuals. Those initiatives must also be accompanied by further investigations into the nature of community identification and the mechanisms through which it buffers against HIV risk behavior. In sum, the findings of the present study suggest that creators and



providers of HIV risk reduction interventions ought to further consider tailoring their interventions on the psychosocial factors investigated here according to age cohorts.

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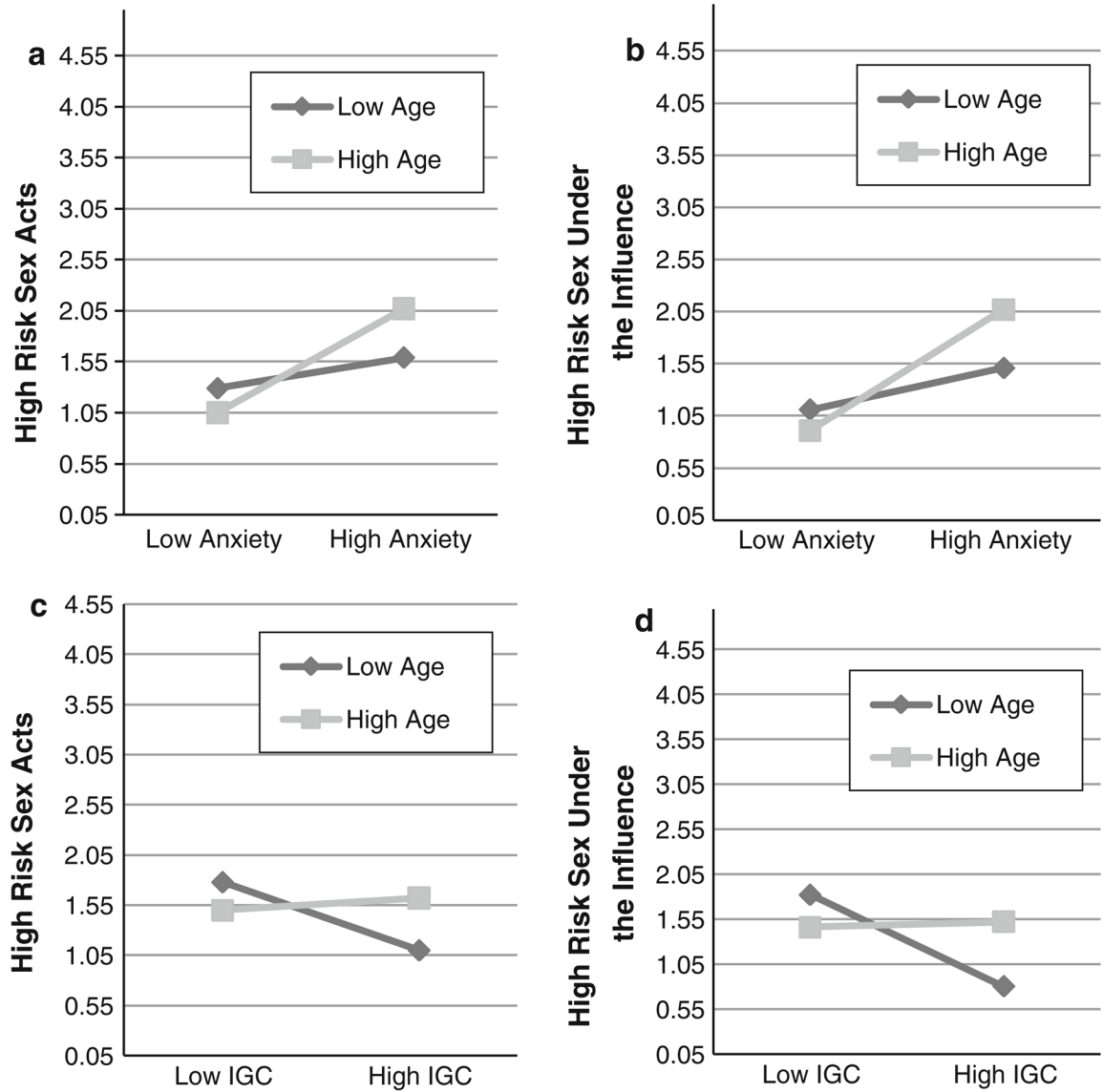
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**Fig. 1.** **a** Anxiety and age interaction predicting high risk sex acts. **b** Anxiety and age interaction predicting high risk sex acts under the influence. **c** Anxiety and IGC predicting high risk sex acts and **d** Anxiety and IGC predicting high risk sex acts under the influence

**Table 1**

Demographic characteristics of sample (N = 302)

	<i>n</i>	%	Mean	<i>SD</i>
Age			28.8	7.1
Race/Ethnicity <sup>a</sup>				
Black	53	18		
Latino	85	28		
White	128	42		
Other/Mixed	36	12		
Income				
<30K	166	55		
>30K	136	45		
Education				
Less than college	164	54		
College or more	138	46		
Parental social class				
Working class or poor	122	40		
Middle class and above	180	60		
Sexual orientation				
Gay	276	91		
Bisexual	26	9		
Relationship status <sup>b</sup>				
In a relationship	69	23		
Single	233	77		
HIV status				
Negative	288	95		
Unknown	14	5		

<sup>a</sup>Latino participants reported more drug use days than White participants

<sup>b</sup>Participants in a relationship reported more high risk sex acts than single participants

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**Table 2**

Correlations among predictor and outcome variables

	1	2	3	4	5	6	7
1. Age	-	-0.04	-0.07	0.10	0.06	0.07	0.11
2. Gay related stigma		-	0.31**	-0.09	0.21**	0.19**	0.12*
3. Anxiety			-	-0.09	0.26**	0.26**	0.17**
4. IGC				-	-0.09	-0.10	-0.20**
5. Total number of high risk sex acts					-	0.98**	0.35**
6. Total number of high risk sex acts under the influence						-	0.36**
7. Total number of drug use days							-

\*  $P < 0.05$ ,\*\*  $P < 0.01$

**Table 3**  
High risk sex acts predicted by gay-related stigma, anxiety and identification with the gay community (IGC)

Predictors	Model 1			Model 2			Model 3		
	B	Exp( $\beta$ )	95% CI	B	Exp( $\beta$ )	95% CI	B	Exp( $\beta$ )	95% CI
Relationship Status	0.59 <sup>**</sup>	1.8	1.2–2.6	0.53 <sup>**</sup>	1.7	1.2–2.4	0.46 <sup>**</sup>	1.6	1.1–2.3
Age				0.14	1.2	0.99–1.3	0.06	1.1	0.91–1.2
Stigma				0.17 <sup>*</sup>	1.2	1.0–1.4	0.16 <sup>*</sup>	1.2	1.0–1.4
Anxiety				0.29 <sup>***</sup>	1.3	1.1–1.5	0.34 <sup>***</sup>	1.4	1.2–1.6
IGC				-0.19 <sup>*</sup>	0.83	0.70–0.97	-0.14	0.87	0.74–1.0
Age * Stigma							0.07	1.1	0.9–1.3
Age * Anxiety							0.18 <sup>*</sup>	1.2	1.0–1.4
Age * IGC							0.20 <sup>*</sup>	1.2	1.0–1.5

Log likelihood ratio  $\chi^2(8) = 66.68$  <sup>\*\*\*\*</sup>

<sup>\*</sup>  $P < 0.05$ ,

<sup>\*\*</sup>  $P < 0.01$ ,

<sup>\*\*\*</sup>  $P < 0.001$ ,

<sup>\*\*\*\*</sup>  $P < 0.0005$

$R^2_{\text{deviance}} = 0.013$



**Table 4**

High risk sex acts under the influence predicted by gay-related stigma, anxiety and IGC

Predictors	Model 1		Model 2		Exp( $\beta$ )	95% CI
	B	Exp( $\beta$ )	95% CI	B		
Age	0.19*	1.2	1.0–1.5	0.09	1.1	0.91–1.3
Stigma	0.14	1.1	0.95–1.4	0.13	1.1	0.95–1.4
Anxiety	0.33***	1.4	1.2–1.7	0.39***	1.5	1.2–1.8
IGC	-0.33***	0.72	0.60–0.87	-0.24**	0.78	0.65–0.95
Age * Stigma				0.12	1.1	0.91–1.4
Age * Anxiety				0.19*	1.2	1.0–1.5
Age * IGC				0.27**	1.3	1.1–1.6

Log likelihood ratio  $\chi^2(7) = 58.34$ \*\*\*\*\*  $P < 0.05$ ,\*\*  $P < 0.01$ ,\*\*\*  $P < 0.001$ ,\*\*\*\*  $P < 0.0005$  $R^2_{deviance} = 0.005$

**Table 5**

Number of drug use days predicted by gay-related stigma, anxiety and IGC

Predictors	Model 1			Model 2			Model 3		
	B	Exp( $\beta$ )	95% CI	B	Exp( $\beta$ )	95% CI	B	Exp( $\beta$ )	95% CI
Race									
Latino	-0.31**	0.73	0.59-0.90	-0.3**	0.74	0.59-0.91	-0.29**	0.74	0.60-0.91
Black	-0.42**	0.66	0.52-0.83	-0.38**	0.68	0.54-0.86	-0.37**	0.69	0.54-0.87
Other	-0.27*	0.76	0.57-1.0	-0.21	0.81	0.62-1.1	-0.22	0.8	0.60-1.0
Age				0.13**	1.1	1.0-1.2	0.12**	1.1	1.0-1.2
Stigma				0.02	1.0	0.93-1.1	0.02	1.0	0.93-1.1
Anxiety				0.12**	1.1	1.0-1.2	0.12**	1.1	1.0-1.2
IGC				-0.14**	0.87	0.80-0.95	-0.15**	0.86	0.79-0.94
Age * Stigma							0.08	1.1	0.98-1.2
Age * Anxiety							0.02	1.0	0.93-1.1
Age * IGC							-0.03	0.97	0.89-1.0

Log likelihood ratio  $\chi^2(10) = 45.44$  \*\*\*\*

\*  $P < 0.05$ ,

\*\*  $P < 0.01$ ,

\*\*\*  $P < 0.001$ ,

\*\*\*\*  $P < 0.0005$

$R^2_{deviance} = 0.012$