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A Model of Sexual Risk Behaviors Among Young Gay and Bisexual Men: Longitudinal Associations of Mental Health, Substance Abuse, Sexual Abuse, and the Coming-Out Process

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Abstract

Sexual risk behaviors of young gay and bisexual men must be understood within the context of other health concerns (e.g., anxiety, substance abuse), population-specific factors (i.e., the coming-out process and gay-related stress), childhood sexual abuse, and other theoretical factors (e.g., safer sex intentions). The current report proposes and longitudinally examines a model of risk factors for subsequent sexual risk behaviors among young gay and bisexual men in New York City. As hypothesized, more negative attitudes toward homosexuality, more substance abuse symptoms, and poorer intentions for safer sex were directly associated with a greater likelihood of unprotected anal sex over the following year. Further, lower self-esteem, more anxious symptoms, and childhood sexual abuse were related to more unprotected anal sex indirectly through more sexual partners, sexual encounters, and substance abuse symptoms. These findings suggest that interventions targeting sexual risk behaviors of young gay and bisexual men may be more effective if they also address mental health concerns and aspects of the coming-out process.

Keywords

Sexual Risk Behaviors; Anal Sex; Child Sexual Abuse; Substance Abuse; Anxiety; Condom Use Intentions; Internalized Homophobia; Self-Disclosure

Despite over two decades of work to curb transmission of HIV among men who have sex with men (MSM) and much recent work to address the specific needs of young MSM (YMSM), the epidemic continues (Catania et al., 2001; Wolitski, Valdiserri, Denning, & Levine, 2001). The prevalence of HIV infection among YMSM ranges from 2% - 12% across major metropolitan areas (Valleroy et al., 2000). Although YMSM do not have a higher prevalence of HIV infection than older MSM (e.g., Catania et al., 2001), some

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research has suggested that YMSM engage in more sexual risk behaviors than older MSM (Crepaz et al., 2000). Over 90% of YMSM have reported having more than one sexual partner in the past six months and between 33% - 49% have had unprotected anal intercourse during the same time (Valleroy et al., 2000). Indeed, it is these high rates of sexual risk behaviors among men in their teens and 20s that may set the stage for the high prevalence of HIV infection found among men in their 30s and 40s. Thus, continued efforts are needed to understand the factors that lead to sexual risk behaviors among YMSM.

The sexual risk behaviors of young gay and bisexual men must be understood within the context of the experiences and challenges that these young men confront in their lives. The current report proposes a model of sexual risk behaviors (see Figure 1) that not only incorporates traditional theoretical factors known to influence sexual risk behavior (i.e., safer sex intentions), but that also considers the realities of gay and bisexual men's lives.¹ The model specifies pathways by which mental health concerns (e.g., psychological distress, substance abuse), population-specific challenges (i.e., the coming-out process and gay-related stress), and other highly pertinent experiences (i.e., childhood sexual abuse and safer sex intentions) may explain sexual risk behaviors. Further, the current report examines the proposed model longitudinally, such that the direct and indirect relations are examined between these hypothesized predictors and subsequent sexual risk behaviors. Below, we review each component of the model as it relates to the sexual risk behaviors of young gay and bisexual men, beginning with the most proximal factors (i.e., safer sex intentions), followed by the mental health concerns, then the population-specific factors, and ending with the (temporally more) distal experience of childhood sexual abuse.

One area of research that has received a great deal of attention is the role of the intention to use condoms on subsequent sexual risk behaviors. Various cognitive models (e.g., Ajzen & Fishbein, 1980) have provided the rationale for examining the impact of intentions on the sexual risk behaviors of MSM (e.g., Diaz, Morales, Bein, Dilan, & Rodriguez, 1999; Fisher, Fisher, & Rye, 1995; Kelly et al., 1995), including YMSM (Rosario, Mahler, Hunter, & Gwadz, 1999; Rotheram-Borus, Rosario, Reid, & Koopman, 1995). Two meta-analyses have found that condom use intentions have a medium to strong effect on sexual risk behaviors (Albarracín, Johnson, Fishbein, & Muellerleile, 2001; Sheeren & Orbell, 1998). These meta-analyses also indicate that the relation between intentions and behavior is not perfect and, thus, other factors are critical for understanding the sexual risk behaviors of young gay and bisexual men.

Mental health issues (i.e., self-esteem, psychological distress, and substance abuse) may bear directly or indirectly on the sexual risk behaviors of young gay and bisexual men. It has been suggested that self-esteem may be critical for understanding sexual risk among gay and bisexual men (Stokes & Peterson, 1998). However, the empirical research has been inconsistent, with some studies failing to find a relation between self-esteem and sexual risk behavior (Rosario, Hunter, Maguen, Gwadz, & Smith, 2001; Savin-Williams, 1995) and other studies finding a significant relation between self-esteem and fewer sexual risk behaviors (Preston et al., 2004; Rotheram-Borus et al., 1995). We hypothesize that the role of self-esteem on sexual risk behaviors is indirect, occurring by means of its relation to other mental health concerns (see Figure 1).

¹Although much research has focused on MSM (many of whom may identify as gay or bisexual and others who may not), the current study examines young self-identified gay and bisexual men. This report uses the general term "MSM" when reviewing findings from the research literature and the term "gay and bisexual men" when referring to our sample and the hypothesized relations in our theoretical model. It is an empirical question whether the model generalizes beyond gay and bisexual men to other MSM.

Given the high rates of negative affect and psychiatric morbidity among young gay, lesbian, and bisexual populations (e.g., Bontempo & D'Augelli, 2002; Fergusson et al., 1999), psychological distress (e.g., anxiety) may be a critical risk factor for young gay and bisexual men. Although a meta-analysis of the association between psychological distress and sexual risk behaviors found little evidence of a link when combining various adult heterosexual and MSM samples (Crepaz & Marks, 2001), several studies of adult and young MSM have found that psychological distress is significantly associated with more sexual risk behaviors (e.g., Marks, Bingman, & Duval, 1998; Rosario et al., 2001; Rotheram-Borus et al., 1995; Strathdee et al., 1998). In addition, some research has suggested that the relation between psychological distress and sexual risk behaviors may be mediated by other mental health factors (e.g., substance use: Marks et al., 1998), which may explain why some studies have failed to find an association (e.g., Dudley, Rostosky, Korfhage, & Zimmerman, 2004).

Among the most frequently examined potential determinants of sexual risk behaviors is substance use and abuse. Not only do YMSM have a higher prevalence of substance use and abuse than heterosexual peers (e.g., Fergusson et al., 1999; Russell, Driscoll, & Truong, 2002), but a large and growing literature also suggests that substance use and abuse are associated with a higher prevalence of sexual risk behaviors among YMSM (Meyer & Dean, 1995; Rotheram-Borus et al., 1994; Seage et al., 1998; Strathdee et al., 1998; Stueve, O'Donnell, Duran, San Doval, & Geier, 2002; Waldo et al., 2000), although some studies have failed to find an association (Dudley et al., 2004).

Research on sexual risk behaviors must consider the unique experiences of the population being examined. Among young gay and bisexual men, research must take into account their experiences with the coming-out process (i.e., the sexual identity development of gay/lesbian and bisexual individuals) and gay-related stress. Studies have found that such aspects of the coming-out process as fewer positive attitudes toward homosexuality (i.e., internalized homophobia: Meyer & Dean, 1995; Waldo et al., 2000), involvement in fewer gay-related social activities (Rosario et al., 2001), discomfort with others learning about the individual's sexuality (Rosario et al., 2001), failure to disclose one's sexuality to others (Seibt et al., 1993), and not having a defined gay identity (Chng & Geliga-Vargas, 2000; O'Donnell et al., 2002) are related to more sexual risk behaviors. Although other studies have failed to find direct significant relations (Dudley et al., 2004; O'Donnell et al., 2002), aspects of the coming-out process may have indirect effects on sexual risk by means of self-esteem and psychological distress (Rosario et al., 2001). Lastly, experiencing gay-related stress (e.g., victimization or ridicule for being gay) also may contribute to more sexual risk behaviors (Bontempo & D'Augelli, 2002; Diaz, Ayala, & Bein, 2004).

Finally, experiences of childhood sexual abuse may place gay and bisexual men at significant risk for subsequent sexual risk behaviors. MSM with a history of childhood sexual abuse report more sexual partners and more unprotected anal sex than those without abuse histories (Carballo-Diequez & Dolezal, 1995; Diaz et al., 1999; O'Leary, Purcell, Remien, & Gomez, 2003; Paul, Catania, Pollack, & Stall, 2001). However, the association of childhood sexual abuse with sexual risk behaviors has been found to be mediated by such factors as anxiety (O'Leary et al., 2003), substance use (Diaz et al., 1999; Paul et al., 2001), and poor intentions to use condoms (Diaz et al., 1999). The mediational findings suggest that these factors may be promoted by sexual abuse and, in turn, it is these factors that place MSM at risk for sexual risk behaviors. Although studies have addressed the role of sexual abuse on sexual risk behaviors among adult MSM, none have done so among YMSM. This is surprising especially because childhood sexual abuse has been found to be more prevalent among YMSM than among their heterosexual peers (Goodenow et al., 2002).

Despite over two decades of research on the sexual risk behaviors of gay and bisexual men, too little attention has been focused on the risk factors of young gay and bisexual men. Further, the available research is limited in that it has been overwhelmingly cross-sectional in design. Building on our earlier cross-sectional work from this study (Rosario et al., 2001), we specify herein a more elaborated model of sexual risk behaviors and longitudinally examine the unique roles of condom use intentions, self-esteem, anxious symptoms, substance abuse, the coming-out process, gay-related stress, and childhood sexual abuse on the subsequent sexual risk behaviors of young gay and bisexual men.

Method

Participants

Youths, ages 14 to 21 years, were recruited from organizations serving gay, lesbian, and bisexual (GLB) youths in New York City, including three gay-focused community-based organizations (CBOs) and two GLB-student organizations from public colleges. Most youths (85%) were recruited from the CBOs and the remainder (15%) from the college organizations. Of the 164 participants interviewed at baseline, 51% were male. The current report focuses on these gay and bisexual male youths. Of the 83 male youths interviewed, data from three interviews were excluded because two were repeat interviews and one was judged to have invalid data.

The final sample of 80 male youths reported a mean age of 18.1 years ($SD = 1.69$). The youths were of Latino (35%), Black (34%), White (24%), and Asian and other ethnic backgrounds (8%). Thirty-nine percent of the youths reported that they had a parent who received welfare, food stamps, or medicaid (defined here as “low” socioeconomic status, SES). Youths self-identified as gay (65%), bisexual (31%), or other (4%). Youths who did not identify as gay or bisexual were included in all analyses (with the exception of the comparison between gay and bisexual youths).

Procedure

Voluntary and signed informed consent was provided by all youths. For those youths under age 18, parental consent was waived by the Commissioner of Mental Health for New York State. An adult at each CBO served *in loco parentis* to safeguard the rights of each minor-aged research participant. The study was approved by the university’s institutional review board and the recruitment sites. It also received a federal certificate of confidentiality.

Youths were administered a 2- to 3-hour questionnaire by an interviewer at baseline and subsequently at 6 and 12 months after the baseline interview. Baseline interviews took place in 1993-1994, with follow-up interviews conducted through 1995. Only one male youth was lost to both follow-up assessments. The sample retention rates for the male youths were 96% (77/80) for the 6-month assessment and 91% (73/80) for the 12-month assessment, with 89% interviewed at all three time periods. Youths received \$30 at each interview.

Measure of Poor Safer Sex Intentions

The Inventory Schedule of the Cognitive-Environmental Model (see Rosario et al., 1999 for full measure), developed for GLB youths, was used at baseline to assess safer sex intentions. Three items (e.g., “I will use a condom if I have anal sex in the next year”) assessed intentions on a 4-point Likert scale ranging from “disagree strongly” (1) to “agree strongly” (4). The mean of the items was computed, with higher scores indicating poorer intentions to use condoms ($\alpha = .74$).

Measures Mental Health Concerns

Self-Esteem—Rosenberg's (1965) 10-item scale was administered at baseline, with its four-point Likert response scale ranging from "strongly agree" (1) to "strongly disagree" (4). The mean was computed, with higher scores indicating greater self-esteem ($\alpha = .86$).

Anxious Symptoms—At baseline, the Brief Symptom Inventory (Derogatis, 1993) was used to assess distress associated with anxious symptoms during the past week on a 5-point response scale ranging from "not at all" (0) to "extremely" (4). The mean of the 6 items was computed, with higher scores indicating greater distress ($\alpha = .81$).

Substance Abuse—Symptoms associated with alcohol or illicit drug abuse were assessed at baseline using an 11-item measure (e.g., "Felt you needed or were dependent on alcohol and/or drugs") derived from the Diagnostic Interview Schedule for Children (National Institute of Mental Health, 1992). Items use a 5-point response scale from "not at all" (1) to "very often" (5). The mean of the items was computed as an index of substance abuse ($\alpha = .90$).

Measures of the Coming-Out Process

Involvement in Gay-Related Activities—Lifetime involvement in gay-related social activities was assessed at baseline using a 28-item scale developed for this study (Rosario et al., 2001). A factor analysis indicated that 11 items (e.g., going to a gay bookstore, gay coffee house, gay pride march, gay fairs, gay clubs or bars) loaded on a single factor. A count of the items endorsed was used as the indicator of involvement in gay-related activities ($\alpha = .80$).

Attitudes Toward Homosexuality—A modified version of the Nungesser Homosexual Attitudes Inventory (NHAI: Nungesser, 1983; see Rosario et al., 2001, for description of modifications) was administered at baseline using a 4-point response scale ranging from "disagree strongly" (1) to "agree strongly" (4). Factor analysis of these data indicated that 11 items [e.g., "My (homosexuality/bisexuality) does not make me unhappy"] assessed attitudes toward homosexuality. The mean of these items was computed, with a high score indicating more positive attitudes toward homosexuality ($\alpha = .85$). Because the youths' attitudes were negatively skewed, the data were transformed, using the exponential e to stretch the positive end of the distribution.

Comfort with Others Knowing about their Homosexuality—As indicated above, a modified version of the NHAI (Nungesser, 1983) was administered at baseline. Factor analysis indicated that 12 items (e.g., "If my straight friends knew of my [homosexuality/bisexuality], I would feel uncomfortable") assessed comfort with others knowing the youth's sexuality. The mean of these items was computed, with a high score indicating more comfort with homosexuality ($\alpha = .90$).

Self-Disclosure of Sexuality to Others—Youths were asked at baseline to report "all the people in your life who are important or were important to you and whom you told that you are (gay/bisexual)" (Rosario et al., 2001). A count of the number of people reported was used as the indicator self-disclosure of sexual identity.

Sexual Identity—An item from the Sexual Risk Behavior Assessment Schedule - Youth (SERBAS-Y: Meyer-Bahlburg, Ehrhardt, Exner, & Gruen, 1994) assessed at baseline whether, when the youth thinks about sex, he thinks of himself as gay, bisexual, or straight. Gay (1) and bisexual (0) youths were compared.

Measure of Gay-Related Stress

A 12-item checklist of stressful events related to homosexuality was administered at baseline (e.g., “Losing a close friend because of your [homosexuality/bisexuality]”; Rosario et al., 2002). The youths indicated whether they had experienced any of the events within the past 3 months. The number of events experienced was computed as the indicator of gay-related stress. Because the responses were skewed, we computed a response scale of zero (0), one (1), or two or more (2) stressful events.

Measure of Childhood Sexual Abuse

Lifetime history of childhood sexual abuse was assessed at baseline using the SERBAS-Y (Meyer-Bahlburg et al., 1994). Youths were asked whether they had ever, before age 13, had sexual experiences with an adult or another child more than five years older than them. Youths also were asked whether they “ever had unwanted or uninvited sex with anyone” since age 13 years. The prevalence of childhood sexual abuse was whether youths indicated abuse either before or after age 13.

Measures of Sexual Risk Behaviors

The SERBAS-Y (Meyer-Bahlburg et al., 1994) was used to assess several risk behaviors. The SERBAS-Y has demonstrated strong test-retest reliability among our gay and bisexual male youths (Schrimshaw, Rosario, Meyer-Bahlburg, & Scharf-Matlick, in press). At the six-month assessment, youths were asked to indicate the number of male sexual partners they had during the past 6 months. They also were asked the number of times they had had sex with each of these male partners during the past 6 months. The total number of sexual encounters was computed by summing across partners. At both the 6-month and 12-month assessments, youths were asked about various sexual behaviors with each of their male partners, including the number of episodes of receptive anal sex and insertive anal sex, as well as the number of such episodes in which condoms were used. The total number of unprotected receptive and insertive anal episodes across partners was computed by subtracting the total number of protected episodes from the total number of episodes. Because the numbers of sexual partners and encounters were positively skewed, these data were logarithmically transformed for parametric statistical analyses. The numbers of unprotected receptive and insertive anal sex episodes also were positively skewed. However, the logarithmic transformations could not normalize these data. Therefore, these data were dichotomized to assess whether youths reported (1) or did not report (0) having unprotected receptive and insertive anal sex across the 6- and 12-month assessments.

Measure of Social Desirability

Because individuals may provide socially desirable responses to questions about stigmatized behaviors, it may be necessary to control for social desirability. After removing two items that were inappropriate for youths, the resulting 31-item Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1964) was self-administered at baseline using a true-false response format. Factor analysis revealed that 12 items loaded on a single factor. A count of the 12 items endorsed was used as the indicator of social desirability ($\alpha = .70$).

Data Analysis

The bivariate relations among the model variables were examined using Pearson correlations. Age, SES, race/ethnicity, recruitment site, and social desirability were examined as potential covariates using Pearson correlations or ANOVA, with post-hoc tests conducted using Fisher’s protected *t* test. Path analysis was used to examine the theoretical model. Path analysis is a series of simultaneous regression equations that examines the unique relation of each predictor to an outcome by controlling for other predictors and

covariates. Path models were tested using multiple linear regression when examining continuous outcome variables (e.g., self-esteem, anxious symptoms, numbers of sexual partners) and logistic regression when examining dichotomous outcomes (e.g., unprotected receptive anal sex). Specifically, a series of simultaneous regression models was conducted in which the coming-out process, gay-related stress, and sexual abuse predicted self-esteem; all of these variables predicted anxious symptoms; these variables, in turn, predicted substance abuse; all of these variables predicted safer-sex intentions; all of these variables predicted number of sexual partners; in turn, these variables predicted number of sexual encounters; finally, simultaneous logistic regression was used such that all prior variables were used to predict unprotected receptive anal sex and unprotected insertive anal sex. Analyses were conducted using pairwise deletion to maximize the sample for each analysis; however, we did not impute missing data for youths lost to follow up. Findings from the multiple linear regression are reported using standardized regression coefficients (β) and for those from the logistic regression, odds ratios (*OR*) are reported. The beta and *OR* represent the strength of the relation between each unique predictor and its outcome (i.e., direct effects). Indirect effects are the product of two or more adjacent direct effects, for example, if A and B are related, and B and C are related, then A is indirectly related to C by means of B. The strength of the indirect effect is the product of relation of A to B by the relation of B to C (i.e., $\beta_{AB} \times \beta_{BC}$). We present the significant direct effects from the analyses. Therefore, all the indirect paths involving the significant direct effects are also significant (see Cohen, Cohen, West, & Aiken, 2003; Kenny, 1979, for further discussion of indirect effects).

Results

Descriptive Information and Bivariate Relations

The means and standard deviations of each model variable appear in Table 1. The young gay and bisexual men reported a mean of approximately 3 male sexual partners and 25 same-sex sexual encounters in the time between their baseline and 6-months assessments. Unprotected receptive anal sex (URA) was reported by 32% of the young men and 41% reported unprotected insertive anal sex (UIA) in the one-year study period. The young men also reported a number of other health concerns at baseline, such that 90% reported at least some degree of distress associated with anxious symptoms and 48% reported at least some indication of substance abuse symptoms. Of the young men, 54% reported a history of childhood sexual abuse.

Pearson correlations among the model variables are presented in Table 1. Young gay and bisexual men who experienced lower self-esteem, greater anxious symptoms, and a history of childhood sexual abuse at baseline significantly reported more sexual partners at the 6-months assessment. Young men with poorer intentions to engage in safer sex and more sexual partners significantly reported more sexual encounters. Finally, young men reporting poorer condom use intentions, more anxious symptoms, a history of sexual abuse as a child, more sexual partners, and more sexual encounters were significantly more likely to engage in either or both URA and UIA.

Covariates

Demographic characteristics and the tendency to provide socially desirable responses were examined for their relations to the model variables. The analyses indicated the need to control for age, SES, race/ethnicity, and social desirability when examining the relations among the model variables.

Age was related significantly ($p < .05$ unless otherwise indicated) to several variables, with older male youths reporting involvement in more gay-related activities ($r = .42$), more

positive attitudes toward homosexuality ($r = .27$), and more sexual encounters ($r = .20$, $p < .10$). Although young men of higher SES tended to report more sexual partners ($r = .20$, $p < .10$), they were less likely to engage in URA than were youths of lower SES ($r = -.22$, $p < .10$). Young men of higher SES were also more likely to identify as gay than were youths of lower SES ($r = .26$). Young men with more socially desirable responses reported higher self-esteem ($r = .33$) and more positive attitudes toward homosexuality ($r = .30$) than youths who provided fewer socially desirable responses.

Race/ethnicity was significantly ($p < .05$) associated with self-esteem $F(3,76) = 2.85$, involvement in gay-related activities $F(3,76) = 3.49$, comfort with others knowing of their homosexuality $F(3,76) = 4.92$, and self-disclosure of sexual identity to others $F(3,76) = 7.82$. Pairwise comparisons indicated that young Black men differed significantly from other youths. Specifically, Blacks reported lower self-esteem ($M = 3.1$, $SD = 0.6$) than Latinos ($M = 3.5$, $SD = 0.4$). Young Black men were involved in fewer gay-related activities ($M = 5.2$, $SD = 3.0$) than were young men of Latino ($M = 6.7$, $SD = 2.6$), White ($M = 7.5$, $SD = 2.5$), and other ($M = 8.0$, $SD = 2.4$) ethnic backgrounds. Black youths were less comfortable with others knowing about their homosexuality ($M = 2.4$, $SD = 0.8$) than were young men of Latino ($M = 2.9$, $SD = 0.6$), White ($M = 3.1$, $SD = 0.7$), and other ($M = 3.0$, $SD = 0.6$) ethnic backgrounds. Young Black men had disclosed their sexual identity to fewer numbers of individuals ($M = 4.1$, $SD = 2.6$) than had young men of White ($M = 9.7$, $SD = 4.4$) or other ($M = 7.8$, $SD = 5.3$) ethnic backgrounds. Young Latino men had disclosed their sexual identity to fewer individuals than had young White men ($M = 6.1$, $SD = 4.5$ vs. $M = 9.7$, $SD = 4.4$, respectively). In subsequent multivariate analyses, race/ethnicity was dummy coded with Blacks the reference group to which Latinos and a combination of Whites and young men of other ethnic backgrounds were compared.

Recruitment site was significantly related to involvement in gay-related activities, $F(3,76) = 4.32$. When controls were imposed for race/ethnicity, the relation between recruitment site and involvement was no longer significant. Therefore, no controls for recruitment site were imposed in subsequent analyses.

Multivariate Associations

Figure 2 contains the path analytic findings. To simplify Figure 2, the significant covariates (i.e., age, SES, race/ethnicity, and social desirability) are not presented; however, they are discussed at the end of this section. In Figure 2, all direct and indirect effects are statistically significant at $p < .05$, unless otherwise indicated. Below, we describe the findings regarding the direct and indirect associations of URA and UIA, from the most proximal predictors (number of sexual encounters) to the most distal (childhood sexual abuse). We do the same for the other sexual risk behaviors.

Sexual Risk Behaviors—As hypothesized (see Figure 1), direct and indirect effects existed among the sexual risk behaviors. Specifically, number of sexual partners was associated with more sexual encounters. In turn, more sexual encounters were associated with a greater likelihood of reporting UIA, with each additional sexual encounter increasing the likelihood of UIA by 3%.

Safer Sex Intentions—Consistent with the hypothesized model, poor safer sex intentions were significantly related to engaging in both URA and UIA.

Mental Health Concerns: Self-Esteem, Anxious Symptoms, and Substance Abuse—As hypothesized, mental health concerns were related to each other and to subsequent sexual risk behaviors directly and indirectly. Lower self-esteem was significantly

related to greater anxious symptoms. Anxious symptoms, in turn, were associated with more substance abuse symptoms and more sexual partners. Substance abuse, in turn, was directly related to URA, such that each symptom of substance abuse increased the likelihood of URA by approximately 29 times ($OR = 29.46$). Thus, both lower self-esteem and greater anxious symptoms may promote URA indirectly through their relations with substance abuse.

Anxious symptoms were unexpectedly related to fewer sexual encounters. We had not hypothesized a relation between these variables (see Figure 1), and, indeed, the Pearson correlation was essentially zero ($r = .01$). However, the medium-sized path coefficient ($\beta = -.30$) indicated that some other variable(s) enhanced the relation between anxious symptoms and sexual encounters. When we deleted substance abuse from the regression equation, the relation between anxious symptoms and sexual partners was nonsignificant at $p > .10$, suggesting that substance abuse statistically enhanced the relation between anxious symptoms and sexual encounters.

Population-Specific Factors: Coming-Out Process and Gay-Related Stress—

Three aspects of the coming-out process were uniquely associated, directly and indirectly, with sexual risk behaviors. More positive attitudes toward homosexuality were significantly associated with a lower likelihood of engaging in URA. Furthermore, more positive attitudes toward homosexuality were directly associated ($p < .06$) with fewer sexual encounters. Given that sexual encounters were associated with UIA, positive attitudes may indirectly decrease the likelihood of UIA by means of its association with fewer sexual encounters. Positive attitudes toward homosexuality also were significantly associated with fewer anxious symptoms. Thus, positive attitudes may indirectly decrease the likelihood of sexual risk behaviors by means of fewer substance abuse symptoms and fewer sexual partners (as described earlier).

However, two aspects of the coming-out process were unexpectedly associated with adverse outcomes. First, greater comfort with others knowing about their homosexuality was associated with a greater (rather than lower) likelihood of URA. Second, disclosure of one's sexual identity was associated with more (rather than less) anxious symptomatology. In addition, gay-related stress was not significantly associated with any model variables.

Childhood Sexual Abuse—A history of sexual abuse was directly associated with more sexual partners at the 6-months assessment, as hypothesized. This suggests, that childhood sexual abuse may have indirect effects on UIA by promoting more sexual partners, given that partners were associated with more sexual encounters, and encounters were associated with a greater likelihood of UIA.

Significant Covariates—Three covariates were significantly ($p < .05$) related to at least one of the outcome variables. Latino youths had higher self-esteem than Black youths ($\beta = .31$) and youths providing more socially desirable responses reported higher self-esteem ($\beta = .31$). In addition, youths of lower SES reported more substance abuse than youths of higher SES ($\beta = -.24$, $p < .06$).

Discussion

Given that young gay and bisexual men have a high prevalence of HIV infection (e.g., Valleroy et al., 2000), it is imperative to understand their sexual risk behaviors in order to develop interventions that are effective in reducing and maintaining low levels of risk behaviors. Based on cross-sectional findings (e.g., Rosario et al., 2001; Stall et al., 2003) and theoretical arguments (e.g., Ajzen & Fishbein, 1980), we proposed a model that

identifies pathways by which mental health concerns, population-specific factors, and other pertinent factors influence sexual risk behaviors. In addition, we examined the model using longitudinal data to investigate the associations of condom use intentions, mental health concerns (e.g., anxious symptoms, substance abuse), population-specific factors (e.g., the coming-out process), and childhood sexual abuse with subsequent sexual risk behaviors of young gay and bisexual men. Examination of the model indicated that poor intentions to engage in safer sex, mental health concerns, the coming-out process, and sexual abuse, all assessed at baseline, were directly or indirectly associated with young men's sexual risk behaviors in the subsequent year.

Poorer safer sex intentions predicted more sexual encounters and a greater likelihood of URA and UIA. As such, these findings support the continued efforts to promote safer sex intentions among young gay and bisexual men. Indeed, given the greater awareness of intentional condomless sex (i.e., "barebacking") among gay and bisexual men (Halkitis, Parsons, & Wilton, 2003; Mansergh et al., 2002), promoting safer sex intentions are of renewed importance. However, poor intentions were not the only predictors of unprotected sex. Thus, interventions to reduce unprotected sex should not be based exclusively on the theory of reasoned action or related models that emphasize intentions for safer sex (e.g., Ajzen & Fishbein, 1980; Rosario et al., 1999). Attempts to reduce unprotected sex should also address other pertinent factors including the existence of mental health problems (e.g., substance abuse) and more population-specific concerns (e.g., attitudes toward homosexuality).

As hypothesized, mental health is important for understanding the sexual risk behaviors of young gay and bisexual men. Both greater anxious symptoms and substance abuse symptoms were related directly to sexual risk behaviors, specifically, anxious symptoms with more sexual partners and substance abuse with URA. Thus, interventions to address sexual risk behaviors must also address the mental health and substance abuse concerns of this population. The elevated psychological distress (Bontempo & D'Augelli, 2002; Fergusson et al., 1999) and substance use and abuse (e.g., Fergusson et al., 1999; Russell et al., 2002) found among young gay and bisexual men (and the larger gay community) must be reduced in their own right and to mitigate their impact on sexual risk behaviors. Our data suggest that, by addressing the self-esteem and attitudes toward homosexuality (both of which were associated with fewer anxious symptoms) of young gay and bisexual men, interventions may indirectly serve to improve the youths' mental health and reduce their subsequent sexual risk behaviors.

The high prevalence of childhood sexual abuse found among young gay and bisexual men from both representative samples (Goodenow et al., 2002) and the present sample is of concern given the observed long-term consequences of sexual abuse for subsequent sexual risk behaviors. In particular, youths with a history of childhood sexual abuse were found to report a greater number of subsequent sexual partners. This suggests that childhood sexual abuse may also indirectly place young gay and bisexual men at risk for an increased number of sexual encounters and greater likelihood of UIA. Psychotherapeutic interventions directly targeting gay and bisexual men with a history of childhood sexual abuse may be needed to address the long-term impact of this abuse on sexual risk behaviors.

Finally, the coming-out process, most particularly attitudes toward homosexuality (i.e., internalized homophobia), was found to have a number of direct and indirect relations with subsequent sexual risk behaviors. Although our young gay and bisexual men reported highly positive attitudes toward homosexuality, those with more positive attitudes had fewer sexual encounters and a lower likelihood of URA. Thus, even slightly negative attitudes may have adverse consequences. In addition, positive attitudes may be indirectly associated with a

lower likelihood of UIA as well, by means of its association with fewer sexual encounters. Furthermore, young men with positive attitudes toward homosexuality were found to experience fewer anxious symptoms and, therefore, may indirectly experience fewer symptoms of substance abuse. In essence, the model indicated that positive attitudes toward homosexuality were beneficial for mental and physical health. The finding is unsurprising from the perspective of the self, given that holding positive attitudes toward homosexuality, when one is gay or bisexual, indicates that the individual likes and is accepting of who he or she is. Such an individual, in turn, is more likely to engage in practices that take care and nurture any aspect of the self (e.g., safer sex practices) than is an individual who dislikes and potentially rejects the self. As such, interventions to address sexual risk behaviors may need to address the underlying negative attitudes which some young gay and bisexual men hold toward homosexuality.

Despite significant findings supporting our proposed model, some unexpected findings emerged. We found that two aspects of the coming-out process (i.e., comfort with others knowing about their homosexuality and self-disclosure of sexual identity) were associated with negative outcomes. We found that comfort with others knowing their homosexuality was related to a higher (rather than lower) likelihood of URA. A potential reason for this finding may be that comfort with others knowing about their sexuality may allow young gay and bisexual men to feel disinhibited in various behaviors, including interpersonal interactions, such as unprotected sex.

We also found that self-disclosure of sexual identity was related to more (rather than less) anxious symptoms. Although greater disclosure may place youths at risk for experiencing gay-related stress (i.e., negative reactions by others to disclosure), the relation between disclosure and anxious symptoms did not change after controlling for gay-related stress. However, the failure to explain the relation may be a function of our measure of gay-related stress, the limitations of which have been discussed elsewhere (Rosario et al., 2002), and which include assessing stress experienced only during the recent past three months (rather than over a longer time span).

It is curious that the current study found a number of significant direct associations with URA, but that relatively few direct associations were found for UIA. For example, both attitudes toward homosexuality and comfort with others knowing about their homosexuality were directly associated with URA, but not with UIA. Except for safer sex intentions which were related to both URA and UAI, the current study suggests that these two behaviors do not necessarily have common predictors. Reasons for this are unclear. However, one possibility may be that the insertive role provides the individual with greater control and agency over the condom application than does the receptive role. Thus, the individual in the insertive posture is better able to actually act on his intentions and, as such, intentions are the critical factor in predicting UAI. By comparison, and despite the importance of intentions, the individual in the receptive role may have less agency to act on his intentions. Consequently, other factors (e.g., the coming-out process) may play an important role in URA.

The study findings must be interpreted within the context of the study limitations. First, our sample size was modest. This resulted in a relatively small number of unprotected sex acts, thereby requiring us to examine unprotected anal sex over the course of the study's entire prospective or follow-up period (combining the prevalence at the six- and twelve-month assessments). Once this was done, the study sample size was sufficient to detect a medium effect size and to identify a number of hypothesized associations. Second, despite examining a broad theoretical model of factors potentially related to subsequent sexual risk behaviors, there were other factors that the present study did not assess. Specifically, our measure of

sexual behaviors, while assessing behaviors with specific partners, did not assess if these were main or causal partners – a factor found to be related to the risk behaviors of young gay and bisexual men (e.g., Crepaz et al., 2000; Dudley et al., 2004; O'Donnell et al., 2002). Finally, the generalizability of this sample may be limited. This sample of urban gay and bisexual male youths was recruited from gay-focused programs or college organizations, and, as such, the youths may be more comfortable and open about their sexuality than samples from other venues. However, we did recruit from several programs and college organizations to obtain greater diversity in participants. In addition, these young men from New York City may have greater access to both drugs and sexual partners than more rural youths, but they also may be exposed to more safer sex promotion messages. Despite these limitations, this study is one of very few longitudinal studies of the sexual risk behaviors of young gay and bisexual men. In addition, herein we propose and examine a model of these sexual risk behaviors, providing both a theoretical framework and unique information regarding the direct and indirect paths by which sexual risk behaviors and other health concerns may occur among the relatively understudied but important population of young gay and bisexual men.

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Figure 1.
Theoretical Model of the Predictors of Sexual Risk Behaviors. (Note: The multidimensional coming-out process is composed of five factors).

Figure 2. Longitudinal Examination of the Theoretical Model of Sexual Risk Behaviors (n of at least 73 and all coefficients significant at $p < .05$, unless otherwise indicated).

Table 1
Bivariate correlations among baseline model variables and subsequent sexual risk behaviors

	M	SD	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.
Baseline Assessment (<i>n</i> = 80):																
1. Poor safer sex intentions	1.68	0.76	–													
2. Self-esteem	3.32	0.51	–.09	–												
3. Anxious symptoms	1.20	0.96	.09	–.34*	–											
4. Substance abuse	1.31	0.59	–.03	–.12	.38*	–										
5. Involvement in gay-related activities	6.48	2.83	.23*	.12	.08	.12	–									
6. Positive attitudes toward homosexuality	35.08	14.81	.04	.41*	–.28*	–.04	.38*	–								
7. Comfort with others knowing their homosexuality	2.78	0.74	.12	.35*	–.11	–.02	.50*	.62*	–							
8. Disclosure of sexual identity	6.40	4.47	.17	.16	.11	.14	.19*	.45*	.43*	–						
9. Sexual identity (gay v. bisexual)	0.68	0.47	.05	.15	.04	.10	.31*	.28*	.42*	.16	–					
10. Gay-related stress	0.70	0.91	–.12	.03	.13	–.07	.04	–.15	–.05	–.14	–.04	–				
11. Childhood sexual abuse	0.54	0.50	.05	–.07	.23*	.03	.21	.01	.11	.07	.04	–.06	–			
Six-Month Assessment (<i>n</i> = 77):																
12. Number of sex partners [/]	3.34	4.30	.22 ⁺	–.23*	.40*	–.02	.20	–.04	.01	.03	.01	–.12	.35*	–		
13. Number of sexual encounters [/]	25.29	35.81	.32*	.12	.05	–.01	.16	.08	.17	.07	.15	–.13	.11	.36*	–	
Six- and Twelve-Month Assessment (<i>n</i> = 73):																
14. Unprotected receptive anal sex	0.32	0.47	.42*	.08	.13	.20	.06	–.11	.18	.04	.07	–.05	.25*	.14	.45*	–
15. Unprotected insertive anal sex	0.41	0.50	.34*	–.13	.25*	.02	.11	–.12	.03	.04	–.09	.05	.27*	.25*	.34*	.59*

[/] Note: Means were computed using untransformed data (for descriptive purposes), but logarithmically transformed data were used to compute correlations.

* $p < .05$

+ $p < .06$