



Published in final edited form as:

AIDS Behav. 2008 September ; 12(5): 713–720. doi:10.1007/s10461-007-9321-9.

HIV Prevention Altruism and Sexual Risk Behavior in HIV-Positive Men Who Have Sex with Men

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Abstract

An understanding of men's motivations to avoid risk behavior is needed to create efficacious HIV prevention programs for HIV-positive men who have sex with men (MSM). This study investigates the relationship between sexual risk behavior and HIV prevention altruism, which is defined as the values, motivations, and practices of caretaking towards one's sexual partners to prevent the transmission of HIV. In a sample of 637 HIV-positive MSM, HIV prevention altruism significantly protects against serodiscordant unprotected anal intercourse (SDUAI) in crude analysis, but not after adjustment for drug use and compulsive sexual behavior. HIV prevention altruism is also related to avoidance of anal sex, but is not related to serodisclosure to secondary partners. Lack of altruism appears related to sexual risk behavior in HIV-positive MSM, although other psychological and contextual factors play significant roles. The promotion of HIV prevention altruism may provide a formidable new direction for HIV prevention programs.

Keywords

altruism; MSM; HIV-positive; prevention

INTRODUCTION

HIV-positive persons are living longer lives as a result of improved treatment and care. This encouraging stride has produced the ironic result of increasing the population of people living with HIV who can potentially spread the virus to others (CDC, 2006). In response, the creation of effective HIV prevention programs for persons living with HIV has become a national priority. Both the National Institutes for Health (NIH, 1997) and the Centers for Disease Control and Prevention (CDC, 2003) have emphasized the urgent need for research and prevention programs that specifically target people living with HIV, especially in communities of men who have sex with men (MSM) and persons of color. New and improved strategies as well as next-generation research questions are needed to prevent the continued spread of HIV in these populations (Stall and van Griensven, 2005).

Considerable levels of sexual risk behavior among HIV-positive MSM continue to be reported in both epidemiological and behavioral studies (Parsons *et al.*, 2003; Semple *et al.*, 2000, 2003). Research has shown rates of unprotected anal intercourse (UAI) among HIV-positive MSM ranging from 9% to 51% (Marks *et al.*, 1999) along with increases in the incidence of gonorrhea and syphilis (CDC, 2006). There is also evidence of an emerging

subculture of barebacking, which is the intentional avoidance of condoms during anal sex (Halkitis *et al.*, 2003; Sheon and Crosby, 2004).

Most of the major theories in the field of HIV prevention, including the Health Belief Model (Janz and Becker, 1984), the Taxonomy of Educational Objectives (Bloom *et al.*, 1964), and Social Cognitive Theory (Bandura, 1994), have relied on motivations of self interest in which HIV-negative MSM have an implicit desire to remain uninfected (Nimmons *et al.*, 2000; Nimmons, 1998). This paradigm fails to adequately address prevention for HIV-positive MSM, who by definition lack such motivation. An improved and more complete understanding of HIV-positive men's motivations to avoid risk behavior is needed in order to address the specific prevention needs in this population.

In the context of sexual risk behavior, both self-interest and concern for others may play a role in the decision to practice safer sex. HIV-positive MSM who practice safer sex may receive some self-benefit from reducing their own risk for reinfection with HIV or other sexually transmitted infections, but their ultimate goal is the protection of their sexual partners from HIV. Nimmons and Folkman (1999) have argued that condom use involves self-sacrifice, which includes decreasing tactile pleasure, potential loss of erection, lack of spontaneity, reduced sensation, and embarrassment. Due to these significant costs, they argue that the term altruism is in fact appropriate. Even if one argues that these are insignificant costs the term altruism may still apply since Batson and Shaw (1991) have argued that altruism does not require self-sacrifice and can even involve self-benefit, as long as self-benefit is an unintended consequence and not the ultimate goal.

The term "prevention altruism," coined by Nimmons (1998), is defined as "the values, motivations, and practices of caretaking in one's sexual behavior, which arise out of a concern for others." This includes protecting one's sexual partner from disease and having a concern for the effects that HIV infection could have on a person's friends, family, or community. This altruistic concern for others, therefore, can directly affect the sexual behavior of MSM. This type of altruism is best attested to by the wealth of literature showing historically lower risk behavior among HIV-positive MSM compared to HIV-negative or HIV-unsure MSM (Coates *et al.*, 1988; Dawson *et al.*, 1991; Frazer *et al.*, 1988; Higgins *et al.*, 1991; McCusker *et al.*, 1988; McCusick *et al.*, 1990; van Griensven *et al.* 1988).

While significant attention has been paid to the risk factors leading to unprotected sex, protective factors have been understudied until recently. A study of 250 HIV-positive MSM from New York and San Francisco found that nearly two-thirds of the participants attributed personal responsibility as the motivation behind their decision to protect their sexual partners from becoming infected with HIV (Wolitski *et al.*, 2003). Subsequent data from other research identified personal responsibility as a significant protective factor against serodiscordant unprotected anal intercourse (SDUAI) (Wolitski *et al.*, 2004; van Kesteren *et al.*, 2005).

In a qualitative study with 36 men of mixed HIV status from the New York and San Francisco areas, Nimmons and Folkman (1999) identified five themes, termed "other sensitive motivations" for safer sex. These included partner-related altruism, ethics and morality, perceived responsibility to the community, self-definition concepts, and extended relationship concerns. This research was extended into a quantitative study by Nimmons, Acree, and Folkman (2000) that assessed the psychometric properties of a new scale titled Other-Sensitive Motivation, which included an altruism subscale. This study was the first quantitative investigation into other-sensitive motives for safer sex. The scale consisted of 145 items organized into subscales around the themes identified in the previous qualitative

study. The overall composite scale was significantly associated with sexual safety in a sample of 102 gay men of mixed HIV status. Findings from these studies support the need to investigate potential protective factors such as altruism.

The current article examines the relationship between HIV prevention altruism and sexual risk behavior in a sample of 637 HIV-positive MSM, predominately men of color, from six HIV epicenters in the U.S. We hypothesize that HIV prevention altruism will be significantly related to three dependent variables: 1) avoidance of serodiscordant unprotected anal intercourse (SDUAI), 2) avoidance of anal sex, and 3) greater serodisclosure to secondary sex partners. We selected these measures of sexual risk behavior because we hypothesize that highly altruistic men would be more likely to 1) use a condom for anal sex with a serodiscordant partner, 2) avoid anal sex all together, 3) disclose their status to secondary partners, or use a combination of these strategies.

We also examined demographic variables, drug use, and compulsive sexual behavior, as prior studies have found these to be related to sexual risk behavior among HIV-positive MSM and because their relationship with HIV prevention altruism was unknown (Benotsch *et al.*, 1999; Chen *et al.*, 2003; Parsons *et al.*, 2003; Parsons *et al.*, 2005; Miner *et al.*, 2007; O'Leary *et al.*, 2005).

METHODS

Participants

Participants were 637 HIV-positive MSM who attended a randomized controlled trial of an HIV-prevention weekend seminar-based intervention: Seattle, WA, ($n=109$); Washington, D.C. ($n=66$); Boston, MA ($n=60$); New York, NY ($n=165$); Los Angeles, CA ($n=139$); and Houston, TX ($n=98$). Table 1 outlines the general demographic and health characteristics of the sample. The mean age of the participants was 42.3 years ($SD=8.2$). The sample included mostly men of color ($n=467$, 73.3%), most notably African-Americans ($n=275$, 43.5%). Level of education was fairly high with 60.4% ($n=384$) of the men reporting at least some college, nearly half the men were on disability ($n=300$, 47.1%), and only 28.3% ($n=180$) were employed. The median reported annual income was \$10,080. Participants reported being HIV-positive for an average of 11.5 years ($SD=6.2$) and 75% ($n=466$) indicated current use of antiretroviral therapy. Nearly one-half of the men in the sample reported an undetectable viral load at their most recent medical visit ($n=301$, 49.3%); however, a notable number did not know their viral load or had never had it measured ($n=102$, 16.8%). The percentage reporting a CD-4 count below 200 was 10.7% ($n=65$).

Procedures

The data presented are pre-test data collected prior to subjects' assignment to an intervention condition. Participants were recruited, screened, and enrolled by community-based organizations (CBOs) in each city through advertising in local gay publications, passing out flyers in popular gay neighborhoods, and placing posters in venues frequented by local MSM. CBOs also advertised the study on their websites, and several utilized HIV/AIDS and STD clinics to recruit participants. Participants were asked to read and sign a copy of the consent form before completing the baseline questionnaire. Data were collected in group settings, where aid was available from research staff for participants with problems reading or understanding questions. All instruments were self-report inventories. Participants were discouraged from talking with one another during data collection, although there were no attempts to separate participants from one another. Upon completion of the entire weekend seminar, participants were paid \$100 in cash.

Measures

HIV prevention altruism—A 7-item Likert-type scale measures level of altruistic motivations toward prevention of HIV transmission. Reliability analysis was performed on the altruism subscale of the Other-Sensitive Motivations Scale created by Nimmons, Acree, and Folkman (2000). This analysis yielded seven items ($\alpha = .83$) that were included on the baseline instrument. Participants indicated level of agreement on seven items yielding a total altruism score ranging from 7 to 35. Higher scores indicate a higher level of HIV prevention altruism. The reliability of this scale in the current sample was $\alpha = .91$.

Serodiscordant unprotected anal intercourse—The number of serodiscordant unprotected anal intercourse acts in the past three months was first summed. SDUAI was defined as UAI with a partner of opposite or unknown HIV status. A dichotomous variable was then created to measure if the participant had engaged in SDUAI one or more times (1=yes, 0=no). Participants who reported not engaging in anal intercourse at all were excluded.

Avoidance of anal sex—A second dichotomous variable was created to indicate whether or not each participant had engaged in any anal intercourse at all (either protected or unprotected) with another man in the past three months.

Serodisclosure to secondary partners—A third variable was created to indicate whether men who reported secondary male partners in the past three months disclosed their HIV status to all, some, or none of those partners.

Compulsive sexual behavior—A 13-item Control subscale from the Compulsive Sexual Behavior Inventory (Coleman *et al.*, 2001) measures the degree to which a participant engaged in compulsive sexual behavior. The reliability in the sample was $\alpha = .92$.

Analysis

Frequency checks were run on all variables to look for potential outliers, and internal validity checks were run on key variables that appeared in multiple sections in the survey. Multiple logistic regression was the primary statistical method used to analyze the data for all three hypotheses. Crude models were run first, followed by adjusted models. Covariates were selected on the basis of their association with the total altruism score and the dependent variables and/or because of prior work citing a significant relationship. The total score on the altruism scale was entered into all regression models in tertiles. The highest tertile ($n=224$, 35.2%) contained participants whose total altruism score was 34–35; the middle tertile ($n=204$, 32.0%) contained participants whose total altruism score was 28–33; and the bottom tertile ($n=209$, 32.8%) contained participants whose total altruism score was 27 or below. The sample of 637 includes only those men who completely filled out the altruism scale. Non-completers ($n=38$, 5.6%) were excluded from analysis. An alpha level of 0.05 was selected as the level of statistical significance and an alpha of 0.10 as evidence of trend.

RESULTS

The crude regression model showed support for the first hypothesis that higher levels of HIV prevention altruism would be protective against SDUAI (see Table 2). Participants who scored in the highest tertile on HIV prevention altruism were 42% less likely to report SDUAI than participants who scored in the lowest tertile ($OR=0.58$, 95% *CI*: 0.38, 0.88, $p=0.01$). The crude model was subsequently adjusted for total score on the Compulsive Sexual Behavior Inventory, ever vs. never use of Viagra before or during anal sex, and ever

vs. never use of crystal meth before or during anal sex. The adjusted model, though not statistically significant, did show evidence of trend ($OR=0.64$, 95% CI : 0.39, 1.06, $p=0.08$) and reflected only a modest change in the strength of the association.

The second hypothesis, that men scoring higher on prevention altruism would be more likely to avoid anal sex, was significant (see Table 3). Overall, 17.1% ($n=109$) of the men reported being celibate from anal sex in the past three months. In the crude model, men in the highest tertile of altruism were half as likely as men in the lowest tertile to report engaging in anal sex ($OR=0.49$, 95% CI : 0.28 – 0.81, $p=0.007$). This model was subsequently adjusted for total score on the Compulsive Sexual Behavior Inventory. In this adjusted model, participants who scored in the highest tertile on altruism were still about 42% less likely to report engaging in anal sex than participants who scored in the lowest tertile ($OR=0.58$, 95% CI : 0.34 – 0.99, $p=0.048$), reflecting only a modest change in the strength of the association.

The third hypothesis test, that men scoring higher on prevention altruism would be more likely to disclose their HIV status to secondary partners, was not significant.

Logistic regression was used to examine the relationship between the total altruism score and men who always disclosed versus men who usually or never disclosed, and this result was not significant ($OR=1.15$, 95% CI : 0.92, 1.45, $p=0.22$). A separate regression examined the relationship between the total altruism score and men who usually or always disclosed compared to men who never disclosed, and this result was also not significant ($OR=1.10$, 95% CI : 0.87, 1.39, $p=0.41$). Evidence of considerable sexual risk behavior was present in this sample of HIV-positive MSM. Most notably, SDUAI was reported by 43.8% ($n=279$) of participants. Nine percent of the sample ($n=56$) also reported having a recent STI other than HIV. Over three-quarters of the men ($n=496$, 77.8%) reported having one or more male secondary partners in the past three months. The average number of secondary partners was 5.0 ($SD=11.5$, range: 0 to 150), while the average number of secondary partners to whom participants disclosed their HIV status was only 2.0 ($SD=5.3$, range: 0 to 60).

High levels of HIV prevention altruism were also present in the sample. The mean score on the HIV prevention altruism scale was 29.1 ($SD=6.58$, range: 7 to 35), and almost one-third of the men scored a 35 ($n=175$, 27.5%).

DISCUSSION

The key finding in this study was that HIV prevention altruism is shown to have a protective effect on sexual risk behavior among HIV-positive MSM. Men who scored high on altruism were about half as likely as men who scored low to report engaging in anal intercourse. This finding lends strength to the argument that refraining from anal sex is one risk reduction method used by HIV-positive MSM to reduce the risk of HIV transmission. HIV prevention altruism was also found to have a protective effect against SDUAI, although the effect was not statistically significant after controlling for the use of crystal meth, Viagra, and CSB. It appears that the presence of these disinhibiting behaviors may override altruistic motivations in this population, although it should be noted that controlling for these variables did not markedly decrease the strength of the measure of association.

Some HIV-positive MSM may perform a type of cost-benefit analysis in the context of sexual behavior, in which their altruistic tendencies are pitted against either compulsive sexual desires and/or the disinhibiting effects of crystal meth and Viagra. The short- and long-term consequences of safer sex may be weighed during this analysis, in which HIV prevention altruism motivates the individual to use a condom, but drug use and CSB drive immediate, short-term gratification in the form of unsafe sex. This finding lends support to the idea put forth by Nimmons and Folkman (1999) that altruistic motives for safer sex

occur outside the immediate context of sexual decision making, and to a great extent, occur during moments of self-reflection. This evidence underscores the urgent need for programs that work to directly intervene on drug use and CSB among HIV-positive MSM.

No evidence was found that HIV prevention altruism was related to serodisclosure to secondary partners. HIV prevention altruism may be evidenced more by actual behavior than by disclosure of one's status. For example, a highly altruistic HIV-positive man may not feel the need to disclose his status to a secondary partner if he either refrains from anal sex or uses a condom for anal sex. Even though a highly altruistic HIV-positive man is not more likely to disclose to secondary partners, he does appear more likely to insist on sex with condoms or to avoid anal sex all together.

In the larger behavioral trial from which this sample originated, the impact of a curriculum that aims to increase HIV prevention altruism, among other things, will be tested. When longitudinal data become available, we should learn whether this particular intervention was able to decrease SDUAI by increasing levels of HIV prevention altruism. We will also be able to investigate changes in altruism level and dependent variables over time.

Further research should look for other evidence of altruism in the lives of MSM, such as volunteerism, caretaking, or participation in other research. The concept of prevention altruism should also be applied and investigated in other domains in public health, for example, smokers' choices to keep second-hand smoke away from family members, or pregnant women's decision to prevent fetal alcohol syndrome.

This study has several limitations. First, because the data are cross-sectional, causal relationships cannot be assumed. Second, since self-report was used to determine HIV status, it is feasible that some participants could have lied about their status in order to enroll in the study and receive payment. Third, the high scores reported on the altruism scale could be indicative of social desirability bias or volunteer bias. Fourth, concern over laws surrounding HIV disclosure and sexual behavior could have made some participants reluctant to report engaging in SDUAI or to report lack of serodisclosure to their sexual partners. As a result, actual risk behavior may have been underestimated. Finally, results from this study cannot be generalized to non-MSM populations since the study utilized a convenience sample of HIV-positive MSM and because altruism, motivations for sex (e.g. procreation), and risk behavior may differ for the entire HIV-positive population.

Based on the results of this study, HIV prevention specialists should consider fostering HIV prevention altruism when designing future prevention programs. Strategies to increase caretaking of sexual partners may reduce sexual risk behavior and reduce the number of new HIV infections. Encouraging prevention altruism, the care for others, in combination with personal responsibility, the care for self (O'Leary *et al.*, 2005; van Kesteren *et al.*, 2005; Wolitski *et al.*, 2003; Wolitski *et al.*, 2004), may provide a new direction in HIV prevention.

The high level of risk behavior reported in this sample underscores the urgent need for efficacious, evidence-based prevention programs for MSM living with HIV. Programs that encourage altruistic concern for one's sexual partners while also targeting factors that can interfere or override other-centered concerns, specifically drug use and CSB, should be developed and tested. Such curricula may be essential to interventions targeting HIV-positive MSM.

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Table 1Demographic and Health Characteristics of Participants (*N* = 637)

<u>Age</u>	<i>n</i>	%
18–25	17	2.7
26–35	107	17.0
36–45	300	47.8
>45	204	32.5
<u>Race/Ethnicity</u>		
African-American/Black	275	43.5
Caucasian/White	164	26.0
Latino/Spanish/Hispanic	151	24.0
Other	41	6.5
<u>Sexual orientation</u>		
Homosexual/Gay/Same Gender Loving	493	81.9
Bisexual/Heterosexual/Other	109	18.1
<u>Years of education</u>		
High school graduate or less	252	39.6
At least some college	384	60.4
<u>Employment Status</u>		
Employed	180	28.3
On Disability	300	47.1
Other (student, retired, etc.)	156	24.5
<u>Annual Income</u>		
\$10,000	373	58.5
\$10,001–19,999	110	17.3
\$20,000–29,999	57	8.9
\$30,000	97	15.2
<u>Currently on antiretroviral medications</u>		
Yes	466	74.8
No	148	23.8
Don't know	9	1.4
<u>Viral load</u>		
Undetectable (< 50 copies/μl)	301	49.3
51–10,000 copies/μl	119	19.5
10,001–100,000 copies/μl	70	11.5
100,000+ copies/μl	18	3.0
Do not know	101	16.6
Never measured	1	0.2
<u>CD4+ count</u>		
200	65	10.7

201–349	126	20.7
350	330	54.2
Do not know	85	14.0
Never measured	3	0.5
<u>Had an STI within the past 3 months</u>		
No	567	91.0
Yes	56	9.0
<u>Currently has a primary partner</u>		
Yes	300	47.2
No	336	52.8
<u>Religion – current</u>		
Catholic	111	17.8
Lutheran/Presbyterian/Other Protestant	71	11.4
Evangelical/Born-again Christian	62	10
Muslim	10	1.6
Jewish	7	1.1
Atheist or Agnostic	22	3.5
Other	215	34.5
None	125	20.1

Table 2

Logistic regression of SDUAI by total HIV prevention altruism score (tertiles)

Crude Model						
Terile	Total score on prevention altruism scale	Beta	SE	Odds ratio	95% CI	p value
Third	34-35	-0.5457	0.2134	0.58	(0.38, 0.88)	0.01**
Second	28-33	-0.2435	0.2151	0.78	(0.51, 1.20)	0.26
First (referent)	27	-	-	1.0	-	-
Adjusted Model*						
Terile	Total score on prevention altruism scale	Beta	SE	Odds ratio	95% CI	p value
Third	34-35	-0.4429	0.2561	0.64	(0.39, 1.06)	0.08
Second	28-33	-0.2411	0.2545	0.79	(0.52, 1.35)	0.34
First (referent)	27	-	-	1.0	-	-

* Note: Adjusted for total CSB score, ever use of Viagra during anal sex, and ever use of crystal meth during anal sex

** Note: Indicates statistical significance ($p < 0.05$)

Table 3
 Logistic regression of any anal sex (yes/no) by total HIV prevention altruism score (tertiles)

Crude Model						
Tertile	Total score on prevention altruism scale	Beta	SE	Odds ratio	95% CI	P value
Third	34-35	-0.7231	0.2675	0.49	(0.28, 0.81)	0.007**
Second	28-33	-0.4215	0.2827	0.66	(0.37, 1.14)	0.136
First (referent)	27	-	-	1.0	-	-
Adjusted Model*						
Tertile	Total score on prevention altruism scale	Beta	SE	Odds ratio	95% CI	P value
Third	34-35	-0.5435	0.2751	0.58	(0.34, 0.99)	0.048**
Second	28-33	-0.3266	0.2893	0.72	(0.41, 1.27)	0.259
First (referent)	27	-	-	1.0	-	-

* Note: Adjusted for total CSB score

** Note: Indicates statistical significance ($p < 0.05$)