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SARIT A. GOLUB
Hunter College of the City University of New York, the Center for HIV/AIDS Educational Studies and Training, and the Graduate Center of the City University of New York, USA
JA'NINA J. WALKER
Center for HIV/AIDS Educational Studies and Training, and the Graduate Center of the City University of New York, USA
BUFFIE LONGMIRE-AVITAL
Center for HIV/AIDS Educational Studies and Training and Public Health Solutions/National Development and Research Institutes, USA
DAVID S. BIMBI
Center for HIV/AIDS Educational Studies and Training, and Laguardia Community College of the City University of New York, USA
JEFFREY T. PARSONS
Hunter College of the City University of New York, the Center for HIV/AIDS Educational Studies and Training, and the Graduate Center of the City University of New York, USA

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ADDRESS. Correspondence should be directed to:
SARIT A. GOLUB, PhD, Department of Psychology, Hunter College of the City University of New York, 695 Park Avenue, New York, New York 10065 [email: sarit.golub@hunter.cuny.edu]

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Abstract

Transgender women completed questionnaires of religiosity, social support, stigma, stress-related growth, and sexual risk behavior. In a multivariate model, both social support and religious stress-related growth were significant negative predictors of unprotected anal sex, but religious behaviors and beliefs emerged as a significant positive predictor. The interaction between religious behaviors and beliefs and social support was also significant, and post-hoc analyses indicated that high-risk sex was least likely among individuals with high-levels of social support but low levels of religious behaviors and beliefs. These data have important implications for understanding factors that might protect against HIV risk for transgender women.

Keywords

- *HIV*
- *religiosity*
- *sexual risk*
- *stress-related growth*
- *transgender*

Transgender women (also referred to as male-to-female or MTF transgender persons) are individuals who are born biologically male, but self-identify as female. Transgender women constitute a socially marginalized group with multiple stigmatized identities. Social stigma and marginalization are often associated with poor psychological adjustment and increased psychological distress, both critical predictors of high-risk behavior (Bockting, Robinson, & Rosser, 1998). A recent meta-analysis of 29 studies estimated average seroprevalence among transgender women at 28 percent (Herbst et al., 2008), and some data suggest that transgender women may have HIV incidence rates higher than any other risk group (Kellogg, Clements-Nolle, Dilley, Katz, & McFarland, 2001). HIV seroprevalence estimates are even higher for transgender women of color; in studies conducted in San Francisco, Los Angeles, and New York, African-American and Latina transgender women were at significantly higher risk for HIV infection compared to their white counterparts (Clements-Nolle, Marx, Guzman, & Katz, 2001).

Increased HIV risk among transgender women has been linked to a variety of behavioral factors, including high prevalence of sex work (Nemoto, Operario, Keatley, Han, & Soma, 2004), increased rates of unprotected anal sex (Garofalo Osmer, Doll, Sullivan, & Harper, 2005), and high rates of sex under the influence of alcohol or drugs (Bockting et al., 1998). Engagement in these high-risk behaviors has been linked to the stigma experienced by transgender women (Bockting et al., 1998), as exposure to stressful events is associated with a variety of unhealthy behaviors, including high-risk sexual behavior and substance use (Lang et al., 2003; Semple, Strathdee, Zians, & Patterson, 2009). In past studies of transgender women, high rates of discrimination predicted unsafe sex (Bockting, et al., 2002), as did low self-esteem and history of victimization (Garofalo et al., 2005).

At the same time, research on resilience to stress highlights several important factors that may assist stigmatized individuals in coping with discrimination and other stressful life situations. Social support has been demonstrated to act as a buffer against stress, blunting its negative effects and facilitating more effective coping (Cohen, 2004). Supportive friendships have been demonstrated specifically to reduce the association between stressors and sexual risk-taking (Brady, Dolcini, Harper, & Pollack, 2009). Unfortunately, stigmatized individuals may sometimes avoid social relationships, and lower levels of social support have been found to mediate the relationship between stigma and both psychological and physical functioning (Larios, David, Gallo, Henrich, & Talavera, 2009). In one study of transgender women, lack of social support emerged as an independent predictor of high-risk sexual behavior (Garofalo et al., 2005).

Another factor that has been associated with enhanced coping in the face of difficult life events is stress-related growth, defined as perceptions of positive personal or life changes associated with stressful events (Calhoun & Tedeschi, 2006) Perceptions of stress-related growth have been associated with a host of positive psychological outcomes, including decreased depression and increased emotional well-being (Helgeson, Reynolds, & Tomich, 2006). In addition, stress-related growth has been associated with positive health behaviors, including decreased alcohol and substance use (Milam, 2006), improved medication adherence (Weaver et al., 2005), and increased physical activity (Littlewood, Vanable, Carey, & Blair, 2008). However, little research has been conducted on perceptions of stress-related growth among transgender women, or on its potential impact on risk behavior in this population.

Religious behaviors and beliefs have also been identified as important components of resilience to stress. Using religious behaviors and beliefs as part of coping with negative life events has been associated with less depressive symptoms, higher self-esteem, improved cognitive functioning, and better life satisfaction (Pargament, Koenig, Tarakeshwar, & Hahn, 2004; Park, 2006; Yakushko, 2005). In accordance with evidence suggesting that religion can be used to counter experiences of stigma or discrimination, some lesbian, gay, bisexual, and transgender (LGBT) individuals use religious behaviors and beliefs (e.g. prayer, meditation, attending worship services), as a means to counter the oppression they feel based on their stigmatized identities (Bockting & Cesaretti, 2001; Fullilove & Fullilove, 1999; Love, Bock, Jannarone, & Richardson, 2005). However, religious affiliation may be a double-edged sword for some LGBT individuals. Religious institutions that stigmatize homosexual, bisexual, or gender non-conforming identities may actually increase mental health problems for LGBT individuals with strong religious beliefs or affiliations with these institutions (Fullilove & Fullilove, 1999; Love et al., 2005).

The present study attempts to examine the relationships among three factors that might protect

against sexual risk-taking among transgender women: social support, stress-related growth, and religious behaviors and beliefs. Often, investigations of HIV risk in this population focus on factors that *promote* risk behavior; in contrast, this analysis focuses on three factors identified in the literature as promoting resilience to stressful life events and *preventing* unhealthy behavior. Specifically, our analyses were designed to examine both bivariate and multivariate associations between each of these three factors and high-risk sexual behavior among transgender women, as well as explore the interactions among these factors in determining risk.

Methods

Participants

Seventy-five transgender women (biological sex male; gender identity female) were recruited from New York City and Northern New Jersey. Participants were predominantly Latina (45.3%) and Black (34.7%), and ranged in age from 18 to 56 (M = 35.37, SD = 10.48). Participants reported low levels of education (72% had GEDs or had not completed high-school), low personal income (68% reported making less than $30,000 per year), and 46.7 percent were unemployed. Half of participants (50.7%, n = 38) reported being HIV-positive. In terms of medical gender affirmation treatments, 93 percent of participants reported taking hormones; 35 percent (n = 26) reported silicone injections in their breasts (13.3%), face (20%) or buttocks (24%); 21.3 percent (n = 16) reported facial surgery, and 6.7 percent (n = 5) had their testicles removed. All participants reported having a penis.

Procedure

Participants were part of a research study designed to test the effectiveness of a four-week workshop series which addressed many life concerns of transgender women (e.g. feelings of isolation, sex work, HIV risk, physical/hormonal bodily changes). Transgender women of color served as peer outreach workers to recruit potential participants. Participants came in for baseline assessments in February 2008, followed by the four-week workshop series, and then completed three-month follow-up assessments. Participants received $40 for each assessment. Analyses in this paper utilized the baseline assessment data only. All procedures were approved by the Institutional Review Board of Hunter College.

Measures

Participants completed a series of validated measures using an Audio Computer Assisted Self Interview (ACASI). ACASI has been found to be an effective interview method for people of diverse educational backgrounds (Turner et al., 1998), and has been found to improve self-report of sensitive topics (Williams et al., 2000).

Religious behaviors and beliefs The Religious Behaviors and Beliefs Scale (*RBB*; Connors, Tonigan, & Miller, 1996) consists of 13 items measuring religious activities, both past and present. The first question asks participants to describe their religious beliefs (e.g. Atheist, Agnostic, Unsure, Spiritual, Religious). Then, six questions ask participants about both public and private religious behavior over the past year (e.g. '*For the past year*, *how often have you done the following: Attended worship service? Read scriptures or holy writings? Thought about God*?') on an 8-point Likert scale 1 (*Never*) to 8 (*More than once a day*). The last six questions ask participants about lifetime engagement in the same 6 behaviors: *Never = 1*, *Yes*, *in the past but not now = 2*, *or Yes*, *and I still do = 3)*. The scale had good internal consistency (Cronbach's Alpha Reliability of .81), with higher scores indicating high levels of religious behaviors and beliefs.

Multidimensional Scale of Perceived Social Support The Multidimensional Scale of Perceived Social Support (*MSPSS*; Zimet, Dahlem, Zimet, & Farley, 1988) consists of 12 questions measuring social support from three sources: family, friends, and significant others. Participants were asked questions about emotional support from all three sources: (e.g. '*I can talk about my feelings with ...* ', rated on a 7-point Likert scale ranging from 1 (*Very strongly disagree*) to 7 (*Very strongly agree*). Responses were summed with higher scores reflecting higher perceived social support. The MSPSS total scale (alpha = .93) measures the extent to which participants perceive social support across sources.

Stress-related growth The Stress-Related Growth Scale (*SRG*), created by Roesch, Rowley, and Vaughn (2004), was adapted for this study. Participants were asked how much they felt they had learned about themselves from being transgender women on three subscales (growth in mature thinking, emotional growth, and religious growth). Twenty-nine questions were asked reflecting each subscale. Questions began with the stem '*Being a*

trans woman ... ' and included items such as: '*I learned to look at things in a more positive way'* (mature thinking); '*I learned better ways to express my feelings'* (emotional growth); and '*I developed/increased my faith in God'* (religious growth). Participants responded on a 3-point Likert scale ranging from 1 (*Not at all*) to 3 (*A great deal*). Participant scores were summed, with higher scores presenting higher levels of stress-related growth. Each subscale demonstrated excellent internal consistency, with Cronbach's alphas of .90 (mature thinking), .88 (emotional growth), and .87 (religious growth).

Perceived stigma Two subscales (personalized stigma and disclosure) of a measure originally designed for HIV-positive persons (HIV Stigma Scale; Berger, Ferrans, & Lashley, 2001) were adapted for this study, consistent with previous adaptations for lesbian, gay and bisexual populations (Frost, Parsons, & Nanín, 2007; Grov, Parsons, & Bimbi, 2009). The personalized stigma subscale (alpha = .92) asked participants 10 questions that measured perceived societal attitudes and possible consequences of being transgender (e.g. *'Some people who know I'm transgender have grown more distant*'; '*Since realizing I'm transgender I feel isolated from the rest of the world*'). The disclosure subscale (alpha = .83) included 10 questions measuring participants' concealment and disclosure of their transgender identity (e.g. '*I am very careful who I tell that I'm transgender'; 'I have told people close to me to keep the fact that I'm transgender a secret*'). Participants responded on a 4-point Likert scale ranging from 1 (*Strongly Disagree*) to 4 (*Strongly Agree*). Scores on both subscales were summed with higher scores indicating more perceived stigma.

Sexual behavior Participants were asked to indicate their number of sexual partners, types of sexual partners (e.g. main partners, casual partners, sex work partners, trade partners), and types of sexual behaviors (e.g. oral sex, anal sex, protected, unprotected) in which they engaged in the last three months. To create a variable that represented the highest risk of potential HIV transmission or infection, we created a composite variable that represented the total number of unprotected anal sex acts with non-main partners (including casual partners and/or partners with whom money, drugs, or other goods were exchanged for sex). This variable was significantly skewed (range: 0–178, median = 0, IQR: 0–2), so, we conducted subsequent analyses using a dichotomous variable indicating any unprotected anal sex with a non-main partner in the past three months (1 = Yes; 0 = No).

Statistical analyses

The data were examined in a three-step process. First, because of the high prevalence of HIV in this sample, comparisons were made on all study variables by HIV status (chi-square for dichotomous variables and *t*-tests for continuous variables). There were no differences in scores on any study variables by HIV status, so this factor was not included in further analyses. Second, bivariate analyses, including both zero-order and partial correlations, were run to investigate the association between psychosocial measures and unprotected sexual behavior. Third, based on the findings from bivariate analyses, hierarchical logistic regression was conducted to examine the relative predictive power of religious behaviors and beliefs, social support, and religious growth in predicting high-risk sexual activity among this sample of transgender women.

Results

Bivariate relationships among study variables

As shown in Table 1, there were a series of significant bivariate associations among study variables. However, social support and religious stress-related growth were the only two variables with significant associations with the outcome variable: unprotected anal sex. Because of the high degree of intercorrelation among other study variables, partial correlations were conducted to assess the association between study variables and unprotected anal sex, controlling for social support and religious growth.

Controlling for social support and religious stress-related growth, a significant partial correlation was demonstrated between religious behaviors and beliefs and unprotected anal sex, $r = .26$, $p < .05$. No other variables demonstrated significant zero-order or partial correlations with high-risk sex.

Significant predictors of high-risk sexual behavior

A logistic regression analysis was conducted to assess the relative predictive power of the three variables associated with high-risk sex in bivariate analyses: religious behaviors and beliefs; religious

Table 1. Bivariate correlations among study variables

	1	*2*	*3*	*4*	*5*	*6*	*7*
1. Unprotected anal sex	—	.059	−.283*	.073	−.102	−.155	−.290*
2. Religious behavior and beliefs		—	.342**	−.144	.173	.208	.400**
3. Social support			—	−.447**	.250*	.239*	.352**
4. Stigma				—	−.172	−.205	−.154
5. SRG—mature thinking					—	.696**	.510**
6. SRG—emotional						—	.528**
7. SRG—religious							—
Mean	.36	34.20	60.12	23.28	49.87	17.79	7.91
SD	.483	12.13	16.71	7.45	6.16	2.92	1.59

* $p < .05$; ** $p < .01$; *** $p < .001$

stress-related growth; and social support. Step one of the regression analysis assessed the main effect of these three predictors as a set, and the second step included their two-way interactions. As is shown in Table 2, the three predictors accounted for 24 percent of the variance in unprotected anal sex, and each variable was a significant independent predictor. Every standard deviation increase in religious stress-related growth was associated with a 37 percent decrease in the odds of unprotected sex ($p < .05$) and every standard deviation increase in social support was associated with a 4 percent decrease in the odds of unprotected sex ($p < .05$). A standard deviation increase in religious behaviors and beliefs was associated with a 6 percent increase in the odds of unprotected sex. In the second step, the two-way interactions among study variables accounted for an additional 13 percent of the variance in the model. All three simple effects (i.e. effects associated with Step 1 predictors) were maintained, although the coefficients changed slightly. In Step 2, these simple effects indicate the impact of each predictor at mean levels of the other two (Jaccard & Turrisi, 2003). For example, at mean levels of both stress-related growth and social support, each standard deviation increase in religious behaviors and beliefs is associated with an almost 7 percent increase in the odds of unprotected sex. In terms of interaction variables, the only significant predictor in Step 2 was the interaction between social support and religious behavior and beliefs. In order to interpret this small but significant interaction effect, participants' scores on both social support and religious behaviors and beliefs were dichotomized based on a median split, and percentages were compared in a 2 x 2 Chi-square. For individuals with high levels of religious behavior and beliefs, rates of unprotected sex were similar among those low in social support (36%) and those high in social support (35%). The percentage of participants who reported unprotected anal sex was highest among participants with low levels of both religious behaviors and beliefs and social support (50% of these participants reported unprotected anal sex). However, the percentage of participants who reported unprotected sex was *lowest* among those who reported low levels of religious belief/behavior, but high levels of social support (14%). In fact, among individuals with high levels of social support, unprotected sex was significantly less likely among participants with low levels of religious behaviors compared to those with high levels of religious behaviors and beliefs, $\chi^2 = 4.85$, $p < .03$.

Discussion

The purpose of this paper was to examine the role of religious behaviors and beliefs, social support, and stress-related growth in predicting high-risk sexual behavior of transgender women. In bivariate analyses, both social support and religious stress-related growth were significantly inversely related to unprotected anal sex, such that higher scores on these scales were protective against risk behavior. In contrast, there was a positive correlation between religious behaviors and beliefs in this sample, such that higher scores on this scale were associated with significantly increased odds of unprotected sex. However, these simple main effects must be interpreted in light of an interaction effect identified in the multivariate model. The interaction between religious behaviors and beliefs and social support was also a significant predictor of unprotected sex, and post-hoc analyses indicated that high-risk sex

Table 2. Logistic regression analyses predicting unprotected anal sex with causal partners

	Unprotected anal sex			
	Step statistics		*Model statistics*	
	B (SE)	*β*	*B (SE)*	*β*
Step 1: main effects				
Religious behaviors and beliefs (RBB)	1.06 (.03)	.06*	1.07 (.03)	.07*
Stress related-growth—religious (SRGR)	.63 (.20)	−.47*	.55 (.25)	−.60*
Social support (SS)	.96 (.02)	−.04*	.95 (.02)	−.05*
		Nagelkerke R^2 = .24		
		X^2_{step} = 14.44		
		X^2_{model} = 14.44		
Step 2: 2-way interactions				
SS X RBB	1.01 (.00)	.01*	1.01 (.00)	.01*
SS X SRGR	.98 (.02)	−0.02	.98 (.02)	−0.02
RBB X SRGR	1.00 (.02)	0.00	1.00 (.02)	0.00
		Δ Nagelkerke R^2 = .13		
		X^2_{step} = 9.45*		
		Nagelkerke R^2 = .37		
		X^2_{model} = 23.88***		

* $p < .05$; ** $p < .01$; *** $p < .001$

was least likely among individuals with high-levels of social support but low levels of religious behaviors and beliefs.

These data have important implications for understanding factors that might protect against HIV risk for transgender women. First, greater religious stress-related growth was associated with lower odds of unprotected sex, and this effect was not qualified by an interaction effect with the other variables. Across multiple studies, stress-related growth has been associated with decreased depression and greater positive well-being (Helgeson et al., 2006), as well as with positive health behaviors (Littlewood et al., 2008; Milam 2006; Weaver et al., 2005). In this sample, religious stress-related growth was the only subscale of the larger stress-related growth scale to emerge as a significant predictor of sexual risk behavior. These findings fit well with past research on religious coping, which finds that religious and spiritual beliefs provide a framework for thinking about negative experiences or stressful events that lessens distress (Laubmeier, Zakowski, & Bair, 2004). In addition, religious beliefs themselves have been found to lead to better health practices (Benjamins, 2006).

Interpretation of findings related to social support and religious behaviors and beliefs is more complex, given their interaction in the multivariate model. The importance of social support is not a surprising finding, and it underscores the extent to which social relationships promote healthful behavior for marginalized populations. However, given average scores on social support and religious stress-related growth, higher scores on religious behaviors and beliefs were associated with *increased* sexual risk-taking in our sample. This finding stands in sharp contrast to the majority of literature on the positive effects of religious coping, which finds a positive association between religious practice and belief and health behavior (George, Ellison, & Larson 2002; Koenig et al., 1997; Strawbridge, Cohen, Shema, & Kaplan, 1997; Wallace & Forman, 1998).

However, these findings must be interpreted with caution, in light of the significant religious behaviors and beliefs by social support interaction. On the one hand, these data suggest that religious beliefs and behaviors moderate the impact of social support on risk behavior. For individuals with high levels of religious behavior and beliefs, social support does not appear to significantly impact risk; but for those with low levels of religious behaviors and beliefs, rates of unprotected sex are significantly reduced for those with high levels of social support (14%), compared to those with low levels of social support (50%). Perhaps social support becomes most

important in the absence of other institutional or structural resources. When individuals lack religious behaviors and beliefs, social support can significantly reduce vulnerability to risk-taking.

At the same time, it is important to consider the interaction effect in its alternative interpretation: social support moderates the impact of religious behaviors and beliefs on risk behavior. When social support is low, religious behaviors and beliefs play an important role in decreasing the risk of unprotected sex. But when social support is high, the impact of religious behaviors and beliefs appears to be reversed, with high levels of religious behaviors and belief associated with much higher rates of unprotected sex, compared to low levels.

It is not surprising that rates of unprotected sex are highest (50%) when both social support and religious behaviors and beliefs are low. Research suggests that some stigmatized individuals isolate themselves from social settings and relationships in an effort to avoid situations in which their stigma might be activated (Corrigan & Matthews, 2003; Lee & Craft, 2002). This pull toward social isolation is even more powerful among individuals with a concealable stigma, that is, a stigma that may not be immediately apparent to others, but is at risk of being discovered (Pachankis, 2007). For many transgender women, their gender identity may be experienced as a concealable stigma, reducing their ability to seek out and sustain relationships and institutional resources that can provide them with adequate levels of social support.

The finding that rates of unprotected sex are lowest (14%) when social support is high, but religious behaviors and beliefs are low, is more difficult to understand. When considered in light of the protective simple main effect of religious stress-related growth, these data may suggest a more complicated relationship between internal and external aspects of religion for transgender women. Internal aspects of religious beliefs, similar to those measured by the religious stress-related growth scale, appear to be protective against risk behavior. For some transgender women, however, institutionally-based religious behavior may be more problematic. As discussed above, some religious institutions are intolerant of gender non-conforming individuals, and may actively discriminate against transgender women and/or gay, lesbian, or bisexual individuals. In this context, strong religious behaviors and beliefs may conflict with a transgender identity, causing depression, anxiety, and other psychological factors associated with high-risk sexual behavior. In the absence of other forms of social support, such religious institutions may provide a modicum of protection against risk-taking. But the transgender women who were able to sustain the lowest rates of unprotected sex (those whose social support was high, but religious behaviors and beliefs were low) may have garnered a social support network outside of religious structures that promote negative beliefs about their transgender identity. The measures collected in this study are insufficient to provide a true test of this hypothesis; future research is needed into the complex relationship between religion and risk behavior among transgender women.

Several limitations of the present study bear mention. First, these data are drawn from a larger study piloting a four-week workshop series. Although these data were collected prior to the first workshop, it is likely that transgender women who are willing to participate in such a workshop series differ significantly from those who are more difficult to recruit or engage for this type of project. Additional research is needed into the role of these factors among a more broadly representative sample of transgender women. Second, the small sample size in this study prevents us from conducting more complex analyses, such as path analysis or structural equations modeling, that might allow us to better tease apart the relationships among study variables. For example, the status of medical gender affirmation treatments among transgender women may be related to risk, social support, and religious behaviors and beliefs. Further research is needed to address these critical interactions. And third, our analyses do not include information regarding substance use among our participants. There was little variance in substance use among participants in our sample, and almost 40 percent reported no substance use in the past three months, preventing us from conducting complex analyses with this factor. Research suggests that substance use is an important factor in determining unprotected sex among transgender women (Sevelius, Reznick, Hart, & Schwarcz, 2009) and may be used to cope with stigma and other stressors associated with being transgender (Hughes & Eliason, 2002; Nemoto et al., 2004; Sausa, Keatley, & Operario, 2007). This study was designed to focus on potentially protective factors, but future research should investigate the interaction between protective factors and those that might exacerbate risk-taking in this population.

Despite these limitations, findings from this study have several important implications for the

development of HIV prevention interventions for transgender women. First, these data support the development of a 'strengths-based approach' to risk reduction for this population, which draws on the potential for social support – most likely in the form of peer support – to reduce sexual risk behavior. Peer support, defined as support from a person who has 'experiential knowledge of a specific behavior or stressor' (Dennis, 2003), has been demonstrated to improve affect, reduce negative health behaviors, and improve disease management. In addition, *providing* peer support has been associated with improved quality of life, self-esteem, self-efficacy, decreased risk of mortality, and improved health outcomes. Peer support theories both within HIV (Marino, Simoni, & Silverstein, 2007) and across other chronic illnesses (Gussow & Tracy, 1978; Whittemore, Rankin, Callahan, Leder, & Carroll, 2000) focus on the potential for reciprocal peer social support to reduce stigma and increase social acceptance and emotional well-being.

Second, these data underscore the importance of interventions that promote spirituality and perceptions of religious stress-related growth. Interventions that focus on strengthening spiritual components of the self have been successful in the treatment of addiction, and have been demonstrated to be associated with decreased HIV risk behavior (Margolin, Beitel, Schuman-Olivier, & Avants, 2006). And third, these data suggest the importance of community-level interventions that educate religious institutions about the transgender community. Improving the ability of religious beliefs and behaviors to act as facilitators of risk reduction – rather than as barriers to it – is critical to the long-term health and well-being of transgender women.

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Author biographies

SARIT A. GOLUB, PhD, MPH, is Associate Professor of Psychology at Hunter College of the City University of New York, and Co-Director of the Center for HIV Educational Studies and Training (CHEST). Her work focuses on social-cognitive determinants of risk behavior.

JA'NINA J. WALKER, MA, is a graduate student in the Developmental Psychology doctoral program at the Graduate Center of the City University of New York. Her area of interest is identity development among LGBT youth of color.

BUFFIE LONGMIRE-AVITAL, PhD, is a Post-Doctoral Fellow at the Center for HIV Educational Studies and Training and at Public Health Solutions at the National Development and Research Institutes. Her work focuses on how developing experiences of racial identity, sexuality, and social class influence risk behavior patterns.

DAVID S. BIMBI, PhD, is Assistant Professor in the Department of Health Sciences at LaGuardia Community College of the City University of New York and a Faculty Affiliate at CHEST. His work focuses on social psychological models of sexual health among male sex workers, MSM, and persons living with HIV.

JEFFREY T. PARSONS, PhD, is Professor and Chair of the Department of Psychology at Hunter College of the City University of New York, and Co-Director of the Center for HIV Educational Studies and Training (CHEST). His work focuses on HIV prevention among LGBT populations.