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ORIGINAL PAPER

Anxiety and Depressive Symptoms Among People Living with HIV and Childhood Sexual Abuse: The Role of Shame and Posttraumatic Growth

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Abstract There is a critical need to examine protective and risk factors of anxiety and depressive symptoms among people living with HIV in order to improve quality of life. Structural equation modeling was used to examine the associations between HIV-related shame, sexual abuse-related shame, posttraumatic growth, and anxiety and depressive symptoms among a cohort of 225 heterosexual women and men who have sex with men (MSM) living with HIV who have experienced childhood sexual abuse (CSA). Higher sexual abuse-related shame was related to more anxiety and depressive symptoms for heterosexual women. Higher posttraumatic growth predicted less anxiety symptoms for only heterosexual women. Higher posttraumatic growth predicted less depressive symptoms for heterosexual women and MSM, but the magnitude of this effect was stronger for heterosexual women than MSM. Psychosocial interventions may need to be tailored to meet the specific needs of heterosexual women and MSM living with HIV and CSA.

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Introduction

Anxiety and depression pose a threat to the wellbeing of people living with HIV. Undiagnosed and untreated anxiety and depressive symptoms can lead to suicide [1], poor HIV medication adherence [2–4], and faster HIV disease progression [5]. For people living with HIV, traumatic experiences such as childhood sexual abuse (CSA) can influence the development and continuation of anxiety and depressive symptoms [6–8]. It is estimated that between 30 and 53 % of people living with HIV have experienced sexual violence during childhood and adolescence [9–11], and often anxiety and depressive symptoms are endorsed later in adulthood [7, 12, 13]. While emerging research has shown a significant association between CSA and symptoms and anxiety and depression, few studies have examined subgroup differences in psychosocial predictors of these mental health disorders among the two largest groups of people living with HIV in the United States: men who have sex with men (MSM) and heterosexual women [14]. There is a critical need to identify psychosocial predictors of anxiety and depressive symptoms unique to people living with HIV and CSA in order to improve health-related quality of life and prolong survival.

HIV-related shame and sexual abuse-related shame are trauma-related emotions that could increase anxiety and depressive symptoms for people living with HIV and CSA. Shame is a relevant trauma-related emotion for people living with HIV and people who have experienced CSA, separately [15–21]. A large body of literature has characterized shame as a distressing and at times a painful

emotion that can occur after a traumatic event [15, 22]. Shame is often associated with negative self-perceptions and self-evaluations as those who feel shame may perceive themselves as deviating from a social and moral code or standard [19, 23]. In the CSA literature, people who experienced sexual violence in childhood and adolescence may feel shameful for being involved in sexually taboo acts that are deemed wrong and dirty [19, 24]. As a result, people who experience shame may also develop feelings of inadequacy, inferiority, and defectiveness [25–27]. In the context of HIV, HIV-related shame has been examined as a component of HIV-related stigma as opposed to being evaluated as a unique predictor of poor health outcomes [23]. While stigma can influence shame, we operationalize shame as a distinct construct that is internally constructed by the individual and is modifiable through psychosocial interventions [21, 23, 28]. For people living with HIV and CSA, shame has been associated with HIV transmission risk [20] and poor quality of life [21]; however, its impact on the development and continuation of anxiety and depressive symptoms remains unclear.

Unlike shame, posttraumatic growth may protect against the exacerbation of anxiety and depressive symptoms for people living with HIV and CSA. Posttraumatic growth has been described as positive emotional change that occurs after enduring a traumatic or stressful event [29–31]. People who have experienced CSA endorse and describe posttraumatic growth as: the ability to develop personal strength, to create more meaningful relationships, and to empathize with others who have also experienced abuse [32–34]. Similarly, people living with HIV also report experiencing posttraumatic growth. In particular, one study found that 59 % of people living with HIV endorsed posttraumatic growth [35]. Our conceptual model of posttraumatic growth (see Fig. 1) is based on research indicating that posttraumatic growth is positively associated with optimism, positive reappraisal, and social support, and is indicative of resilience [36–38]. Therefore, it is important to understand the effects of posttraumatic growth on protecting and promoting the mental health of people living with HIV and CSA as this is an area of opportunity for developing coping and mental health interventions that can improve the health of this vulnerable population.

HIV-related shame, sexual abuse-related shame, and posttraumatic growth may act as risk and protective factors for anxiety and depressive symptoms; however, their relationship among people living with HIV and CSA remains unknown. The current study addresses this gap in the literature in three ways. First, existing studies on both HIV-related shame and sexual abuse-related shame have examined primarily health behaviors [20, 21, 23]. We are building upon this research by examining HIV-related shame and sexual abuse-related shame as risk factors for anxiety and depressive symptoms among people living with HIV and CSA. Second, posttraumatic growth has been associated with less depressive symptoms among people living with HIV [35, 36, 39], yet research investigating its impact on anxiety symptoms is scarce. This is concerning, since the prevalence of anxiety symptoms is between 40 and 73 % for people living with HIV [8, 40]. We are expanding upon current literature by examining the impact of posttraumatic growth on anxiety symptoms among people living with HIV and CSA. Finally, only a handful of studies have examined subgroup differences among people living with HIV, and these studies have focused primarily on HIV transmission behaviors [41–43] and sexual health [44–47]. To date, very few studies have investigated such subgroup differences in trauma-related emotions and mental health disorders among people living with HIV and CSA. This is problematic, since current literature suggests that the prevalence of CSA is similar for both MSM and heterosexual women [48–51]. We are expanding upon current literature by examining differences in the associations between shame, posttraumatic growth, and anxiety and depressive symptoms among heterosexual women and MSM living with HIV and CSA.

The purpose of the current study is to examine the impact of shame and posttraumatic growth on anxiety and depressive symptoms among people living with HIV and CSA. This study hypothesized that: (1) higher scores of HIV-related shame would predict higher scores of anxiety and depressive symptoms, (2) higher scores of sexual abuse-related shame would predict higher scores of anxiety and depressive symptoms, and (3) greater posttraumatic growth would be related to lower scores of anxiety and depressive symptoms. Further, we explored whether these associations differed between heterosexual women and MSM.

Method

Participants and Procedures

The current study is a secondary data analysis of data collected from a large randomized controlled trial of a group coping intervention for men and women living with HIV and CSA [52–54]. Participants were recruited from community-based organizations and medical clinics serving individuals living with HIV/AIDS in New York City. Brochures describing the intervention were used to recruit participants for the study in addition to provider referrals. Participants were eligible for the study if they were: (a) 18 years of age or older; (b) HIV-positive; and (c) reported sexual victimization before the age of 18 by an adult or by someone at least 5 years older than the

participant at the time of incident using a modified version of the Traumatic Experiences Questionnaire [55]. Individuals were excluded and referred to appropriate services for the following reasons: (a) acute distress due to sexual revictimization in the past month; (b) severe psychological distress as evidenced by suicidal intent or a score of 30 or higher on the Beck Depression Inventory [56]; and (c) acute psychosis or impaired mental status.

A total of 333 people were screened from March 2002 and January 2004 according to the eligibility criteria using a structured clinical interview which assessed history of sexual victimization, depression, mental status, participant risk to self or others, and sociodemographics. Of the 333 people screened, 21 did not meet the eligibility criteria for the following reasons: seven people reported not being sexually abused, seven met criteria for severe depression, six were cognitively impaired, and one had experienced sexual revictimization in the past month. Those not eligible were referred to appropriate services. After screening, the eligible participants were administered a baseline assessment using a computer-assisted personal interview (CAPI), which was conducted in English. Participants were remunerated $35 upon completion of the assessment. The randomized controlled trial did not exclude people living with HIV and CSA based on sexual identity, but did ask a sexual identity question (i.e., "How would you describe yourself?") to assist in allocating participants into a group where they would feel most comfortable. However, only 13 men describing themselves as heterosexual were enrolled, which was insufficient for randomized allocation to conditions, thus they were not included in the RCT (though these men were offered the experimental intervention separate from the study). Further, HIV risk behaviors and mental health outcomes vary for sexual majority and minority women [57, 58]. The majority of women enrolled in the current study (77 %) described themselves as heterosexual. There were 31 women described themselves as lesbian or bisexual, which is insufficient to allow modeling of differences between sexual majority and minority women. As a result, the final sample consisted of 101 heterosexual women and 124 MSM, and the current analyses examined differences between these two groups. Study procedures were approved by the home university's institutional review board.

Measures

Childhood Sexual Abuse-Related Shame

CSA-related shame was assessed using the Sexual abuse-related shame subscale of the HIV and Abuse Related Shame Inventory (HARSI) [23]. All responses were rated on a 5-point scale from 0 (*not at all*) to 4 (*very much*). The Sexual abuse-related shame subscale contained nine items that reflected a person's feelings of shame related to their experience of sexual abuse. Participants indicated their feelings of shame to the sexual victimization they experienced before the age of 18 by an adult or by someone at least 5 years older than the participant at the time of incident. Responses were summed to create a total score. The Cronbach's alpha was 0.93.

HIV-Related Shame

HIV-related shame was assessed using the HIV-related shame subscale of the HARSI [23]. All responses were rated on a 5-point scale from 0 (*not at all*) to 4 (*very much*). The HIV-related shame subscale contained thirteen items that reflected a person's feelings of shame related to their HIV infection. Responses were summed to create a total score. The Cronbach's alpha was 0.90.

Anxiety Symptoms

Anxiety symptoms were assessed using the Beck Anxiety Inventory (BAI) [59]. Participants indicated the frequency with which they had experienced 21 anxiety and somatic symptoms over the past week. All responses were rated on a 4-point scale from 0 (*never*) to 3 (*all of the time*). Responses were summed to obtain an anxiety symptom severity score. The Cronbach's alpha was 0.91.

Depressive Symptoms

Depressive symptoms were assessed using the Center for Epidemiological Studies Depression Scale (CES-D) [60]. Participants indicated the frequency with which they had experienced 20 depressive symptoms over the past week. All responses were rated on a 4-point scale from 0 (*never*) to 3 (*all of the time*). Responses were summed to obtain a depressive symptom severity score. The Cronbach's alpha was 0.88.

Posttraumatic Growth

The latent variable of posttraumatic growth was estimated using three observed variables (i.e., optimism, positive reappraisal, perceived availability of social support) supported by existing literature, which suggest strong associations between these latent factors and posttraumatic growth (see Fig. 1) [36–38].

Optimism Optimism was assessed with the Life Orientation Test (LOT) [61]. The LOT is a 12-item measure designed to assess dispositional optimism. Of the 12 items, four items measured optimism, four measured pessimism,

and four are filler items. Responses are measured on a 5-point scale with scores ranging from 0 (*strongly disagree*) to 4 (*strongly agree*). Consistent with other studies [38], the responses to the four optimism items were summed to calculate an optimism scale score. The Cronbach's alpha was 0.75.

Positive Reappraisal Positive Reappraisal was assessed using the Positive Reappraisal subscale of the Ways of Coping Questionnaire (WCQ) [62]. All responses were on a 4-point scale from 0 (*never*) to 3 (*very often*). The Positive Reappraisal subscale contained five items that reflected a person's ability to create positive meaning by focusing on personal growth. All responses were summed to create a total score. The Cronbach's alpha was 0.84.

Perceived Availability of Social Support Perceived Availability of Social Support was assessed with the Perceived Availability of Social Support subscale from the Social Relationship Scale [63]. All responses were on a 5-point scale from 1 (*definitely no*) to 5 (*definitely yes*). The Perceived Availability of Social Support subscale contained seven items that reflected how much participants believed others would provide support to them. Responses were summed to create a total score. The Cronbach's alpha was 0.85.

Sociodemographics

Participants reported their age in years, race/ethnicity (i.e., Black, White, Hispanic, Native Hawaiian, Asian, American Indian, more than one race, and unknown), levels of income (i.e., $0–$9999, $10,000–$19,999, $20,000–$29,999, $30,000–$39,999, and $40,000+), education in years, and years since HIV diagnosis.

Data Analysis

Sample characteristics were computed and group differences were examined with χ^2 tests and sample t tests (Table 1). Analyses were performed using SPSS 21 [64].

Structural equation modeling was used to examine the hypothesized relationships between HIV-related shame, sexual abuse-related shame, posttraumatic growth, anxiety symptoms, and depressive symptoms. This type of analysis accounts for multiple relationships among variables, for measurement error, and allows testing of directional relationships [65, 66]. Posttraumatic growth was represented by a latent variable and was created with multiple indicators (i.e. optimism, perceived availability of social support, and positive reappraisal). HIV-related shame and sexual abuse-related shame were exogenous variables in the hypothesized model. Anxiety and depressive symptoms were endogenous variables (see Figs. 1, 2). Only covariates that were statistically significant between the two groups (as shown in Table 1) were controlled for in the structural equation model.

Multigroup modeling was used to evaluate significant differences between heterosexual women and MSM for the overall model and individual paths [67]. In particular, an unconstrained model (i.e., a model in which key study variables were able to vary across the groups) and a constrained model (i.e., a model in which all key study variables were equal across the groups) were analyzed. Comparing the respective χ^2 values from the constrained and unconstrained models indicate whether a path or overall model was significantly different between the two groups. A significant change in χ^2 difference indicated that differences between heterosexual women and MSM existed in the specified path or overall model. The constrained models were configural invariance. Hypothesized models were evaluated for goodness of fit with a CFI and TLI > 0.95, RMSEA < 0.06 [68]. Estimation of model parameters and fit statistics were performed using Mplus software [69, 70]. Less than 10 % of the data was missing for the years since HIV diagnosis covariate, as a result, the estimates for all models predicting anxiety and depressive symptoms were estimated with the Missing Estimator. This method allowed missing data to be imputated with estimated values.

Results

Sample Characteristics and Correlations

The sample was comprised of 225 people living with HIV (101 heterosexual women 124 MSM). Heterosexual women and MSM were compared in study variables and demographics (Table 1). The bivariate correlations between study variables are displayed in Table 2.

Fit Statistics for Posttraumatic Growth Latent Variable and Model Testing

Assessment of the measurement model on the latent variable posttraumatic growth was conducted to confirm that the observed variables loaded on the latent variable. The overall fit of the model was satisfactory, (χ^2, N = 225) = 35.46, $p = 0.00$, and CFI = 0.97, TLI = 0.92, RMSEA = 0.06. Next, we assessed the hypothesized model (Figs. 1, 2), and found a good fit to the data (CFI = 0.95, TLI = 0.90, RMSEA = 0.05), controlling for income, education, age, and years since HIV diagnosis.

Table 1 Sample characteristics among heterosexual women and MSM (N = 225)

	Heterosexual women (N = 101)	MSM (N = 124)	Test of group differences X^2 or t
Age in years, M (SD)	43.49 (7.14)	41.2 (6.75)	−2.45**
Race			12.2
Black	78 (79)	62 (77)	
White	8 (8)	20 (25)	
Native Hawaiian	1 (1)	0 (0)	
Asian	0 (0)	1 (1)	
American Indian	3 (3)	2 (2)	
More than one race	7 (7)	13 (16)	
Unknown	3 (3)	2 (3)	
Ethnicity			1.54
Hispanic	13 (14)	20 (25)	
Non-Hispanic	86 (87)	80 (99)	
Income			26.5**
$0–$9,999	82 (83)	52 (65)	
$10,000–$19,999	10 (11)	38 (48)	
$20,000–$29,999	5 (5)	4 (5)	
$30,000–$39,999	2 (2)	2 (3)	
$40,000+	0 (0)	2 (3)	
Years since HIV diagnosis[a], M (SD)	8.69 (5.01)	11.25 (6.29)	3.15**
Years of education, M (SD)	11.6 (1.90)	12.9 (2.58)	4.07**
Predictors			
HIV-related shame, M (SD)	15.74 (13.36)	17.18 (13.11)	0.81
Sexual abuse-related shame, M (SD)	12.92 (11.44)	13.36 (9.79)	0.31
Posttraumatic growth			
Perceived availability of social support, M (SD)	22.12 (5.72)	21.25 (5.26)	−1.19
Optimism, M (SD)	9.96 (3.18)	9.52 (3.35)	0.31
Positive reappraisal, M (SD)	8.61 (4.50)	6.9 (3.96)	−3.02**
Outcomes			
Anxiety, M (SD)	38.17 (12.04)	35.17 (9.60)	−1.61
Depression, M (SD)	21.34 (13.12)	21.49 (10.62)	0.09

Data are % (N) unless otherwise indicated

M mean, *SD* standard deviation

[a] Less than 10 % of the data is missing

** $p < 0.01$

Examining Associations Between Shame, Posttraumatic Growth, and Anxiety and Depressive Symptoms

Heterosexual women living with HIV and CSA who reported higher HIV-related shame were more likely to report more anxiety ($\beta = 0.27$, $p < 0.05$) and depressive symptoms ($\beta = 0.32$, $p < 0.01$). Similarly, heterosexual women living with HIV and CSA who reported higher sexual abuse-related shame were more likely to report more anxiety ($\beta = 0.30$, $p < 0.01$) and depressive symptoms ($\beta = 0.23$, $p < 0.01$). Further, heterosexual women living with HIV and CSA who reported higher posttraumatic growth were more likely to report fewer anxiety ($\beta = -0.27$, $p < 0.05$) and depressive symptoms ($\beta = -0.43$, $p < 0.01$). A slightly different pattern emerged for MSM. MSM living with HIV and CSA who reported higher HIV-related shame, but not abuse-related shame, were more likely to report more anxiety ($\beta = 0.25$, $p < 0.01$) and depressive symptoms ($\beta = 0.26$, $p < 0.05$). Further, MSM living with HIV and CSA who reported higher posttraumatic growth were more likely to report fewer depressive ($\beta = -0.30$, $p < 0.05$), but not anxiety symptoms ($\beta = -0.15$, $p > 0.05$).

Differences Between Heterosexual Women and MSM

A significant change in χ^2 difference in the multigroup modeling indicated that four structural paths in the hypothesized model were different for heterosexual women and MSM living with HIV and CSA. First, the effects of posttraumatic growth on anxiety symptoms differed significantly (χ^2 (1) = 12.83, $p < 0.005$). Higher posttraumatic growth predicted fewer anxiety symptoms for heterosexual women living with HIV and CSA, but were not significantly associated with anxiety symptoms for MSM living with HIV and CSA. Second, the effects of posttraumatic growth on depressive symptoms differed significantly (χ^2 (1) = 29.79, $p < 0.001$). Higher posttraumatic growth predicted fewer depressive symptoms for both heterosexual women and MSM living with HIV and CSA, but the magnitude of this effect was stronger for heterosexual women than MSM. Third, the relation between HIV-related shame and sexual abuse-related shame differed significantly (χ^2 (1) = 94.10, $p < 0.001$). The correlation of HIV-related shame to sexual abuse-related shame was significantly stronger for heterosexual women living with HIV and CSA compared to MSM living with HIV and CSA. Fourth, the relation between anxiety and depressive symptoms differed significantly (χ^2 (1) = 18.69, $p < 0.001$). The correlation of anxiety symptoms to depressive symptoms was stronger for MSM living with HIV and CSA compared to heterosexual women living with HIV and CSA.

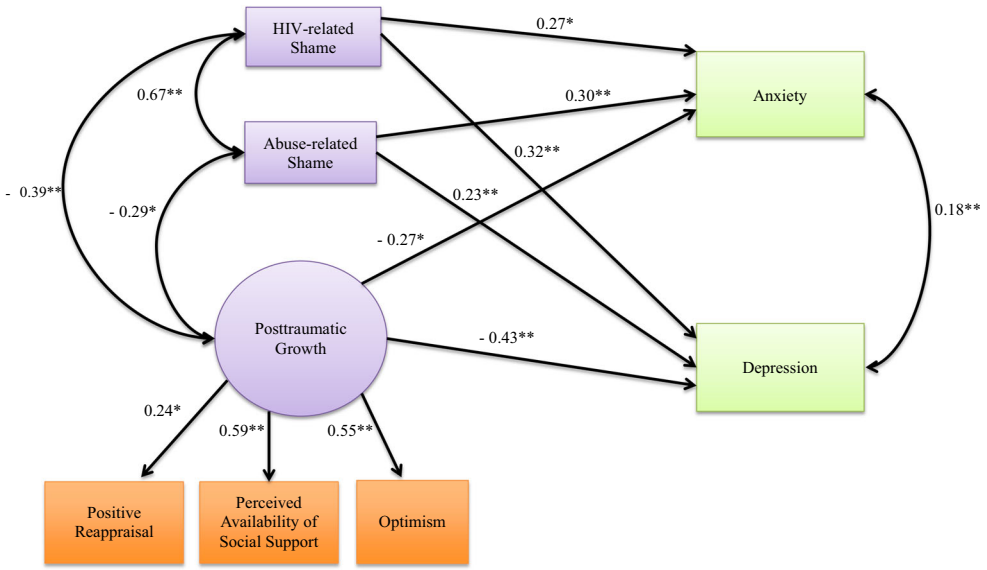

Fig. 1 Final model of relationships between HIV-related shame, sexual abuse-related shame, posttraumatic growth, anxiety, and depression among heterosexual women living with HIV who have experienced childhood sexual abuse, while controlling for income, age, and education. $*p < 0.05$, $**p < 0.01$. *Solid lines* indicate significant associations. *Unidirectional arrows* displays standardized regression weights. *Bidirectional arrows* show correlations

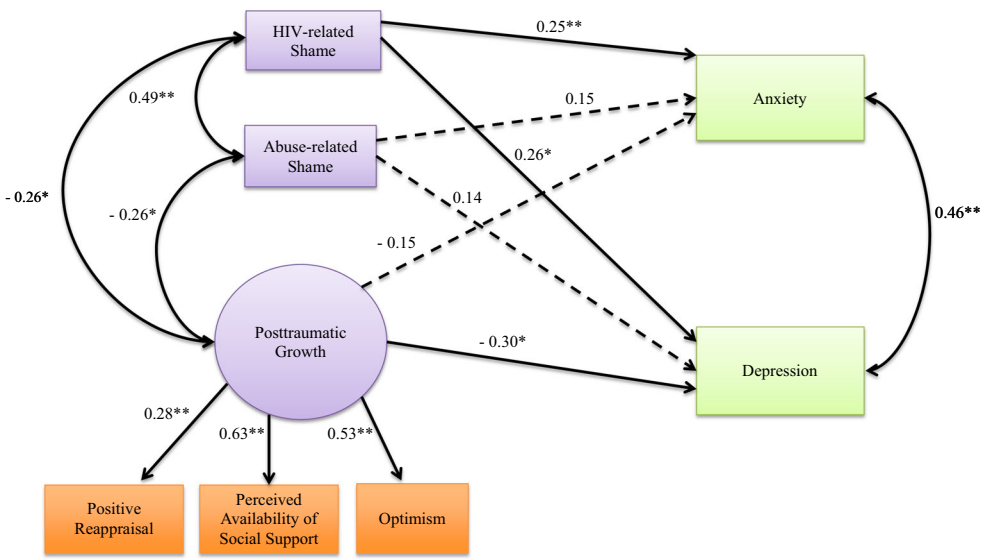

Fig. 2 Final model of relationships between HIV-related shame, sexual abuse-related shame, posttraumatic growth, anxiety, and depression among men who have sex with men living with HIV who have experienced childhood sexual abuse, while controlling for income, age, and education. $*p < 0.05$, $**p < 0.01$. *Solid lines* indicate significant associations. *Unidirectional arrows* displays standardized regression weights. *Bidirectional arrows* show correlations

Table 2 Bivariate correlations among study variables

	1	2	3	4	5	6	7	8	9	10	11	12
1. HIV-related Shame	–											
2. Sexual abuse-related Shame	0.582**	–										
3. Depressive symptoms	0.528**	0.483**	–									
4. Anxiety symptoms	−0.465**	0.456**	0.720**	–								
5. Positive reappraisal	0.013	0.038	0.026	0.121	–							
6. Optimism	−0.191**	−0.237**	−0.324**	−0.242**	0.244**	–						
7. PASS	−0.218**	−0.137*	−0.322**	−0.224**	0.178**	0.307**	–					
8. Age	−0.088	−0.009	−0.080	−0.045	−0.060	0.134*	0.059	_				
9. Ethnicity[a]	−0.027	−0.072	−0.084	−0.066	−0.137*	−0.054	−0.065	0.046	_			
10. Education	0.048	0.050	−0.071	−0.113	−0.076	0.005	−0.003	0.114	0.028	_		
11. African-American[a]	0.015	−0.054	0.093	0.102	0.192**	0.093	0.070	−0.040	−0.663**[c]	−0.184**	_	
12. Income[b]	0.002	−0.037	−0.027	−0.066	0.000	−0.047	0.161*	0.051	0.039	0.317**	−0.103	_
13. Years since HIV diagnosis	−0.125	−0.086	−0.161*	−0.135	−0.075	−0.041	0.039	0.241**	0.058	0.013	−0.047	0.050

PASS Perceived Availability of Social Support

Pearson's correlation unless otherwise noted; * $p < 0.05$; ** $p < 0.01$

[a] Point-biserial correlation

[b] Polyserial correlation

[c] Phi coefficient

Exclusion of Heterosexual Men, and Bisexual/Lesbian Women from Hypothesized Models

It is worth noting that heterosexual men and bisexual and lesbian women were excluded from the multigroup models for three distinct reasons: (1) this paper was primarily interested in the two high risk groups for HIV (i.e., heterosexual women and MSM), (2) inclusion of heterosexual men and bisexual and lesbian women resulted in possible confounding between gender and sexual identity, and (3) the sample sizes for both heterosexual men and bisexual and lesbian women was less than 40, thus limiting any additional statistical analyses with these groups.

Discussion

With HIV being recognized as a chronic but manageable disease, it is important to understand factors that influence prevalent problems in the HIV community such as anxiety and depressive symptoms. Anxiety and depressive symptoms are known contributors of poor health and wellbeing among people living with HIV [2, 4], thus, developing programs that address correlates of anxiety and depressive symptoms, such as CSA and HIV-related shame, may improve the health and wellbeing of people living with HIV. This is one of the first studies to examine the effects of HIV-related shame, sexual abuse-related shame, and posttraumatic growth on symptoms of anxiety and depressive symptoms among heterosexual women and MSM living with HIV who have experienced CSA. The findings from the current study illustrate an understudied yet significant association between trauma-related emotions, and anxiety, and depressive symptoms among people living with HIV and CSA. Our findings are consistent with current literature [15, 16], and extend this research, indicating that among people living with HIV and CSA, the experiences of shame and posttraumatic growth may exacerbate and attenuate anxiety and depressive symptoms, respectively.

Our findings indicated that group differences existed among heterosexual women and MSM in the effects of posttraumatic growth on anxiety and depressive symptoms. In the current study, posttraumatic growth was associated with fewer anxiety symptoms among heterosexual women, but not MSM. This finding supports extant literature that suggests women are more likely to report posttraumatic growth compared to men [71]. While we are unaware of studies that have examined differences in posttraumatic growth or anxiety symptoms between heterosexual women and MSM living with HIV and CSA, previous research on differences in coping between women and men may provide a possible explanation for the unique relationship. Women tend to use more emotion-focused coping strategies (e.g., creating new meaning) and productive rumination (e.g., improving social networks) than men, and these behaviors can lead to higher posttraumatic growth [71]. Further, some extant research suggests that heterosexual women living with HIV endorse greater coping self-efficacy, or greater confidence about one's ability to use coping behaviors, than MSM living with HIV [72]. Therefore, it is possible that heterosexual women living with HIV and CSA may be actively engaging in both emotion-focused coping and productive rumination, which allows them to consistently participate in the posttraumatic growth process and are experiencing positive stress-buffering effects of posttraumatic growth. However, among men, HIV-related shame, but not abuse-related shame, predicted more anxiety and depressive symptoms. Large representative community samples have indicated that, while CSA is related to adult mental health problems, this association appears to be stronger for women than men [73]. It is probable that both biological (e.g., sex, age) and social-cultural (e.g., family, peer, cultural contexts) factors influence how traumatic events in childhood (e.g., sexual abuse) and later in life (e.g., HIV infection) impact mental health. This may be particularly true regarding salient features of self-identity and social status, and thus the experience of shame. It is possible that, for men, past childhood abuse may have less impact on current levels of shame and anxiety symptoms than living with HIV infection. Also, posttraumatic growth may have more impact on depressive symptoms related to past abuse than on anxiety related to HIV infection. Regardless, our results provide evidence for the development of coping and mental health interventions specific to the needs of heterosexual women and MSM with HIV and CSA.

While gender differences may provide one explanation for the differential effect of posttraumatic growth on mental health symptoms among heterosexual women and MSM living with HIV and CSA, it is important to consider the role of sexual identity and how childhood experiences may impact this development. In particular, Rosario [74] hypothesizes that individuals who identify as gay or bisexual are less securely attached than heterosexuals due to the experiences of homonegative attitudes and discrimination. Individuals with a secure attachment are more likely to have an accessible and attentive caregiver, and this relationship helps to foster a positive sense of self [74, 75]. Thus, securely attached individuals are more resilient, may engage in the posttraumatic growth process more, and experience less stress [74]. However, gay or bisexual individuals who experience negative attitudes about homosexuality from their caregivers may feel that their parents are inaccessible, abusive, or unresponsive, which may lead to an insecure attachment [74]. Although

additional research is needed to explore these promising relationships, it is feasible that MSM living with HIV and CSA are less securely attached due to experiencing negative and discriminatory attitudes towards homosexuality, and thus engage in the posttraumatic growth process in fewer situations (e.g., only feelings of depression).

Few studies have investigated the role of posttraumatic growth on depressive symptoms among people living with HIV and CSA, however, our findings are consistent with Milam [39] who found that experiencing posttraumatic growth was associated with a lower severity of depressive symptoms among people living with HIV. Our findings extend this research by focusing on the experiences of people living with HIV and CSA. Unlike anxiety, depressive symptoms (e.g., persistent feelings of sadness which affect one's functioning) appear to be mitigated by posttraumatic growth for both heterosexual women and MSM living with HIV and CSA. These findings support previous recommendations to use strength-based approaches to improve mental health symptoms for men living with HIV [72], however, these approaches may be useful for heterosexual women living with HIV and CSA since our findings indicate that the buffering effect of posttraumatic growth on depressive symptoms was stronger for heterosexual women.

The prevalence of CSA is comparable between MSM and heterosexual women [49–51], yet our study found that sexual abuse-related shame was a predictor of anxiety and depressive symptoms for only heterosexual women. These findings are consistent with previous research that suggest women who have experienced CSA are more likely to develop internal negative attributions about the abuse and to self blame, leading to poor emotional adjustment [76]. Heterosexual women living with HIV and CSA may be using internal, negative attributional styles such as self-blame, to explain and rationalize their experiences of CSA, and possibly lead to sexual abuse-related shame. As a result, high levels of sexual abuse-related shame may result in poor emotional adjustment such as anxiety and depressive symptoms for heterosexual women living with HIV and CSA. Experiences and shame associated with CSA remain relevant for women living with HIV during adulthood. Given these findings and new advances in HIV treatment, it is important that future research examine the effect of sexual abuse-related shame on other health-related outcomes (e.g., HIV self-care behaviors, reproductive health) among women living HIV.

There is a paucity of research that examines the impact of sexual abuse-related shame on the health of MSM living with HIV; however, our findings build upon current research examining shame and mental health among men. In particular, CSA-related literature suggests that men who experienced CSA do report sexual abuse-related shame [77], though they are less likely to develop internalizing problems such as feelings of sadness and social withdrawal compared to women [78]. However, qualitative studies indicate that MSM who experienced CSA endorse feelings of isolation, depression, and suicidality [48]. Our findings lie at the intersection of previous work by suggesting that MSM living with HIV and CSA endorse feelings of sexual abuse-related shame; however, this specific type of shame is not a significant predictor of anxiety and depressive symptoms. Though MSM living with HIV and CSA experience sexual abuse-related shame, this trauma-related emotion may not be the most salient emotion for this unique population. In particular, MSM who have experienced CSA endorse additional emotions such as rage and anger towards the perpetrator and society for silencing their victimization experiences [79, 80]. For MSM living with HIV and CSA, rage and anger related to both their experiences of CSA and HIV may be more relevant for their mental health.

Shame has been associated with poor psychological health [19]; our study extends current literature by examining HIV-related shame as a predictor of anxiety and depressive symptoms. Results suggest that for heterosexual women and MSM living with HIV, high levels of HIV-related shame are associated with a greater severity of anxiety and depressive symptoms. Living with HIV is a stigmatized identity that can influence one's self-perception, mental health, and self-care behaviors [81]. HIV-related stigmatizing attitudes such as "people living with HIV deserved their illness" may be internalized, resulting in people living with HIV to experience a devalued sense of personhood [81]. As a result, feelings of shame, degradation, and worthlessness over time could be manifested by, or exacerbate existing anxiety and depressive symptoms. These findings warrant future research to examine the effects of HIV-related shame on health-related outcomes such as self-care behaviors and sexual risk behaviors among people living with HIV.

Although the findings from the current study are novel, they should be interpreted considering these specific study limitations. First, findings from this study cannot be used to make causal inferences since this was cross-sectional in design. Nevertheless, HIV-related and sexual abuse-related shame must have occurred after HIV diagnosis and experiences of sexual victimization, though it is unclear if shame predated mental health symptoms. Studies with a longitudinal framework would be useful in explicating the temporal relationship between shame, posttraumatic growth, and mental health. Second, the fit indices for the latent variable indicate a good fit; however, factor-loading value for positive reappraisal was <0.50. Positive reappraisal remained a factor indicator for two reasons: (1) its strong and well-documented association with posttraumatic

growth [82–85], and (2) its moderately strong and significant correlation with the other two factor-loadings (i.e., optimism, and perceived availability of social support). Third, anxiety and depressive symptoms were captured using self-report questionnaires as opposed to diagnostic interviews and thus are not necessarily indicative of the existence of a mental health disorder. Fourth, the current study sample is primarily composed of low-income individuals living in NYC, which may limit the generalizability of our findings beyond these geographical and SES categories. Further, low SES groups may have differential access to services relating to CSA or mental health problems, thus potentially masking or exacerbating the relationships between variables observed in this study. Finally, this paper focused on the experiences of heterosexual women and MSM living with HIV and CSA; thus, limit the generalizability of the findings to these two specific groups. Future research efforts need to be taken to understand how shame and posttraumatic growth impact the mental health of heterosexual men, and lesbian and bisexual women.

Conclusion

Our findings have significant implications for clinical research and practice. Anxiety and depressive symptoms are two highly prevalent mental health problems among people living with HIV, and posttraumatic growth may buffer the effects of these mental health problems. Interventions designed to promote growth after a traumatic event may be useful for those living with HIV who have experienced CSA. Similarly, there is a need for future research to examine mechanisms that explicate the relationship between shame, and anxiety, and depressive symptoms. Understanding the role that shame plays on the mental health of heterosexual women and MSM living with HIV who have experienced CSA may improve health-related outcomes. Furthermore, psychosocial interventions that target heterosexual women and MSM living with HIV who have experienced CSA should be sensitive to the strong association between shame and mental health. Clinicians and researchers working with heterosexual women and MSM living with HIV who have experienced CSA should be mindful of this emotion and work to include intervention components specific to reducing shame. Additional approaches are needed to address anxiety symptoms for MSM living with HIV and CSA. In particular, a recent stress reduction intervention focused on both individual and environmental factors such as readiness to change, educational achievement, and employment, found a significant decrease in mental health symptoms among MSM living with HIV and CSA [86]. It may be useful to develop future coping interventions to address the effects of individual and environmental factors such as coping skills, posttraumatic growth, and socioeconomic resources on the mental health of MSM living with HIV and CSA.

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