

Research Article

Bouncing Back: Resilience and Mastery Among HIV-Positive Older Gay and Bisexual Men

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Abstract

Purpose of the Study: Adults with HIV infection are living into old age. It is critical we investigate positive constructs such as resilience and mastery to determine factors associated with psychological well-being. We examine HIV-related factors, adverse conditions, and psychosocial characteristics that are associated with resilience (the ability to bounce back) and mastery (sense of self-efficacy).

Design and Methods: We analyzed 2014 data from the longitudinal study Aging with Pride: National Health, Aging, and Sexuality/Gender Study (NHAS), focusing on a subsample of 335 gay and bisexual older men. Multivariate linear regression was used to identify factors that contributed or detracted from resilience and mastery in the sample recruited from 17 sites from across the United States.

Results: Resilience and mastery were independently associated with psychological health-related quality of life. In multivariate analysis, adjusting for demographic characteristics, previous diagnosis of depression was negatively associated with resilience. Time since HIV diagnosis was positively associated with mastery whereas victimization was negatively associated with mastery. Social support and community engagement were positively associated with both resilience and mastery.

Implications: Individual and structural-environmental characteristics contributed to resilience and mastery. These findings can be used to develop interventions incorporating an increased understanding of factors that are associated with both resilience and mastery.

Keywords: Resilience, Mastery, HIV, Older adults, Victimization, Gay and bisexual men, Aging with Pride: National Health, Aging and Sexuality/Gender Study

HIV disease is now recognized as a phenomenon impacting older adults. In the United States, there has been a dramatic and consistent growth in people, age 50 and older, living with HIV (The [Centers for Disease Control and Prevention \[CDC\], 2016](#)). The CDC (2016) estimated that at the end of 2013, 395,668 individuals, 50 and older, were living with HIV in the United States, with

21% of new HIV infections among persons aged 50 and older. One recent estimate suggests that by 2020 as much as 70% of persons living with HIV in the United States will be aged 50 and older ([Tietz, 2013](#)). This increase is due to the confluence of new infections and the increasing survival rates among HIV-positive adults ([Heckman and Halkitis, 2014](#)).

Older Gay and Bisexual Men

Consistent with the history of the HIV epidemic, gay and bisexual men (or men who have sex with men [MSM]) continue to become newly infected with HIV and make up a substantial number of those older than 50 years living with HIV in the United States. In a recent surveillance report, the CDC (2016) indicated that in 2014, 67% of diagnosed HIV infections among those 50 and older were among gay and bisexual men mostly via transmission route of MSM. Gay and bisexual older men also face unique psychological and social challenges as well. Grossman (2008) notes that older MSM are often invisible—invisible to younger gay men due to agism, to health care providers as their sexuality is not recognized and to larger society due to continued homophobia. Gay and bisexual older men are subject to dual stressors of agism and sexual minority stress, and these stressors in combination have been found to contribute to poorer mental health (Wight, Harig, Aneshensel, & Detels, 2016; Wight, LeBlanc, de Vries, & Detels, 2013). In addition, Wight and colleagues (2012) found that HIV-related bereavement can negatively impact mental health and can create a vulnerability to positive affect. Thus, gay and bisexual older men continue to be an important focus of research efforts on a population that is seriously impacted and HIV and social invisibility. Still McLaren (2016) underscores the importance of the gay community, in particular having a sense of belonging as a means of moderating poor mental health, among older gay men, in particular those who live alone. Older adults living with HIV, regardless of sexual orientation, face complex physiological and psychosocial issues including increased mortality, delayed diagnosis (CDC, 2016), and “accelerated” aging (Pathai et al., 2014), including age-related comorbidities (Capeau, 2011). Studies on social support have shown that seropositive older adults are often isolated from informal social networks due to HIV stigma and agism (Shippy, Cantor, & Brennan, 2004). Additionally, HIV stigma and agism may be combined and doubly stigmatizing (Emlet, 2006b). These older adults may be more socially isolated than their younger counterparts (Emlet, 2006a) or HIV-negative peers (Fredriksen-Goldsen et al., 2011).

Successful Aging

Despite the deleterious effects of HIV, there is a growing interest in understanding how individuals living with HIV can age successfully (High et al., 2012; Moore et al., 2013; Vance, Struzick & Masten, 2008). A deficiency-focused approach is insufficient to fully understand the strengths inherent in this population. Vance and colleagues (2008) defined successful aging as maximizing existing abilities and minimizing difficulties associated with age-related losses. This definition fits well for those living with HIV, acknowledging disease and the presence of chronic health conditions while focusing on maximizing one’s abilities within their life experience. The recommendations from the NIH Working Group on HIV and Aging encourage studies that emphasize

mechanisms of successful aging with HIV (High et al., 2012), suggesting that by better understanding how older adults age well with HIV, we can translate findings into interventions promoting well-being among HIV-positive older adults who are not aging successfully (High et al., 2012).

Health Equity Promotion Model

A strengths-based approach (Saleeby, 1997) that examines how to maximize exiting abilities, as suggested by Vance and colleagues (2008), is the Health Equity Promotion Model [HEPM] (Fredriksen-Goldsen et al., 2014). The HEPM is designed specifically to conceptualize mechanisms of health equity among lesbian, gay, bisexual and transgender (LGBT) adults, including HIV-positive gay and bisexual older men, highlighting the importance of psychological resources as key strengths, which contribute to health and well-being (Fredriksen-Goldsen et al., 2014). It acknowledges that psychological resources in later life should be viewed from a life course perspective (Dannefer & Settersten, 2010), accounting for the historical and social-environmental context, as well as the unique needs and adaptation shared by age cohorts of HIV-positive gay and bisexual men. It also suggests that psychological resources can interplay with risk and protective factors. For example, psychological resources can be influenced by biological (e.g., HIV-related factors) and social resources (e.g., social support and community engagement) as well as adverse factors (e.g., depression, victimization, and discrimination). Two important constructs identified as potentially supporting successful aging with HIV are resilience and mastery (Fang et al., 2015; High et al., 2012).

Resilience

Resilience has been typically defined as a pattern of positive adaptation in the context of past or present adversity or risk (Smith & Hayslip, 2012). It has been characterized as a trait, a process, a resource, or an outcome (Aldwin & Igarashi, 2012), depending on the level of analysis one is undertaking. Resilience is seen as having individual, interpersonal, and environmental components (Smith & Hayslip, 2012) that assist with adaptation to risks or negative, nonnormative, or age-graded events, such as loss, or declines in health or social status, as examples. In their review of resilience and successful aging, Pruchno, Heid, and Genderson (2015) posit that resilience, by definition, requires adversity, suggesting “adversities experienced throughout a person’s life can serve as a stimulus for resilience” (p. 202). Certainly, HIV infection does, in fact, constitute adversity, as one must learn to integrate HIV into their daily life (De Santis, 2008). For the purpose of this study, we place emphasis on resilience as a intrapersonal, interpersonal, and environmental resource (Burns, Anstey, & Windsor, 2011) in which HIV-positive gay and bisexual older men positively evaluate their adaptation to adversity (Zautra, Hall, & Murray, 2010).

Smith and Hayslip (2012) suggest that intrapersonal, interpersonal, and environmental (including community) resources can contribute to resilience. However, the number of empirical papers that examine resilience in adults of any age living with HIV remains limited (De Santis, 2008; De Santis, Florom-Smith, Vermeesch, Barroso, & DeLeon, 2013; Fang et al., 2015; Lyons, Haywood, & Rozbroj, 2016). There are, however, emerging consistencies across studies that focus on resilience among people living with HIV. Yu and colleagues (2014) found that among HIV-positive adults in China, resilience was negatively associated with depression, anxiety, and stress, whereas Lyons and colleagues (2016) found that having been diagnosed with an anxiety or mood disorder was associated with decreased resilience among gay men living with HIV in Australia. Fang and colleagues (2015) found social support (interpersonal) to be an important component of resilience among older adults living with HIV, whereas Emler, Tozay, and Raveis (2010), in a qualitative study of older adults living with HIV, identified relational living (involving formal and informal support) and generativity as important elements of resilience. Studies have also identified the key role of community. De Santis (2008) suggests that both community and empowerment are important concepts to consider in resilience, whereas Earnshaw, Bogart, Dovidio, and Williams (2013) suggest that resilience must include family and community resources. Still, we have not found any studies to date that include community in the statistical modeling of resilience.

Pruchno and colleagues (2015) suggest that no single variable exerts a dominant influence on resilience. Adverse experiences and when possible, a life course perspective of adversity, should be taken into account when examining resilience in older people. Smith and Hayslip (2012) suggest that persons showing resilience at one point in time may be much less (or more) resilient at a different time as adversity can accumulate. A sense of bouncing back from an adverse event, such as an HIV diagnosis, could be hampered by intrapersonal, interpersonal, and environmental contexts, including experiences of discrimination, victimization, internalized stigma, and depression. Because the empirical evidence pertaining to effects of these adverse experiences on resilience is still largely unavailable on gay and bisexual older men, there is a considerable gap in our knowledge about how such experiences contribute to and detract from resilience in this population.

Sense of Mastery

The second construct, that is closely aligned with resilience but fundamentally different, is mastery (Kent & Davis, 2010). Conceptually, mastery differs from resilience in several distinct ways. First, mastery is a cognitive or affective resource that helps one develop a sense of self-control (Rueda et al., 2012). Second, although resilience requires experiences of adversity, mastery requires no such

supposition. Mastery and self-control can develop without adverse experiences. It is important then to consider that one's historic, and structural-environmental experiences may impact the development of resilience and mastery differently, depending on one's resources and risks. For example, one's HIV cohort (pre versus post highly active antiretroviral therapy - HAART) era, the life experiences of adversity and the existence or absence of a supportive community may all impact one's response to and ability to develop mastery and resilience.

Mastery has been examined among people living with HIV, including studies of older adults. Acquiring mastery is found to be important to improve mental health (Gibson et al., 2011) and reduce depressive symptoms (Rueda et al., 2012) in HIV-positive adults. This association may be partly attributed to the direct negative correlation between mastery and stigma (Emler et al., 2013) as well as the buffering effect provided by mastery, making one less susceptible to HIV stigma (Rueda et al., 2012). Correlates of mastery are rarely examined. The direct consequence is that we are left with a significant knowledge gap about what factors contribute to a sense of mastery among this population. In this study, guided by the HEPM, we assess what risk and protective factors in both individual and structural-environmental contexts are associated with increased feelings of mastery. This information may, in turn, lead to improved knowledge of how to foster mastery in HIV-positive gay and bisexual older men, thus improving quality of life.

The purpose of this study, therefore, is to examine HIV-related factors, adverse experiences, and psychosocial characteristics that are associated with resilience and mastery in HIV-positive gay and bisexual older men. We examine resilience and mastery as separate psychological resources that relate to each other but may be influenced by different factors in structural-environmental and individual contexts. We use data from the 2014 survey of the Aging with Pride: NHAS for this analysis.

The proposed research question is "Do HIV-related factors, adverse experiences, and psychosocial characteristics predict resilience and mastery in gay and bisexual older men living with HIV?" Our hypothesis, based on a review of the limited literature on older adults living with HIV infection, is that HIV-related factors, adverse experiences (including lifetime victimization, discrimination, and depression), and psychosocial characteristics (such as spirituality, social support, and community engagement) will independently contribute to both resilience and mastery. Finally, both resilience and mastery will independently be associated with psychological health-related quality of life (HRQOL).

Methods

Data

The data for this analysis were obtained from a subsample from Aging with Pride: NHAS (Fredriksen-Goldsen & Kim, 2017), a longitudinal study of LGBT older adults

aged 50 and older from throughout the United States (see Fredriksen-Goldsen & Kim, 2017). We utilized 2014 survey data. For the purposes of this study, our subsample met the following inclusion criteria: (i) self-identified as a gay or bisexual male; (ii) did not identify as transgender (due to small sample size); and (iii) had a diagnosis of HIV infection (obtained by self-report). The final sample size for the analyses was 335.

Measures

Variables included in the analysis are categorized into five distinct domains consistent with the conceptual framework. These include demographic and background characteristics, HIV-related factors, adverse experiences, psychosocial characteristics, and outcome variables. Background and demographic characteristics included age, sexual orientation (gay vs bisexual), education (high school or less vs more than high school), and poverty (at or below 200% federal poverty level [FPL] vs greater than 200% FPL based on the 2013 Federal Poverty Guideline). HIV-related factors included years living with HIV/AIDS, and whether they had ever received an AIDS diagnosis using self-reported criteria from the CDC (AIDS.gov, 2016).

Adverse experiences measured five types of lifetime discrimination and nine types of lifetime victimization due to sexual orientation and gender identity and receiving a depression diagnosis (Fredriksen-Goldsen & Kim, 2017). Items from both scales measured how many times participants experienced different types of discriminatory and victimization events throughout their lifetime. Summary scores were created that summed the items in each scale (ranges = 0–15 for discrimination and 0–27 for victimization), with higher scores representing greater levels of lifetime discrimination and victimization ($\alpha = 0.77$ and 0.89 , respectively). Depression diagnosis was a single item, asking participants whether they were ever told by a doctor or medical professional that they had depression.

Psychosocial characteristics included four measures to assess psychosocial characteristics, including identity stigma, spirituality, social support, and engagement in the LGBT community. Identity stigma was measured by a 4-item scale to assess the degree of internalizing social stigma on LGBT persons (Fredriksen-Goldsen & Kim, 2017), $\alpha = 0.84$. A summary score was created that averaged across the four items (range = 1–6), with higher scores representing greater levels of identity stigma. Spirituality was measured with a 4-item scale ($\alpha = 0.93$) to assess the degree of religious and spiritual beliefs with a 6-point Likert scale. Average scores were computed (range = 1–6), with higher scores representing greater levels of spirituality. Social support was measured by the 4-item scale from MOS-Social Support Scale (Gjesfeld, Greeno, & Kim, 2007), averaged across the items (range = 0–4), with higher scores representing greater levels of perceived social support ($\alpha = 0.85$).

Engagement in LGBT community was evaluated with a 4-item scale. Questions included “I help other people in the community” and “I am active or socialize in the community.” A summary score was created that averaged across the four items (range = 1–6), with higher scores representing greater levels of engagement in the LGBT community ($\alpha = 0.84$).

Outcome variables were psychological HRQOL, resilience, and mastery. The psychological HRQOL was assessed by the psychological subscale of the World Health Organization Quality of Life-BREF (WHOQOL-BREF). The six questions in this subscale asked participants to indicate to which degree they experienced the six related items (1 = not at all/very dissatisfied/never and 5 = extremely/completely/very satisfied/always). Questions included “Do you have enough energy for everyday life?” A summary score was computed using the formula recommended in the user manual (range = 0–100) (WHOQOL Group, 1998), with higher scores representing greater levels of psychological HRQOL ($\alpha = 0.83$).

Resilience was measured by the 3-item scale (Fredriksen-Goldsen & Kim, 2017; Smith et al., 2008), including such items as “I tend to bounce back quickly after hard times.” A summary score was created that averaged across the three items (range = 1–6), with higher scores representing greater perceived resilience ($\alpha = 0.73$). Mastery was measured by the 4-item scale from Lachman and Weaver (1998), with items such as “What happens to me in the future mostly depends on me.” A 6-point Likert scale was used, ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). A summary score was created that averaged across the four items (range = 1–6), with higher scores representing greater mastery ($\alpha = 0.82$).

Analytic Strategy

First, we computed the descriptive statistics to investigate the overall distributions of demographic and background characteristics, HIV-related factors, adverse experiences, psychosocial characteristics, and outcomes among the HIV-positive gay and bisexual older men. Second, to evaluate the relationships between resilience, mastery, and psychological HRQOL, we used hierarchical model and entered resilience and mastery in a step-wise fashion along with other control covariates. We used seemingly unrelated regression to integrate different models and used Wald test to test the changes in beta coefficients across models. Third, to investigate the relationships among resilience and mastery, we used the hierarchical model and entered the selected independent variables as blocks into the model according to the hypotheses based on the conceptual model. Because the resilience and mastery were expected to correlate, we used multivariate linear regression modeling to assess them simultaneously while taking into considerations pre-existing intercorrelations (Huberty & Morris, 1989; Rencher, 2003).

An advantage of this approach allows researchers to examine the structure of the relationships between independent and dependent variables across different outcome variables. In order to reduce sampling bias and increase the generalizability of the findings, we applied survey weights to statistical analyses. Survey weights were computed utilizing three external probability samples' data as benchmarks following two-step postsurvey adjustment, as has been applied to other types of non-probability samples (Lee, 2006; Lee & Valliant, 2009). In the first step, the Aging with Pride: NHAS sample was combined with the National Health Interview Survey (NHIS) sample ascertaining sexual orientation by sexual identity, and we computed the probability of being selected from the NHIS versus the Aging with Pride: NHAS sample by using a logistic regression model with age, sex, sexual orientation, Hispanic ethnicity, race, education, region, and home ownership as covariates. In the second step, we further calibrated the weights for those in same-sex partnerships, another indicator of sexual orientation. The population totals by age, race/ethnicity, gender, education, marital status, and region were estimated from the NHIS, the American Community Survey, and the Health and Retirement Study (HRS). See Fredriksen-Goldsen and Kim (2017) for detailed information regarding the postsurvey adjustment procedures.

All statistical analyses were conducted in commercial statistical software, Stata 14 (StataCorp., 2015). Study procedures were approved by the University of Washington Institutional Review Board.

Results

Demographic and Background Characteristics

Table 1 summarizes the weighted estimates of the demographic and background characteristics in the sample. The mean age was 58 years with a range of 50–84. About 86% identified as gay men; 68% identified as non-Hispanic White, with 14.6% Hispanic and 15% African American; 41% had a high school education or less; and nearly half lived below 200% of the FPL. The length of time living with HIV ranged from less than 1 to 35 years, with a mean of 20. Slightly more than one third (37%) had received an AIDS diagnosis. AIDS is an advanced stage of HIV infection that occurs when one's immune system is badly damaged (AIDS.gov, 2016). Having CD4 cells less than 200 per cubic millimeter of blood or being diagnosed with opportunistic infections can result in a diagnosis of AIDS. Left untreated, the survival rate for those diagnosed with AIDS is approximately 3 years (AIDS.gov, 2016). On average, they had experienced 10 lifetime discriminatory and victimizing events. Nearly 60% had received a diagnosis of depression. Participants had, on average, relatively low levels of identity stigma and moderate-to-high levels of spirituality, social support, and community engagement.

Multivariate Analyses

Table 2 summarizes the model fitting results of linear regression that investigated the relationships between psychological HRQOL and resilience and mastery. As shown

Table 1. Demographic Characteristics and Key Variables Among Gay and Bisexual Older Adults Living with HIV/AIDS

	Mean or %	95% Confidence interval
Demographic characteristics		
Age (range: 50–84 y), <i>M</i>	58.32	(57.26, 59.38)
Sexual orientation, Gay	85.87%	(78.60, 90.95)
Race/ethnicity, Non-Hispanic White	67.77%	(59.04, 75.41)
Education, High school or less	41.26%	(32.54, 50.57)
Income, At or below 200% poverty level	45.57%	(36.90, 54.50)
HIV-related factors		
Years of living with HIV (range: 0–35 y), <i>M</i>	20.33	(19.02, 21.64)
Progression to AIDS	37.03%	(29.03, 45.81)
Adverse experiences		
Depression ever	57.95%	(49.12, 66.30)
Lifetime discrimination (range: 0–15), <i>M</i>	2.35	(1.80, 2.90)
Lifetime victimization (range: 0–27), <i>M</i>	7.16	(5.93, 8.39)
Psychosocial characteristics		
Internalized stigma (range: 1–6), <i>M</i>	1.72	(1.55, 1.89)
Spirituality (range: 1–6), <i>M</i>	3.93	(3.61, 4.26)
Social support (range: 0–4), <i>M</i>	2.44	(2.23, 2.65)
Community engagement (range: 1–6), <i>M</i>	4.03	(3.84, 4.22)
Outcome variables		
Resilience (range: 1–6), <i>M</i>	3.95	(3.76, 4.15)
Mastery (range: 1–6), <i>M</i>	4.44	(4.28, 4.60)

Note: Weighted estimates are presented.

Table 2. Results for Linear Regression with Psychological Quality of Life as the Outcome

	Psychological health-related quality of life ^a		
	Model 1	Model 2	Model 3
	<i>b</i> (95% CI)	<i>b</i> (95% CI)	<i>b</i> (95% CI)
Resilience	8.91** (6.70, 11.12)		7.10** (4.50, 9.71)
Perceived mastery		8.67** (5.43, 11.91)	4.77** (1.44, 8.11)

Note: CI = confidence interval.

^aEstimates were fully adjusted for all the covariates.

** $p < .01$.

in Table 2, in Models 1 and 2 with resilience or mastery entered into the model along with other covariates, both resilience and perceived mastery were significantly and positively associated with psychological HRQOL, even when all other covariates were controlled. In Model 3 with both resilience and mastery simultaneously entered into the model, it was shown that they still remained significantly associated with psychological HRQOL, despite that beta coefficients were significantly reduced as suggested by Wald tests (resilience: design-adjusted $F(1, 2430) = 5.92$, $p = .015$; and, mastery: design-adjusted $F(1, 2430) = 16.01$, $p < .01$).

The summaries of model fitting results are presented in Table 3. As shown, most of the demographic factors were not significantly associated with either resilience or mastery. The only exception was that those with lower educational attainment had lower levels of resilience in the model. In contrast, years of living with HIV had significant positive relationships with mastery in the model, although having an AIDS diagnosis was not significantly related to either resilience or mastery. Having ever received a diagnosis of depression was negatively associated with resilience, but not mastery. In contrast, lifetime victimization was negatively associated with mastery but not resilience. Lifetime discrimination was not associated with either resilience or mastery. As presented in the full models, social support was positively associated with both resilience and mastery as was community engagement. Identity stigma and spirituality, in contrast, were not significantly associated with either resilience or mastery at the .05 level.

Discussion

Many HIV-positive gay and bisexual older men are part of a cohort who did not expect to live into middle and older age (Halkitis, 2013). Those who did survive have often experienced AIDS-related bereavement. Wight and colleagues (2012) found that 20% of the gay men in their study had lost 15 or more friends to AIDS. Although much of the focus on aging with HIV has been on its deleterious impacts, the results of this study provide an enhanced understanding of resilience and mastery and characteristics that contribute to those psychological resources. We hypothesized that

resilience and mastery relate independently to psychological HRQOL while their relationships with psychological HRQOL would diminish when both were entered in the same model. We also hypothesized that HIV-related factors, adverse experiences such as depression, lifetime victimization, and discrimination, and psychosocial characteristics would independently contribute to resilience and mastery.

Our first hypothesis was supported in that resilience and mastery were important, yet separate psychological resources, which can make significant and independent contributions to psychological well-being in this population. Furthermore, both resilience and mastery were independently associated with psychological HRQOL beyond the selected covariates. Additionally, their association with psychological HRQOL remained significant, yet was reduced in strength, when both of them were entered into the same model. This suggested that resilience and mastery were correlated constructs that can partially explain each other's relationships with psychological HRQOL. This finding is consistent with our conceptualizations that resilience and mastery are independent constructs that interact but contribute differently to outcomes such as psychological quality of life. Future research should explore the association between resilience and AIDS-related bereavement, particularly among long-term survivors.

With regard to HIV-related factors, our findings point to important and differential characteristics of resilience and mastery. Progression of HIV to an AIDS diagnosis was not associated with either outcome, which is perhaps not surprising considering the efficacy of HIV treatment. The effectiveness of antiretroviral therapy makes the physical effects of HIV manageable (Millard et al., 2014). More relevant, however, is the association between time since diagnosis and the differential impact on resilience and mastery. Although greater time living with HIV was significantly associated with resilience initially, that significance was lost once psychosocial characteristics were entered into the model. One potential explanation is that time since diagnosis was correlated in this study with spirituality and sense of community (Porter, Brennan-Ing, Burr, Dugan, & Karpiak, 2015), this may have explained away the observed relationship between time living with HIV and resilience. This association, however, remained significant with mastery.

Table 3. Results of Hierarchical Multivariate Regression

	Resilience		Mastery	
	<i>b</i> (95% CI)	<i>b</i> (95% CI)	<i>b</i> (95% CI)	<i>b</i> (95% CI)
Demographic characteristics				
Age	0.00 (−0.02, 0.02)	0.01 (−0.01, 0.03)	−0.02 (−0.04, 0.00)	−0.01 (−0.03, 0.01)
Bisexual (vs Gay)	−0.08 (−0.48, 0.33)	−0.26 (−0.74, 0.22)	0.26 (−0.14, 0.66)	0.14 (−0.26, 0.55)
Racial/ethnic minority	−0.23 (−0.72, 0.13)	−0.28 (−0.70, 0.13)	−0.03 (−0.37, 0.31)	0.03 (−0.30, 0.35)
≤High school (vs > HS)	−0.49* (−0.90, −0.08)	−0.46* (−0.85, −0.06)	−0.29† (−0.61, 0.03)	−0.24 (−0.54, 0.06)
≤200 FPL (vs > 200% FPL)	−0.16 (−0.23, 0.55)	0.02 (−0.35, 0.39)	0.03 (−0.35, 0.29)	−0.18 (−0.51, 0.15)
HIV-related factors				
Years with HIV	0.03* (0.00, 0.05)	0.01 (−0.01, 0.03)	0.04** (0.02, 0.05)	0.02** (0.01, 0.04)
Progression to AIDS	−0.24 (−0.59, 0.11)	−0.19 (−0.53, 0.15)	−0.20 (−0.47, 0.07)	−0.17 (−0.41, 0.08)
Adverse experiences				
Depression ever (vs never)	−0.72** (−1.07, −0.38)	−0.60** (−0.94, −0.26)	0.04 (−0.25, 0.32)	0.14 (−0.13, 0.41)
Lifetime discrimination	0.00 (−0.06, 0.07)	0.01 (−0.04, 0.07)	−0.03 (−0.11, 0.04)	−0.03 (−0.09, 0.03)
Lifetime victimization	−0.01 (−0.04, 0.02)	−0.02 (−0.04, 0.01)	−0.02† (−0.05, 0.00)	−0.02* (−0.05, −0.00)
Psychosocial characteristics				
Internalized stigma		0.01 (−0.14, 0.17)		−0.08 (−0.22, 0.07)
Spirituality		0.03 (−0.07, 0.14)		0.06 (−0.02, 0.15)
Social support		0.22** (0.05, 0.38)		0.18* (0.03, 0.33)
Community engagement		0.19** (0.05, 0.34)		0.17** (0.04, 0.30)

Note: Weighted estimates are presented. CI = confidence interval; FPL = federal poverty level; HS = high school.

† $p < .10$. * $p < .05$. ** $p < .01$.

Mastery, considered the extent to which one feels control over significant factors in their lives (Pearlin, Lieberman, Menaghan, & Mullan, 1981), is likely instrumental in people learning they can be successful in managing HIV infections, which may build confidence that they can successfully perform other activities and attain their goals (Greene & Conrad, 2012). Our findings of HIV-related factors being associated with mastery are consistent with those of Gibson and colleagues (2011) who found associations between time since diagnosis, mastery, and increased mental health quality of life as well as with those of Emlet and colleagues (2013) who found time since diagnosis was associated with increased mastery and lower levels of HIV stigma in older adults living with HIV in Ontario, Canada. Mastery likely not only provides a greater feeling of control but also increases problem-solving skills, enhancing one's ability to better handle HIV-related problems (Rueda et al., 2012). It is probable that problem solving and maintaining a sense of control are more closely tied to mastery than the concept of resilience, which is associated with the ability to "bounce back."

Our model also took into account adverse experiences including lifetime experiences of discrimination, victimization, and diagnosis of depression. Our findings suggest that these adverse experiences have differentiating impacts on the outcome variables. Having been diagnosed with depression was found to significantly and negatively impact resilience. These findings are consistent with the conceptualization of resources and risks associated with resilience, suggesting that depression specifically, is a risk factor for

lowered resilience (Zautra et al., 2010). Zautra and colleagues note that hallmark symptoms of depression, such as hopelessness and helplessness, are in opposition to protective factors such as optimism and hope. Because resilience is perceived as existing on a continuum, it is possible that greater experiences of depression may create a breaking point making "bouncing back" more difficult. Additionally, Riley (2012) suggests that for some, resilience needs to be fostered through therapeutic encouragement and without that support, the individuals' ability to reconstitute or reframe adversity may be hampered. This finding supports recent data from Lyons and colleagues (2016) who found that ever being diagnosed with a mood or anxiety disorder was negatively associated with resilience. Having a diagnosis of depression however did not impact mastery, which is contrary to some research findings with HIV-infected populations (Rueda et al., 2012). It is possible that the relationship between mastery and depression is highly complex involving coping styles, social support, and other factors not considered in this analysis. Further research and refined measures are needed to investigate such additional factors and to better understand these complex relationships.

Although discrimination was not significantly associated with either resilience or mastery, victimization was negatively associated with mastery. Studies examining the relationship between victimization and mastery in various populations, including women and adolescents, show mixed results. (Renner, Cavanaugh, & Easton, 2015; Turner, Finkelhor, & Ormrod, 2010). Renner and colleagues suggest that emotions, such as shame, self-blame,

and fear, due to prior victimization, may lead to negative self-appraisals, reducing mastery. In the lives of LGBT individuals, [Spencer and Patrick \(2009\)](#) suggest that victimization early in life, including being victimized as the result of perceived sexual orientation, can lead to a reduced sense of mastery. We can only speculate as to why victimization was not associated with resilience. Experiences of discrimination constitute adversity, a prerequisite for resilience, yet resilience is a complex phenomenon and victimization may overwhelm one's ability to "bounce back." Further research is needed to better explore these relationships.

Finally a number of psychosocial characteristics were found to influence both outcome variables. Social support and community engagement both contributed independently to resilience and mastery. Multiple studies examining adults living with HIV have found social support and other positive social appraisals to be associated both qualitatively and quantitatively with resilience and mastery ([De Santis et al., 2013](#); [Emlet et al., 2010, 2013](#); [Fang et al., 2015](#); [Lyons et al., 2016](#)).

An additional important finding was the significant association between community engagement and both outcome variables. In setting a resilience agenda, the HEPM acknowledges the impact of structural-environmental influences whereas [Earnshaw and colleagues \(2013\)](#) suggest that empowerment at the community level can foster resilience through the deployment of knowledge, skills, and resources, disrupting the deleterious effects of segregation, historical trauma, and medical mistrust. We need to acknowledge and reflect back on the history of community engagement and mobilization of efforts of gay and bisexual men during the early days of the HIV epidemic ([Jaffe, Valdiserri, & De Cock, 2007](#)). Many of the older men with HIV have been long time community activists. This is important at a macro level but also may positively impact feelings of mastery or resilience. Our finding, for example, that community engagement, in the LGBT community, was significantly associated with both resilience and mastery is an important finding that contributes to the knowledge of positive psychological states and importance of macro level involvement. Future research will be needed to better capture the context and identify types of community engagement that foster more positive adaption to HIV.

The results of this study have important practice implications as well. In particular, intervention development and direct practice could capitalize on the importance of mastery, social support, and community in fostering positive psychological processes. For example, as [Rueda and colleagues \(2012\)](#) point out, interventions targeting mental health concerns can focus on improving one's sense of self-control (mastery) as a way of coping with disease and change. Mastery can be positively impacted through interventions. For example, [Chesney and colleagues \(2003\)](#) found that improved mastery reduced stress among HIV-positive gay and bisexual men. Practitioners can work with gay and bisexual older men living with HIV to improve

their social support through active engagement and effort. Additionally, we now have evidence of the importance of community engagement. Helping clients improve their engagement with community (either the LGBT or HIV community) may serve to positively impact the individual as well as the broader community.

This study provides important insights into resilience and mastery in gay and bisexual older men living with HIV infection. Yet limitations to the study exist. First, even though this is 2014 survey data of a longitudinal study, the data are cross-sectional and therefore no causal inferences can be made. For example, the association between depression and resilience cannot be assumed to be directional. Additionally, because the original study focused on LGBT older adults and not specifically those living with HIV infection, other potentially useful variables that are HIV specific were not available, such as detailed information about their use of active antiretroviral therapies. Finally in the current study, we measured discrimination and victimization with retrospective recall. Therefore, the measurement may still be subjective to measurement errors, despite the fine psychometric properties they displayed. It should be promising for future studies to draw on longitudinal data with additional measures designed specifically for gay and bisexual older men living with HIV/AIDS as well as to collect prospective data on discrimination and victimization.

Although the topic of resilience in vulnerable populations has grown substantially, it remains at an embryonic stage for those studying aging and HIV. For our understanding of resilience in those living with HIV to move forward, we need to better understand the interplay of a myriad of psychological characteristics such as coping mechanisms, social support, and intrapersonal factors that contribute to resilience and mastery. Then, through enhancing our understanding, we can begin to develop tailored interventions aimed at heightening resilience and mastery in this population as opposed to only reducing deficits. We also need to understand more fully how age or length of time living with HIV impacts resilience and mastery. Although such complex relationships will take time to methodically investigate, as our understanding of resilience and mastery grows we will be better positioned to hone our understanding of the interplay between these important psychological factors.

Conclusion

The NIH Working Group on HIV and Aging has encouraged studies that examine positive psychology in older adults living with HIV/AIDS in order to better understand factors that may support successful aging. Our study has identified resources and risks that are associated with and likely support and foster the development of resilience and mastery in this population. Our hypotheses were supported suggesting that resilience and mastery are separate yet related psychological resources that contribute significantly

to psychological well-being among HIV-positive gay and bisexual older men. In addition, HIV-related variables, adverse circumstances, and psychosocial characteristics contribute differentially, as well as at times in concert, to resilience and mastery. Further understanding of such contributing factors may assist in the development of tailored interventions to promote social support and community engagement among HIV-positive gay and bisexual older men.

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