



Black Women Living with HIV: A Latent Profile Analysis of Intersectional Adversities, Resilience, and Mental Health

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Abstract

Black women living with HIV (BWLWH) face adversities, including discrimination (race, HIV, and gender related) and trauma. This study examines which latent profiles of resilience (R) and adversity (A) are most prevalent and their relationships to mental health among 119 BWLWH [age=44.1 (standard deviation=10.9)]. Questionnaires measured resilience (post-traumatic growth, trait/coping resilience, religious coping, social support), adversity (discrimination, trauma, microaggressions), and mental health [post-traumatic stress disorder (PTSD) symptoms, post-traumatic cognitions (PTC), and depressive symptoms]. Four salient profiles emerged through latent profile analysis and mental health differences were evaluated. Profile 1 (19.8%) reported lowest scores on 4 resilience measures, lowest traumas, and second lowest on discrimination (low resilience/low adversity—LR/LA). Profile 2 (13.8%) had second lowest on 3 resilience measures but second highest social support, highest/second highest on traumas and discrimination and microaggressions (low resilience/high adversity—LR/HA). Profile 3 (59.5%) exhibited higher scores on resilience and lowest scores on 3 of 4 adversity measures (high resilience/low adversity—HR/LA). Profile 4 (6.9%) reported high on 3 resilience measures, but third lowest on social support, and second highest/highest traumas, discrimination, and microaggressions (high resilience/high adversity—HR/HA). For PTC, the HR/LA group had significantly lower scores compared with the LR/LA and LR/HA groups; and LR/HA had higher PTC scores than the HR/HA group. PTSD scores were significantly lower for HR/LA than all profiles. Depression scores were significantly higher for LR/LA and LR/HA groups than HR/LA. Findings indicate that lower adversity alongside higher resilience leads to better mental health. Policies must address intersectional discrimination and prevent trauma impacting BWLWH; interventions are needed to improve social support and healing.

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Introduction

AMONGST WOMEN WHO are newly diagnosed with HIV in the United States, Black women are disproportionately affected, accounting for more than half of the diagnoses in 2018.¹ This disparity is linked to structural factors, including racism, sexism, and poverty.^{2,3} Black women also face disparities in exposure to trauma^{4,5} and mental health outcomes,

such as severe depression and symptoms, consistent with post-traumatic stress disorder (PTSD)^{6–8} likely due to a myriad of factors at the micro and macro levels (i.e., individual, interpersonal, and structural levels).⁹ Intersectional discrimination and stigma is a complex process by which Black women living with HIV (BWLWH) who are already subjected to racism, classism, and gender-based oppression, are also stigmatized and treated in an inferior manner as

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women living with HIV.¹⁰ Intersectionality theory founded by Black feminists, such as Kimberlé Crenshaw, echoes that intersecting systems of oppression (e.g., racism, sexism, classism, and heterosexism) are simultaneously impacting the lives of minoritized communities.^{11,12}

Intersectional discrimination and stigma may result in or exacerbate mental health symptoms among BWLWH.^{13,14} However, BWLWH may be resilient in the context of the adversities they face. Resilience is the ability to bounce back or function adaptively in the face of or following adverse experiences.¹⁵ Latent profile analyses provide a tool to assess whether BWLWH may be grouped in terms of differential levels of adversities and resilience resources in relation to mental health outcomes. Findings may help us to better develop and target interventions for the group/class of BWLWH who are most in need.

Adverse childhood experiences and lifetime traumatic experiences predict negative health outcomes, especially for minoritized women.^{16–18} Although most people will experience a stressful event (e.g., interpersonal violence, death in family, accidents) at some point in their lives, BWLWH experience them at a higher rate with severe traumas (e.g., assault) predicting the highest risk of PTSD.^{19–21} Due to intersectional discrimination and stigma,¹⁰ BWLWH face racism, sexism, and HIV stigma.²² Intersectional discrimination and stigma may manifest in multiple ways, such as “macro” acts of discrimination, which generate inequities in health and living conditions (e.g., employment and housing discrimination) and daily microaggressions, which are subtle yet demeaning comments and behaviors (e.g., viewed as angry when being assertive). Discrimination and microaggressions are manifestations of structural isms, which refers to the aggregation of avenues in which societies further oppression by way of intertwined systems (e.g., health care, housing, employment, benefits, and education).²³ Research among BWLWH have found that microaggressions and discrimination are associated with depressive symptoms and PTSD symptoms.^{13,14}

Resilience has been defined by the American Psychological Association as the “process of adapting well in the face of adversity, trauma, tragedy, threats, or even significant sources of stress.”²⁴ The construct of resilience has been further developed over recent years. Resilience has been studied as an individual trait, as a coping strategy, and as a process entailing development of capacity in the context of repeated person–environment interactions.^{15,25} The degree of resiliency may be affected by multiple cultural, social, and biological factors such as family functioning, religion, and access to work or educational opportunities.^{26–28} At the individual level, trait resilience consists of characteristics such as hardiness and personal competence, which represent lasting characteristics that are not invoked only in response to a stressor.^{29,30} Resilience as a coping strategy is defined as techniques used to reduce stress, including active coping in which an individual uses psychological or behavioral strategies (e.g., walking, listening to gospel music).²⁸ In BWLWH, higher trait resilience and coping strategies (e.g., humor) have been found to be associated with lower depressive symptoms and lower trauma symptoms.^{31,32}

In contrast to trait resilience, resilience as a dynamic process details the way in which environment, biology, genetics, and psychology interact throughout an individual’s

life to facilitate positive adaptive functioning.^{25,33–35} At the interpersonal level, a resilience factor is social support, which reflects the quality of relationships a person has with others (e.g., friends, romantic partners, family, and peers) and the ability to harness what one needs from these relationships in times of hardship. In a sample of Black women, social support served as a mediator between perceived stress and severe PTSD symptoms.³⁶ In a qualitative study with BWLWH they expressed that the resilience they showed was nurtured by their “village” (inclusive of relationships with children and grandchildren, partners, and health care providers) and that support offered women space to heal from traumas experienced.³⁷ Religious coping and spirituality is also a resilience factor with particular cultural relevance in the Black community and for BWLWH. Researchers found that among BWLWH who reported lower levels of mental health symptoms they were more likely to rely on positive religious coping strategies.⁸

In addition, specifically among individuals who have experienced trauma, scholars have examined post-traumatic growth, which occurs when an individual endures a traumatic experience and psychologically endures change in a positive manner, which opens possibilities for growth and improvement.³⁸ Fewer studies have been focused solely on BWLWH and post-traumatic growth.³⁹ In a sample of majority BWLWH, negative associations were found between post-traumatic growth and psychological distress.⁴⁰ A qualitative study in 2016, found six major sources for resilience in BWLWH, which included self-care, internal strength, religion/spirituality, hope, self-awareness, social support from community and family, and support from health professionals/facilities.⁴¹ In the limited literature on resilience resources in BWLWH, resilience has been associated with higher quality of life, lower depressive symptoms, viral suppression, and medication adherence,^{2,37,42} thereby echoing the importance of studying resilience in conjunction with adversities and mental health among BWLWH.

However, few studies have assessed the combination of resilience and adversity (especially intersectional discrimination and stigma) in relation to mental health outcomes in BWLWH,^{31,41,43} instead studies have examined them individually or specifically with regard to sexual violence/assault and maternal adversities.^{36,44,45} With the chronicity of adversities stemming from racism, sexism, HIV stigma, and violence impacting BWLWH, the interplay of these adversities and several types of resilience could have effects on mental health outcomes. Latent profile analysis (LPA) is a statistical technique that can offer meaningful findings to inform intervention through empirically identifying subgroups within a sample to understand nuances in health outcomes based on the subgroups found. Using data from 119 BWLWH, this exploratory study aims to understand how many, and which resilience and adversity profiles are present in the data, as well as explore how depressive symptoms, PTSD symptoms, and post-traumatic cognitions (PTC) differ across the profiles.

Methods

Participants and procedures

Between 2017 and 2019, baseline data were collected from 119 BWLWH living in the Southeastern United States who were participating in a behavioral medicine study aimed at

developing an intervention to decrease trauma symptoms and improve antiretroviral therapy (ART) adherence and viral load. An initial phone screen was conducted with potential participants and women who met the following criteria were scheduled for an in-person baseline visit: (1) at least 18 years old, (2) living with HIV, (3) identifying as Black and/or African American, (4) cisgender female, (5) English speaking, (6) history of abuse/trauma, (7) been prescribed ART for the last 2 months, and (8) either (a) self-reported adherence from the past 2 weeks anything other than excellent response (from a Likert-type scale), (b) reported “yes,” “not sure/uncertain” or “don’t know” in response to having detectable viral load in the last year or (c) missing one or more HIV-related medical visits in the past year.

Additionally, at the in-person visit, participants were excluded if there were significant untreated mental health issues that would interfere with study participation (e.g., unstable psychosis or mania), and/or if they were unwilling or unable to provide informed consent, and/or if they had recent (past 6 months) behavioral treatment for ART adherence or trauma.

For eligible women, two baseline assessments were conducted across two study visits, with the first baseline assessment visit including the informed consent procedures where written consent was obtained. Women completed a baseline questionnaire battery that included questions about sociodemographic characteristics, resilience, discrimination, depression, and trauma symptoms. Participants were compensated with a total of \$50 upon completion of both baseline assessments across the two visits (\$25 per visit/assessment). The study was approved by the University of Miami’s Institutional Review Board.

Measures

Sociodemographic characteristics. This survey included questions pertaining to the participant’s age, living situation, household characteristics, educational level, annual income, religion, employment status, relationship status, and country of birth.

Resilience related indicators

Intrapersonal resilience. The Connor–Davidson Resilience Scale (CD-RISC) includes 10 items that assess the individual’s ability to strive despite adversity (Cronbach’s α for this sample = 0.89). The CD-RISC measures both trait (e.g., “I am able to adapt when changes occur”) and coping (“I try to see the humorous side of things when I am faced with problems”) resilience of an individual with excellent psychometric properties.^{46–49}

Social support. Extensively used to measure social support, the Multidimensional Scale of Perceived Social Support consists of 12 items that divide into factor groups depending on the source of support, such as family, friends, and partner (global α = 0.93).⁵⁰ This measure highlights resilience that can build in the context of interpersonal relationships as opposed to intrapersonal experiences. A sample item is, “I get the emotional help and support I need from my family.” Convergent validity for this scale with Social Support Behaviors scale has been found with high reliability in African/American and/or Black samples.⁵¹

Positive religious coping. The RCOPE Subscale of the Brief RCOPE includes 4 items that ask participants about their use of spirituality and/or religion to cope with life’s difficulties (Cronbach’s α = 0.87). Sample items include “I look for a stronger connection with God” and “I try to see how God might be trying to strengthen me in this situation.” It is the most commonly used measure of religious coping and its terms of concurrent validity, RCOPE has been found to be significantly correlated with wellbeing constructs.⁵²

Post-traumatic growth. The post-traumatic growth inventory (PTGI) self-report measure consists of 21 items that assess perceived personal benefits that are cultivated from a survivor’s attempt to cope with trauma (Cronbach’s α = 0.90) such as “I discovered that I’m stronger than I thought I was.” Responses are rated on a 6-point Likert-type scale (“I did not experience this change” to “experiencing a very great degree”). A higher score indicated greater post-traumatic growth. This measure has been validated across diverse populations and traumatic experiences such as cancer diagnosis, natural disasters, and war.^{53–57}

Adversity indicators

Trauma frequency. The Life Events Checklist for Diagnostic and Statistical Manual of Mental Disorders (DSM-5) (LEC-5) is a self-report measure that screens for 16 traumatic events in a participant’s lifetime that have been shown to potentially result in PTSD and/or distress. This measure has been validated in clinical samples and has shown to converge with the Traumatic Life Events Questionnaire with good temporal stability.⁵⁸

Discrimination. The Multiple Discrimination Scale (MDS) assesses discrimination acts targeting a few identities. For this study, two of the relevant subscales related to HIV status (α = 0.87) and Black race/ethnicity (α = 0.85) were measured, and each subscale had 13 items. The MDS has shown good construct validity among Black individuals living with HIV.⁵⁹

Gender- and race-related microaggressions. The Gendered Racial Microaggressions Scale for Black Women (GRMS-BW) has 26 items that capture the frequency and appraisal of microaggressions Black women experience due to gendered racism. Frequency is rated on a Likert-type scale where higher scores indicate greater frequency, 0 (never) to 5 (once a week or more). Previous research has demonstrated good reliability of the GRMS-BW, and convergent validity with significant positive correlations with both the Racial and Ethnic Microaggressions Scale⁶⁰ and the Schedule of Sexist Events.^{61,62} Cronbach’s alpha in the current sample is α = 0.95.

Mental health measures

Depressive symptoms. The Center for Epidemiologic Studies Depression Scale (CES-D) consists of 20 items that assess current affective depressive symptoms that participants experienced in the past week. This measure has been well validated across many populations, including women living with HIV.^{63–65} The internal consistency in this sample was α = 0.88.

Post-traumatic cognitions. The Post-Traumatic Cognitions Inventory (PTCI) measures thoughts and beliefs that commonly occur as a result of trauma using 36 items with 3 subscales related to negative cognitions about the world, self, and self-blame. Responses are rated using a 7-point Likert-type scale ranging from 1 (totally disagree) to 7 (totally agree) and initial validation of the measure showed that the PTCI compared satisfactorily with other measures of trauma-related cognitions.⁶⁶ The Cronbach's alpha in the current sample was 0.96.

PTSD symptoms. PTSD symptoms were captured by the Davidson Trauma Scale (DTS), which comprises 17 items. The Cronbach's alpha in the current sample was 0.84, the DTS has been validated across a variety of samples with different trauma exposures (e.g., childhood sexual abuse, war, natural disaster).^{29,67,68}

Data analytic strategy

Analyses were conducted using SPSSv28.0, Mplusv8.6, and SAS[®] v9.4. First, means, standard deviations (SDs), and correlations among study variables were examined. Second, we used LPA to identify the number of resilience and adversity profiles based on the participant's distribution on 4 resilience (post-traumatic growth, trait/coping resilience, religious coping, and social support) and 4 adversity constructs (frequency of trauma, HIV-related discrimination, race-related discrimination, and microaggressions). Standardized scores (z-scores) of indicators were used to conduct LPA. To determine the best-fitting model, fit information criterion was used, including Bayesian information criteria (BIC), sample size-adjusted Bayesian information criterion (SSABIC), and the parametric Bootstrap Likelihood Ratio Test (BLRT) and entropy.⁶⁹ Models with lower BIC and SSABIC indicated a better fit. BLRT estimates the difference distribution, a significant BLRT *p* value rejects the null hypothesis of the *k*-1 model in favor of the alternative *k* model, and a higher entropy indicates better separation between profiles ranging 0 to 1.⁶⁹

Third, to examine whether and to what extent sociodemographic characteristics and psychosocial adjustments vary among identified profiles, the current study used the auxiliary corrected 3-step approach.⁷⁰ Step 1 estimated the

unconditional LPA model, step 2 calculated misclassification rates, and step 3 analyzed profiles with covariates (mental health measure scores) while accounting for misclassification rates.⁷⁰ The 3-step approach was conducted in Mplusv8.6.⁷¹ After the 1st step was completed, SAS[®] v9.4 for Windows (SAS Institute, Cary, NC) was used to examine and compare characteristics of the optimal profiles identified. Chi-square tests with Monte Carlo-simulated Fisher's exact *p* values were calculated for categorical sociodemographic variables and one-way analysis of variance procedures were used for the continuous variables.

Results

Table 1 summarizes the means, SDs, and correlations of the indicator variables. The assumption of local independence among indicators in the LPA was not violated as most indicators were not correlated with large effect sizes. A total of 119 women completed the baseline visit. A total of 116 women were included in the LPA and 3 participants were excluded due to missing data on indicator variables. The mean age for the total sample was 49.16 years with a SD of 10.88 years. Most of the women endorsed being single (43.97%), exclusively heterosexual (75.86%), practicing the Baptist religion (52.59%), and having children (81.90%). About 31% of the sample had education level of some college or higher, most of the women reported an income of \$11,999 or less (62.06%), and more than half of the women were renting a home or apartment (67.24%). Age was found to be significantly different across the four profiles, however, no other differences in sociodemographic variables across profiles were found, as shown in Table 2.

This sample's average depression score (mean=22.07, SD=11.51) was above both the typical clinical cutoff score of 16 for the general population and higher-than-average scores compared in another study looking at women (across race/ethnicity) living with HIV.^{72,73} The average PTSD score among our sample was 44.49 (SD=11.51) and among a sample of survivors of various trauma (e.g., rape, war, natural disasters), a cutoff score of 40 was found.^{68,74} The average intrapersonal resilience score (i.e., CD-RISC) for the full group in our sample was 25.08 (SD=9.5), and in the general population for the United States averages range between 30.8 and 33.5.⁷⁵

TABLE 1. BIVARIATE CORRELATIONS AND DESCRIPTIVE STATISTICS OF INDICATOR VARIABLES

	1	2	3	4	5	6	7	8
1. PTGI	—							
2. CD-RISC	0.45*	—						
3. RCOPE	0.38*	0.13	—					
4. MSPSS	0.43*	0.43*	0.38*	—				
5. LEC	0.08	-0.04	0.22*	0.03	—			
6. MDS-HIV	0.01	-0.08	0.06	-0.16	0.28*	—		
7. MDS-RACE	-0.03	-0.03	-0.07	-0.12	0.25*	0.56*	—	
8. GRMS-BW	0.01	0.08	0.11	0.01	0.37*	0.48*	0.54*	—
Mean	65.91	25.09	2.54	56.51	6.79	1.31	1.79	1.12
SD	25.48	9.50	0.67	19.06	5.22	2.39	2.58	0.94

**p*<0.05.

CD-RISC, Connor-Davidson Resilience Scale; GRMS-BW, Gendered Racial Microaggressions Scale for Black Women; LEC, Life Events Checklist; MDS-HIV, Multiple Discrimination Scale-HIV subscale; MDS-RACE, Multiple Discrimination Scale-Race subscale; MSPSS, Multidimensional Scale of Perceived Social Support; PTGI, post-traumatic growth inventory; RCOPE, positive religious coping; SD, standard deviation.

TABLE 2. DEMOGRAPHIC CHARACTERISTICS OF PROFILES

Characteristic	All	Latent profiles				Test statistic
		LR/LA (19.8)	LR/HA (13.8)	HR/LA (59.5)	HR/HA (6.9)	
Age	49.16 (10.88)	43.13 (12.81)	50.50 (7.84)	51.20 (10.13)	46.25 (11.29)	$F(3, 112)=3.68^*$
Education, <i>n</i> (col%) ^b						$\chi^2(3)=0.93$
≤8th grade	6 (5.17)	1 (4.35)	1 (6.25)	4 (5.80)	—	
Some HS	34 (29.31)	8 (34.78)	5 (31.25)	16 (23.19)	5 (62.50)	
HS graduate/GED	40 (34.48)	6 (26.09)	3 (18.75)	31 (44.93)	—	
Some college	28 (24.14)	6 (26.09)	4 (25.00)	15 (21.74)	3 (37.50)	
College graduate	7 (6.03)	1 (4.35)	3 (18.75)	3 (4.35)	—	
Some graduate school	1 (0.86)	1 (4.35)	—	—	—	
Relationship status ^c						$\chi^2(15)=10.81$
Married	17 (14.66)	4 (17.39)	2 (12.50)	11 (15.94)	—	
Not married, living with partner	18 (15.52)	4 (17.39)	2 (12.50)	11 (15.94)	1 (12.50)	
Noncohabitating relationship	14 (12.07)	—	1 (6.25)	12 (17.39)	1 (12.50)	
Single	51 (43.97)	12 (52.17)	9 (56.25)	25 (36.23)	5 (62.50)	
Divorced/separated	11 (9.48)	2 (8.70)	1 (6.25)	7 (10.14)	1 (12.50)	
Loss of long-term partner/widowed	3 (2.59)	—	1 (6.25)	2 (2.90)	—	
Missing	2 (1.72)	1 (4.35)	—	1 (1.45)	—	
Sexual orientation ^c						$\chi^2(9)=15.76$
Exclusively heterosexual	88 (75.86)	15 (65.22)	12 (75.00)	56 (81.16)	5 (62.50)	
Heterosexual with some same gender experience	11 (9.48)	2 (8.70)	2 (12.50)	4 (5.80)	3 (37.50)	
Bisexual	8 (6.90)	4 (17.39)	2 (12.50)	2 (2.90)	—	
Same gender loving with some heterosexual experience	—	—	—	—	—	
Exclusively same gender loving	4 (3.45)	1 (4.35)	—	3 (4.35)	—	
Choose not to answer	5 (4.31)	1 (4.35)	—	4 (5.80)	—	
Religion ^c						$\chi^2(12)=4.85$
Christian	32 (27.59)	9 (39.13)	3 (18.75)	17 (24.64)	3 (37.50)	
Catholic	5 (4.31)	1 (4.35)	1 (6.25)	3 (4.35)	—	
Baptist	61 (52.59)	10 (43.48)	10 (62.50)	37 (53.62)	4 (50.00)	
Other	8 (6.90)	1 (4.35)	1 (6.25)	6 (8.70)	—	
None	8 (6.90)	2 (8.70)	1 (6.25)	4 (5.80)	1 (12.50)	
Missing	2 (1.72)	—	—	2 (2.90)	—	
Household characteristics						$\chi^2(3)=2.82$
Children ^c						
Yes	95 (81.90)	20 (86.96)	14 (87.50)	56 (81.16)	5 (62.50)	
No	20 (17.24)	3 (13.04)	2 (12.50)	12 (17.39)	3 (37.50)	
Missing	1 (0.86)	—	—	1 (1.45)	—	
Income ^b						$\chi^2(3)=4.79$
<5000	41 (35.34)	11 (47.83)	5 (31.25)	21 (30.43)	4 (50.00)	
5000 ≤ <i>x</i> ≤ 11,999	31 (26.72)	7 (30.43)	3 (18.75)	18 (26.09)	3 (37.50)	
12,000 ≤ <i>x</i> ≤ 15,999	8 (6.90)	1 (4.35)	1 (6.25)	6 (8.70)	—	
16,000 ≤ <i>x</i> ≤ 24,999	6 (5.17)	1 (4.35)	1 (6.25)	4 (5.80)	—	
25,000 ≤ <i>x</i> ≤ 34,999	3 (2.59)	—	1 (6.25)	2 (2.90)	—	
35,000 ≤ <i>x</i> ≤ 49,999	2 (1.72)	—	2 (12.50)	—	—	
≥50,000	3 (2.59)	—	—	3 (4.35)	—	
Missing/refuse to answer/do not know	22 (18.97)	3 (13.05)	3 (18.75)	15 (21.74)	1 (12.50)	

(continued)

TABLE 2. (CONTINUED)

Characteristic	All	Latent profiles			Test statistic
		LR/LA (19.8)	LR/HA (13.8)	HR/HA (6.9)	
Housing ^c	78 (67.24)	16 (69.57)	10 (62.50)	47 (68.12)	$\chi^2(15) = 10.49$
Renting home or apartment	13 (11.21)	2 (8.70)	2 (12.50)	8 (11.59)	
Own apartment or home (self/someone else in household)	13 (11.21)	2 (8.70)	2 (12.50)	8 (11.59)	
Publicly subsidized housing	7 (6.03)	1 (4.35)	2 (12.50)	4 (5.80)	
A friend/relatives' home (pay little or no rent)	3 (0.86)	1 (4.35)	—	1 (1.45)	
Homelessness (shelter, street, car, etc.)	2 (1.72)	1 (4.35)	—	1 (1.45)	
Missing					

^aExact *p* values <0.05 considered statistically significant.

^bAnalysis of variance.

^cKnuskal-Wallis test.

^d*N*.

GED, General Educational Diploma; HR/HA, high resilience/high adversity; LR/LA, high resilience/low adversity; HS, high school; LR/HA, low resilience/high adversity; LR/LA, low resilience/low adversity.

LPA results

Latent profile models were iteratively compared with increasing numbers of unconditional profile solutions using BIC, SSABIC, BLRT, and entropy as shown in Table 3. A 4-profile model was chosen as indicated by the lower BIC and SSABIC, high entropy, and significant BLRT. The BIC was heavily considered as it has performed well in the literature.⁷⁰ Figure 1 depicts the 4-profile standardized solution of the unconditional model. The following is a breakdown of the resilience and adversity indicator score patterns and socio-demographic descriptions of each profile.

Profile 1: Low resilience/low adversity. The first profile consisted of 19.8% (*n*=23) of the sample; the participants in this group reported the lowest scores on all four resilience measures and second lowest score for race-related and HIV-related discrimination, microaggressions, and lowest average number of traumas; this group was characterized as “low resilience/low adversity (LR/LA).”

Sociodemographic description: This group also had the lowest average age of 43.13 years, over half of the participants were single, ~65% of the samples had a high school education or less, about 17% identified as bisexual, 86.9% had 5 children or less, and almost half of the participants reported <\$5,000 income and rent an apartment or home. Most participants were of Baptist denomination in this profile as well as the other profiles.

Profile 2: Low resilience/high adversity. The second profile had 13.8% of the sample (*n*=16); they were characterized as “low resilience/high adversity (LR/HA),” this group scored second lowest on 3 of 4 resilience measures (PTGI, resilience, and religious coping), however, they had the second highest social support score. In terms of adversity measures, this group reported the highest number of traumas and second highest for discriminations and microaggressions.

Sociodemographic description: Profile 2 had an average age of 50.5 years (SD=7.84) and about 43% of this profile received some college education or graduated from college. Over half of the participants in this group were single, 75% identified as exclusively heterosexual, and 14.2% of the profile had between 6 and 9 children. Similar to profile one, 62.5% of the profile were renting an apartment or home with 50% of the participants reporting up to \$11,999 income.

Profile 3: High resilience/low adversity. The third profile, classified as “high resilience/low adversity (HR/LA),” represented a large portion of the sample (59.5%, *n*=69), had the highest CD-RISC and perceived social support scores, and had the second highest post-traumatic growth and RCOPE scores. This profile had the second lowest frequency of traumas reported and lowest scores for discriminations and microaggressions.

Sociodemographic description: The average age in this profile was 51.2 years (SD= 10.13) and a little over a quarter of the group (26.09%) had either some college education or graduated from college. Twenty-five percent of the women were either married or living with a partner, over 80% identified as exclusively heterosexual, and 53.5% had between 3 and 9 children. A little over half of the women (56.52%) reported an income up to \$11,999, 4.35% reported an income of \$50,000 or more, and the majority of women rented an apartment or home.

TABLE 3. LATENT PROFILE ANALYSIS: MODEL FIT STATISTICS (N=116)

The number of profiles	BIC	SSABIC	Entropy	BLRT	BLRT p	Class percentages
1	2647.17	2596.60				
2	2535.36	2456.34	0.958	154.59	<0.001	84.4, 15.5
3	2492.34	2384.87	0.969	85.80	<0.001	6.9, 76.7, 16.4
4	2461.67	2325.75	0.930	73.45	<0.001	19.8, 13.8, 59.5, 6.9

BIC, Bayesian information criteria; BLRT, bootstrapped likelihood ratio test; SSABIC, sample size adjusted BIC.

Profile 4: High resilience/high adversity. Lastly, the fourth profile made up 6.9% of the sample ($n=8$) and was labeled as “high resilience/high adversity (HR/HA).” They reported the highest scores for post-traumatic growth and religious coping, second highest score for trait/coping resilience, but the second lowest scores for perceived social support. This profile reported the second highest number of traumas experienced and highest scores for both HIV and race-related discrimination and gendered racial microaggressions.

Sociodemographic description: This profile had 50% of their participants in the lowest income bracket, 62.5% were renting an apartment or home, and 62.5% reported being single. About 62% of the participants had received a middle school or less education while another 37% had some college education. The average age of this profile was 46.25 years old ($SD=11.29$), and 62% of the women had children.

Associations between profiles and mental health

The last step of the three-step approach tested the equality of means across the latent profiles on mental health outcomes (i.e., depressive symptoms, PTSD symptoms, post-traumatic cognitions) using Wald tests to make global and pairwise comparisons. Depression scores [overall model: $\chi^2(3)=14.88$, $p=0.002$] were significantly higher for LR/LA [$M=26.27$, standard error (SE)=2.74] and LR/HA ($M=29.39$, SE=3.30)

compared with the HR/LA group ($M=18.52$, SE=1.24). No significant differences were found between the HR/HA group and other groups. Across the post-traumatic cognitions outcome [overall model: $\chi^2(3)=15.42$, $p=0.001$], the LR/LA ($M=11.05$, SE=0.78) and LR/HA ($M=13.41$, SE=1.08) groups had significantly higher trauma cognitions compared with the HR/LA group ($M=9.29$, SE=0.38). In addition, the LR/HA group had significantly higher PTCI scores than the HR/HA ($M=10.17$, SE=0.90) group. Similarly, for PTSD symptoms [overall model: $\chi^2(3)=21.54$, $p<0.001$], the LR/LA, LR/HA, and HR/HA groups all had significantly higher scores compared with the HR/LA group.

Discussion

Among BWLWH we present novel findings using LPA that revealed four groups of women in terms of levels of resilience resources and intersectional adversities; and revealed interesting relationships with symptoms of depression and PTSD. Overall, women in the group with lower levels of adversity (trauma, discrimination, microaggressions) and higher resilience factors had lower depressive symptoms, PTSD symptoms, and PTC. To our knowledge, this is the first study among BWLWH to utilize latent class analyses to examine profiles based on the interplay of intersectional discrimination and microaggressions, trauma, resilience, and depression and

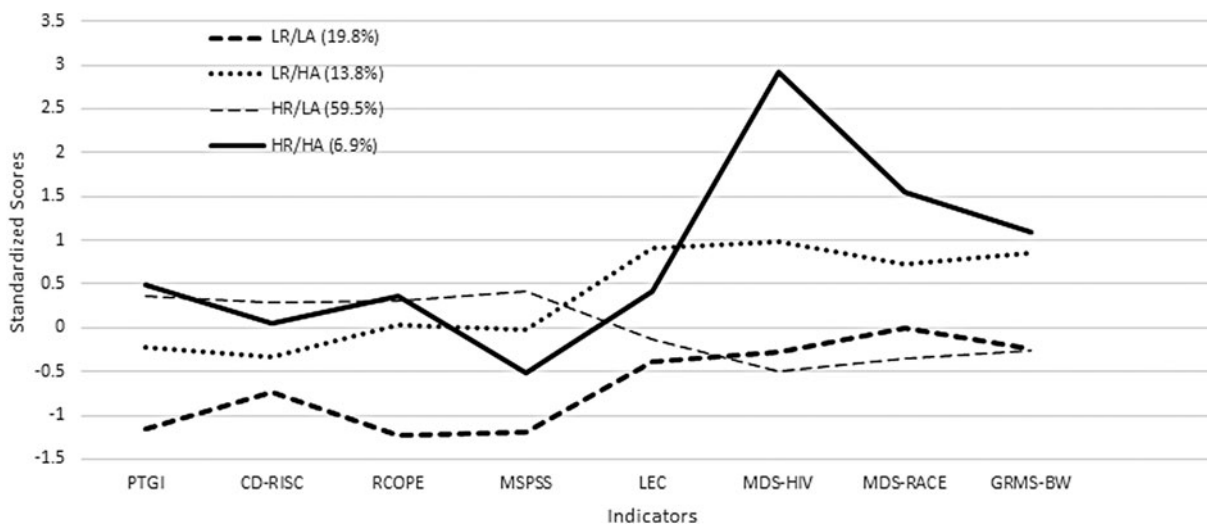


FIG. 1. Depiction of the four latent profiles. % refers to percentage of participants in the profile; CD-RISC, Connor-Davidson Resilience Scale; GRMS-BW, Gendered Racial Microaggressions Scale for Black Women; HR/HA, high resilience/high adversity; HR/LA, high resilience/low adversity; LEC, Life Events Checklist frequency of trauma; LR/HA, low resilience/high adversity; LR/LA, low resilience/low adversity; MDS-HIV, Multiple Discrimination Scale-HIV subscale; MDS-RACE, Multiple Discrimination Scale-Race subscale; MSPSS, Multidimensional Scale of Perceived Social Support; PTGI, Post-Traumatic Growth Inventory; RCOPE, positive religious coping.

trauma symptoms. Further, our study utilized four different measures of resilience that captured social support, religion/spirituality, trait/coping, and post-traumatic growth cognitions to adequately capture the range of resilience resources BWLWH may utilize.¹⁵ Lastly, given the intersectional adversities BWLWH are exposed to, due to racism, sexism, HIV stigma, and trauma, we measured frequency of traumatic events, discriminations related to HIV and race, and microaggression experience based on gender and race.

The four groups identified were LR/LA, LR/HA, HR/LA, and HR/HA. In the depiction of the latent profiles, we found that the LR/LA group and HR/LA group are at the opposite ends of spectrum on the resilience measures but are similar in their number of lifetime traumatic events being lower than the other two groups. The group with higher resilience (HR/LA) also reported less discrimination due to race and HIV but scored very similarly to the LR/LA group on the gendered racial microaggressions scale. The HR/HA group reported the most discrimination targeting their HIV status and race as well as gendered racial microaggressions; had either highest or second highest scores on post-traumatic growth, trait/coping resilience, and religious coping; but had comparatively lower social support scores.

The presence of lower social support with higher enacted HIV stigma (i.e., discrimination) in this study, is consistent with a previous study (283 Black individuals living with HIV) that found an association between high perceived social support from friends and lower perceived HIV stigma.⁷⁶ HIV stigma can be enacted by individuals in one's support system and if women surround themselves with a chosen support system (e.g., peers living with HIV, supportive friends) on study self-report measures, they may report higher social support (from their chosen support network) and lower HIV stigma experiences (lessened by chosen support network).

When mental health outcomes were compared across the four groups, findings emerged that were consistent with existing literature, yet novel. With post-traumatic cognitions, we found that groups with higher resilience regardless of adversity experienced lower post-traumatic cognitions. This suggests that when it comes to thoughts or cognitions related to traumatic experiences, resilience may play a buffering role. These findings are consistent with two previous studies looking at the moderating and mediating role of resilience.⁴⁵ One study found that resilience mediated the relationship between depressive symptoms and ART adherence in BWLWH and the second study found that resilience moderated the association between childhood sexual abuse and depressive symptoms for women with and at risk for HIV.^{42,77} For PTSD symptoms, the LR/LA, LR/HA, and HR/HA groups all had significantly higher scores compared with the HR/LA group. Similarly, the LR/LA and LR/HA groups had significantly higher depressive symptoms and PTC than the HR/HA group.

Interestingly, the HR/HA group exhibited the second lowest scores for depressive symptoms and PTC; however, they endorsed the highest PTSD symptoms. Essentially higher depressive symptoms were associated with two groups (i.e., LR/LA, LR/HA) exhibiting lower resilience when compared with the HR/LA group. However, the HR/HA group did not exhibit lower depressive symptoms compared with the HR/LA group. This echoes that the presence of high resilience resources on its own is not associated with better mental health outcomes. Perhaps, high resilience is beneficial

in response to a certain level of adversity, but higher levels of adversities (i.e., trauma, discrimination, microaggressions) beyond that may cause long-lasting harm (depression, PTSD) and dampen the benefit of resilience. Evidence-based interventions such as Sisters Informing Sisters on Topics about AIDS, Effectiveness of Empowering African American Women on the Road to Health, and Women Involved in Life Learning from Other Women take a comprehensive cultural approach to decrease HIV risk and improve health outcomes among Black women.⁷⁸⁻⁸⁰

To promote the wellbeing of BWLWH and allow them to thrive, structural changes are needed to prevent and decrease violence/trauma, discrimination, and microaggressions. These structural changes/interventions may include investing in neighborhood infrastructure, increasing employment and housing access, decriminalization of laws surrounding HIV exposure, improved health care access, and access to health care providers who are trained with cultural humility and trauma-sensitive care.⁸¹⁻⁸⁵

Also interesting, within our HR/HA profile, we found that while all the resilience indicators (i.e., post-traumatic growth, trait/coping resilience, and religious coping) were high, the resilience indicator of social support was comparatively lower in this group. Previous research has found that social support is associated with decreases in stigma and increases in viral suppression in women living with HIV.² The social support provided by health care providers has also been studied and increased health care provider trust was associated with higher HIV treatment self-efficacy.⁸⁶ Higher perceived and experienced stigma was associated with lower trust in providers in both race-concordant and -discordant pairs.⁸⁷ However, some research has indicated that the type of social support received may be especially important.³¹ In addition, if social support reported by women serves as a proxy for family units, this may also be an area of strain for Black women if they are expected to bear the emotional and physical toll of caregiving for family in alignment with the Strong Black Women Schema.⁸⁸

Also, if the typical support systems asked about (e.g., family, partners, friends) were sources of past trauma and stigma for BWLWH and women have since distanced themselves, reporting low social support from these sources would be adaptive. Lastly, this HR/HA profile may suggest that if BWLWH are high in several resilient resources, being low in one (e.g., social support) is not detrimental.

Despite the novel findings, a few limitations should be acknowledged. First, the data are of cross-sectional nature and thereby causal relationships cannot be determined between profiles and mental health outcomes. Second, this study used self-report data collection, which can be biased due to the limitations of social desirability and recall. Third, generalizability may be limited since the data were collected from BWLWH meeting parent study phone screen criteria [e.g., (a) participant self-report adherence from last 2 weeks less than excellent (b) participant responded with "yes," "not sure/uncertain," or "don't know" to an inquiry of detectable viral load within the last 12 months or (c) missing HIV-related medical visits in the last 12 months] in the Southeastern United States. Despite these limitations, the results of this study expand insights on the interplay of intersectional adversities and resilience in BWLWH and their association with mental health outcomes (i.e., depressive symptoms, post-traumatic cognitions).

In summary, among BWLWH we found that higher resilience coupled with lower intersectional adversities was associated with better mental health outcomes such as lower depressive symptoms when compared with a LR/LA or LR/HA profile. However, when high resilience was coupled with high adversity (HR/HA), depressive symptoms were not found to be statistically lower in comparison to all other profiles and PTSD symptoms were significantly higher compared with the HR/LA. Resilience is a powerful construct; however, in the context of intersectional adversities it cannot be solely relied on to improve mental health outcomes for BWLWH. Policies must address structural racism and prevent trauma impacting BWLWH. Interventions should consider chosen social support systems and include these social support systems within interventions for BWLWH as traditional support systems may not be viewed as beneficial for some women. Interventions should also include positive religious coping and promote healing following adversities. Future studies should aim to look at the longitudinal trajectories of adversity, resilience, and mental health to gain a better understanding of the relationship among BWLWH.

Authors' Contributions

D.J.B.: Conceptualization; writing-original draft; formal analysis; writing-reviewing and editing. S.K.D.: Investigation; conceptualization; writing-reviewing and editing.

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Disclaimer

The content of this publication is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

Ethics Approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the Institutional and/or National Research Committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. Procedures were approved by the University of Miami Institutional Review Board.

Informed Consent

Informed consent was obtained from all individual participants included in the study.

Author Disclosure Statement

No competing financial interests exist.

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