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Cognitive and Behavioral Resilience Among Young Gay and Bisexual Men Living with HIV

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Abstract

Purpose: HIV/AIDS disproportionately affects young gay, bisexual, and other men who have sex with men (Y-GBMSM). Resilience remains understudied among Y-GBMSM living with HIV, but represents a potentially important framework for improving HIV-related outcomes in this population. We sought to explore cognitive and behavioral dimensions of resilience and their correlates among Y-GBMSM to gain insights to inform future interventions.
Methods: Our study sample consisted of 200 Y-GBMSM living with HIV enrolled in a multisite study of the Adolescent Medicine Trials Network for HIV/AIDS Interventions (ATN). Participants completed a one-time, self-administered structured questionnaire, including validated scales capturing a range of cognitive, behavioral, demographic, and psychosocial data. Utilizing these data, we examined cognitive and behavioral dimensions of resilience and their potential psychosocial correlates using linear regression modeling.
Results: Multiple regression analyses demonstrated that education, stigma, social support, ethnic identity, internalized homonegativity, and behavioral resilience were statistically significant predictors of cognitive resilience ($P < 0.001$, $R^2 = 0.678$). Social support satisfaction and cognitive resilience were significant predictors of behavioral resilience ($P < 0.001$, $R^2 = 0.141$).
Conclusions: Our findings point to potential strategies for incorporating resilience-promoting features into future interventions to support Y-GBMSM living with HIV. Specifically, strengths-based interventions in this population should seek to enhance social support, promote positive identity development, and encourage education. Future research can also seek to utilize and refine our measures of resilience among youth.

Keywords: adolescents, HIV/AIDS, resilience, sexual minority health

Introduction

Although HIV incidence is stable in the United States overall, rates continue to increase among youth aged 13–24, who make up 26% of new diagnoses.[1] This increase is primarily driven by new diagnoses among young gay, bisexual, and other men who have sex with men (Y-GBMSM); 72% of all new infections among GBMSM occur among persons aged 13–24.[2] Given the large numbers of Y-GBMSM diagnosed with HIV each year in the United States, there is a critical need to improve our understanding of influences on health-related behaviors in this population.

Of the studies that focus exclusively on the health behaviors of Y-GBMSM, most utilize a risk or deficit paradigm, concentrating on risky behaviors that influence HIV acquisition or transmission (e.g., illicit drug use, inconsistent condom use).[3–6] Although such studies provide important information, some have alternatively called for strengths-based approaches to research involving Y-GBMSM and sexual minority populations more generally.[7–9] Such strengths-based research falls

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into a long tradition of utilizing *resilience* as a critically important lens through which to view adolescent and young adult health and development.[10]

Resilience is defined most succinctly as positive adaptation in the context of adversity.[9,11,12] Our theoretical framing of resilience builds primarily on the work of Fergus and Zimmerman, but is also consistent with other foundational work in the field.[11,13,14] Resilience refers not simply to the achievement of positive outcomes in the setting of risk but also to the actual adaptive processes that enable these outcomes. The influences on resilient adaptation have been characterized as ''promotive factors,'' which include intrinsic *assets* within the individual (e.g., self-esteem) and extrinsic *resources,* which are external to an individual (e.g., social support).[13] Resilience and the promotive factors that enable it are generally described with respect to specific populations and risk behaviors, and the positive effects of such factors in one setting are not necessarily generalizable to others.

Resilience is a particularly important framework to examine among Y-GBMSM living with HIV, who are likely to face high levels of adversity related to multiple stigmatized identities. Despite these significant challenges, we have observed Y-GBMSM living with HIV to display adaptive coping skills and achieve favorable health outcomes in our prior work.[8,9,15] Improving our understanding of resilience in these youth has the potential to inform effective interventions that enhance positive adaptation as opposed to simply mitigate risk.

Based on prior research, certain constructs can be hypothesized to function as either promotive or risk-enhancing factors among Y-GBMSM living with HIV.[16] Specifically, positive identity development and social support emerge as likely promotive factors. Identity development is central in the lives of all adolescents, and these youth are living with multiple salient identities—sexual minority identity, HIV-positive identity, and often ethnic minority identity. Positive views of one's own ethnic identity have been previously linked with resilience in studies of minority youth, with respect to avoidance of violent behavior.[17] In another study of Y-GBMSM, those who identified as heterosexual or bisexual, exhibited lower rates of resilience than those who identified as gay.[18] A prior analysis from our parent study also highlighted associations between ethnic identity and engagement in HIV care among Y-GBMSM living with HIV.[15] *Social support* is another resilience resource that is highlighted in many youth populations, across a range of behaviors.[13] For example, peer and family support has been shown to mitigate the negative effects of violence.[19] In one particularly relevant study, Kubicek et al. described resilience among Black Y-GBMSM participating in the predominantly Black and gay House/Ball subculture. They found that participation in the House/Ball community positively built on youth's intersecting minority identities while also enhancing social support.[12]

In many resilience-focused studies, the existence of resilience is inferred by documenting favorable outcomes among a population known to be at risk. However, scholars in the field have also developed and tested measures of resilience to assess resilience processes more directly.[20–22] While no gold standard currently exists, most of these scales examine promotive factors (both intrinsic assets and extrinsic resources) that constitute resilience processes, which enhance an individual's ability to withstand adversity.

To measure resilience in our current analysis, we drew specifically on descriptions of resilience in our own sample of Y-GBMSM living with HIV. A previous qualitative analysis from our parent study (described in the next section) identified and described four dimensions of resilience within this group: (1) engaging health promoting cognitive processes; (2) enacting healthy behavioral practices; (3) enlisting social support; and (4) empowering other gay/bisexual youth (Fig. 1).[8] The relationship between these dimensions was often temporal, with cognitive resilience leading to positive behavioral change. Building on these findings, the goal of the present analysis was to quantitatively examine these cognitive and behavioral dimensions of resilience and their correlates among Y-GBMSM living with HIV.

Methods

Study design and procedures

This analysis is derived from a multisite, cross-sectional study conducted by the Adolescent Medicine Trials Network for HIV/AIDS Interventions (ATN). The parent study, ATN 070 (''Psychosocial Needs of HIV+ Young Men who Have Sex with Men''), was a mixed-methods examination of the psychosocial and developmental needs of Y-GBMSM living with HIV. Data collection was conducted at 14 geographically diverse ATN clinical sites between March and June of 2009. Young men aged 16–24 who were living with HIV and enrolled in HIV care at ATN-affiliated clinics were eligible to participate. Inclusion criteria were as follows: (1) male sex assigned at birth and identification as male at enrollment; (2) living with HIV; (3) HIV acquired horizontally through sexual or substance use behavior; (4) age 16–24; (5) ability to understand English; and (6) at least one sexual encounter with a male during the previous year (by self-report). On verification of eligibility, coordinators obtained signed consent and enrolled participants in the study. Waivers of parental consent were granted by the institutional review boards

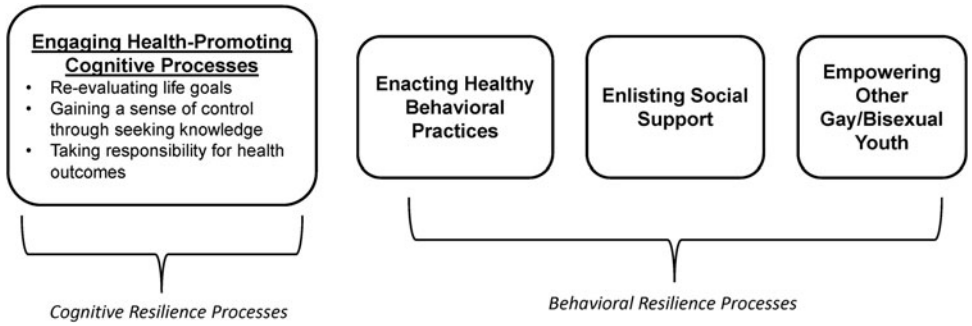

FIG. 1. Dimensions of resilience among young gay, bisexual, and other men who have sex with men. Adapted with permission from: Harper et al.[8]

Table 1. Selection of Measures to Approximate Cognitive and Behavioral Resilience

Description of resilience processes from Harper et al. qualitative analysis of Y-GBMSM living with HIV[8]	*Scale or questions used to quantify the resilience dimensions in current analysis*
Cognitive dimensions of resilience	
Re-evaluating life goals	Time Perspective Inventory: Future Orientation Subscale[23] Assesses the degree to which respondents are striving for future goals and rewards
Gaining a sense of control	Life Outcome Expectancies Scale Measures respondents' perceived control over life circumstances and perceived likelihood of reaching life milestones
Taking responsibility for health outcomes	Illness Cognition Questionnaire[24] Measures helplessness, acceptance, and perceived benefits of living with a chronic illness
Behavioral dimensions of resilience	
Enacting healthy behavioral practices	Have you… Increased exercise? Changed your diet? Quit/reduced smoking? Etc.
Enlisting social support	Have you… Joined a support group? Begun to attend church/synagogue/temple? Etc.
Empowering other gay/bisexual youth	Have you… Educated others about HIV?

Y-GBMSM, young gay, bisexual, and other men who have sex with men.

(IRBs), to avoid selection bias that could result from recruiting only those youth whose parents were aware/supportive of their sexual identity. Each participant completed an audio computer-assisted self-interview (ACASI) containing the measures described below. In addition, a subset of participants underwent qualitative interviews that led to the description of the dimensions of resilience depicted in Figure 1.[8] The ATN 070 protocol was approved by the IRB at each site. IRB approval was not required for the analysis presented here, which was a secondary analysis of deidentified data. Compensation for participation was determined by each site.

Outcome measures

We derived two quantitative outcome measures from the ACASI questionnaire that aligned conceptually with the dimensions of resilience depicted in Figure 1.[8] For the purposes of this analysis, we divided Harper's processes into *cognitive resilience* (which included ''Engaging Health Promoting Cognitive Processes'' in the original article) and *behavioral resilience* (a combination of ''Enacting Healthy Behavioral Practices,'' ''Enlisting Social Support,'' and ''Empowering other gay/bisexual youth''; Table 1).

In the qualitative study by Harper et al., three cognitive processes were described: (1) re-evaluating life goals, (2) gaining a sense of control, and (3) taking responsibility for health outcomes.[8] To approximate these specific subthemes, we assessed cognitive resilience using a composite measure consisting of the Future Orientation subscale of the Stanford Time Perspective Inventory,[23] the Life Outcome Expectancies Scale, and the Illness Cognition Questionnaire (ICQ).[24] The Future Orientation subscale[23] was used to assess the degree to which participants were striving for future goals and rewards, to approximate the qualitatively described resilience process ''re-evaluating life goals.'' The Life Outcome Expectancies measure was designed specifically for ATN 070 and consists of questions measuring participants' perceived control over their life circumstances and perceived likelihood of reaching life milestones. We used this scale to measure ''gaining a sense of control.'' The ICQ[24] contains 18 items rated on a 4-point scale regarding their attitudes toward living with a chronic disease. We used this scale to approximate the cognitive resilience process ''taking responsibility for health outcomes.'' When all of these dimensions of cognitive resilience were combined into a single outcome measure, it displayed excellent reliability ($\alpha = 0.86$).

We assessed behavioral resilience using a series of questions that asked: ''What types of changes have you made in your lifestyle since learning you were HIV+?'' Participants could answer ''Yes,'' ''No,'' or ''I don't know'' to a list of 17 items. This list of questions aligned with the three dimensions of behavioral resilience described in the qualitative study,[8] including 11 items that corresponded to ''Enacting healthy behavioral practices'' (e.g., ''Quit smoking,'' ''Increased exercise''), 5 items that corresponded to ''Enlisting social support'' (e.g., ''Joined support group''), and 1 item that was potentially related to ''Empowering other gay/bisexual youth'' (''Educated others about HIV''). The sum of ''Yes'' answers to the 17 questions formed the behavioral resilience outcome utilized in the subsequent analyses ($\alpha = 0.82$).

Demographics and covariates

Demographic variables included in this analysis were race, age, housing status, education, employment, and time since HIV diagnosis. We focused our selection of additional covariates on hypothesized promotive factors relating to identity

and social support, as these have been demonstrated to be theoretically and/or empirically related to resilience in other studies. These included scales measuring ethnic identity,[25] internalized homonegativity,[26] HIV stigma,[27] and social support.[28]

Ethnic identity was assessed using Phinney's multigroup ethnic identity measure, which has been validated in numerous studies with diverse youth ($\alpha = 0.87$ in our sample).[25,29] Internalized homonegativity was assessed using Mayfield's 23-item Internalized Homonegativity Inventory (IHNI), which had excellent reliability as well ($\alpha = 0.92$).[26] Participants' attitudes toward their identity as young men living with HIV were assessed using the 13-item *Negative Self-Image* subscale of the HIV Stigma Scale ($\alpha = 0.90$).[27] Participants' satisfaction with the quality and availability of their social support was assessed using the *Emotional Support* subscale of the Social Support for Adolescents Scale ($\alpha = 0.70$).[28]

Data analysis

Descriptive analyses were performed for all variables. We examined distributions and associations between hypothesized promotive factors, demographics, and resilience outcome variables. Univariate analyses included frequencies and measures of central tendency and variability (Table 2). We conducted *t*-tests, one-way ANOVA, or simple linear regressions to assess bivariate relationships between predictors and resilience outcome variables (Tables 3 and 4). We created a correlation matrix to assess for multicollinearity between predictor variables (data not shown). Associations that were significant at $P < 0.10$ were retained in the multivariate models, as were the background demographic variables. Multivariate models were constructed using forward stepwise linear regression; demographic variables were included regardless of significance, however, the covariates were only retained in the model if they remained significant and improved the model. Separate multivariate regression models were developed for cognitive and behavioral resilience. All data analysis was conducted using SPSS statistical software (IBM Corp., Armonk, NY).

Table 2. Characteristics of the Sample ($n = 200$)

	Mean (SD)	*Range*
Age in years	21.15 (1.91)	16–24
Time since diagnosis (years)	2.40 (1.70)	0.07–8.14
		N (%)
Race/ethnicity		
Black/African American (not Latino)		132 (66.0)
Hispanic/Latino		37 (18.5)
White/Caucasian		14 (7.0)
Multiracial/Biracial		10 (5.0)
Asian/Pacific Islander		1 (0.5)
Native American/Alaskan Native		2 (1.0)
Other		4 (2.0)
Sexual orientation identity		
Gay/queer		156 (78.0)
Bisexual		24 (12.0)
Straight		3 (1.5)
Trade		5 (2.5)
Down low		3 (1.5)
Questioning		2 (1.0)
Other		7 (3.5)
Education		
Did not complete high school		53 (26.5)
High school graduate		74 (37.0)
Some college/technical school		73 (36.5)
Employment		
Full-time		44 (22.0)
Part-time		47 (23.5)
Not employed		109 (54.5)
Housing arrangement		
Own house/apartment		66 (33.0)
Parent's house/apartment		70 (35.0)
Family member(s) house/apartment		17 (8.5)
Another person's house/apartment		18 (9.0)
Foster/group home		3 (1.5)
Boarding home/shelter/halfway		17 (8.5)
Other		9 (4.5)

Results

Demographics

Two hundred Y-GBMSM participated in this study. Demographic characteristics are presented in Table 2. The majority of our participants identified as Black/African American, most identified as gay, most had completed high school, and approximately half were employed. The majority reported stable housing, either independently or with family members. The mean age of our sample was 21 years, and Y-GBMSM were diagnosed with HIV an average of 2.4 years before participation.

Bivariate analyses

In bivariate analyses, education, housing, employment, internalized homonegativity, ethnic identity, HIV stigma, social support satisfaction, and behavioral resilience were all significantly associated with cognitive resilience (Table 3). Ethnic identity, social support satisfaction, and cognitive resilience were significantly associated with behavioral resilience (Table 4).

Regression analyses

Stepwise multiple linear regressions were used to examine the relationship between the demographic/psychosocial

Table 3. Bivariate Linear Regression Analysis of Variables Potentially Associated with Cognitive Resilience Among Y-GBMSM

Variable	*Coefficient (B)*	*SE*	*Beta*	P
Race (Black)	0.015	0.102	0.010	0.886
Age	−0.816	0.704	−0.082	0.248
Education	5.487	1.666	0.228	0.001
Housing	−3.416	1.486	−0.163	0.021
Employment	4.318	1.600	0.188	0.008
Time since diagnosis	−0.105	0.759	−0.010	0.890
Internalized homonegativity	−0.405	0.084	−0.325	<0.001
Ethnic identity	9.653	2.456	0.269	<0.001
HIV stigma	−0.833	0.117	−0.451	<0.001
Social support satisfaction	2.309	0.328	0.447	<0.001
Behavioral resilience	1.439	0.351	0.280	<0.001

Table 4. Bivariate Linear Regression Analysis of Variables Potentially Associated with Behavioral Resilience Among Y-GBMSM

Variable	*Coefficient (B)*	*SE*	*Beta*	P
Race (Black)	−0.009	0.020	−0.033	0.641
Age	−0.175	0.137	−0.090	0.204
Education	−0.284	0.332	−0.061	0.394
Housing	−0.251	0.289	−0.061	0.387
Employment	−0.150	0.317	−0.034	0.637
Time since diagnosis	−0.165	0.156	−0.076	0.292
Internalized homonegativity	−0.004	0.017	−0.016	0.821
Ethnic identity	1.330	0.487	0.190	0.007
HIV stigma	−0.029	0.025	−0.080	0.260
Social support satisfaction	0.260	0.069	0.259	<0.001
Cognitive resilience	0.055	0.013	0.280	<0.001

predictor variables and the two types of resilience. Variables that were significantly associated with each outcome in the bivariate analyses were entered into the model using a forward stepwise elimination procedure to examine their relationship to the dependent variables. Multivariate regression analyses are presented in Tables 5 and 6.

Level of education, HIV-related stigma, social support satisfaction, behavioral resilience, ethnic identity, and internalized homonegativity were all significant predictors of cognitive resilience. The final model accounted for a substantial percentage of the overall variance ($R^2 = 0.678$, $P < 0.001$). For behavioral resilience, the two predictors that remained in the final model were social support satisfaction and cognitive resilience. This model accounted for a smaller proportion of the variance in this outcome, but remained highly significant ($R^2 = 0.141$, $P < 0.001$).

Discussion

Y-GBMSM living with HIV face multiple social stressors and intersecting stigmas; despite this, resilience with resultant positive health outcomes is often observed. In the current study, our aim was to examine factors associated with such resilience to inform future interventions in this key population.

We found that several psychosocial and demographic factors were significantly associated with cognitive resilience:

Table 5. Stepwise Regression Analysis Summary for Full Model Variables Predicting Cognitive Resilience

Variable	*B*	*SEB*	*Beta*	*Delta R^2*
Less than high school education	−6.452	2.397	−0.160**	—
HIV stigma	−0.589	0.107	−0.339***	0.214
Social support satisfaction	1.061	0.302	0.211**	0.095
Behavioral resilience	0.940	0.278	0.194**	0.037
Ethnic identity	5.898	2.022	0.173**	0.022
Internalized homonegativity	−0.187	0.071	−0.160**	0.019

$R^2 = 0.678$ ($P < 0.001$).
$^{**}P < 0.01$;$^{***}P < 0.001$.

Table 6. Stepwise Regression Analysis Summary for Full Model Variables Predicting Behavioral Resilience

Variable	*B*	*SEB*	*Beta*	*Delta R^2*
Cognitive resilience	0.052	0.016	0.254**	0.097
Social support satisfaction	0.189	0.078	0.182*	0.023

$R^2 = 0.141$ ($P < 0.001$).
$^{*}P < 0.05$;$^{**}P < 0.01$.

level of education, HIV stigma, social support satisfaction, behavioral resilience, ethnic identity, and internalized homonegativity. In terms of Fergus and Zimmerman's framework,[13] these primarily represent *assets*, resilience factors that lie within the individual. The associations with HIV stigma, ethnic identity, and internalized homonegativity highlight the importance of positive identity beliefs among these young men. The association between a positive view of one's ethnic identity and resilience has been similarly demonstrated in other studies of Black and Latino youth.[30–33] In these studies, positive ethnic identity acted as a buffer between adverse circumstances and health outcomes. Prior research has also demonstrated that positive views of gay identity can be protective among gay youth and are often associated with favorable health outcomes despite concomitant stresses.[34,35] In addition to these assets, social support satisfaction emerged as a significant predictor in our model and is a well-described resilience resource in adolescence and young adulthood.[16] This has also been shown in studies focused on sexual and ethnic minority youth and their communities.[36–38]

When we examined associations with behavioral resilience, only two factors emerged as significant predictors: cognitive resilience and satisfaction with social support. The relationship between cognitive and behavioral resilience is consistent with the framework outlined in the preceding qualitative study (Fig. 1),[8] in which the behavioral resilience processes seemed to represent an evolution from the cognitive resilience processes as participants acclimated to their HIV diagnosis.

Our findings about associations between identity constructs, social support, and resilience are consistent with previous literature.[17–19] However, a somewhat unique feature of this analysis was that we focused on resilience dimensions themselves as our outcomes, as opposed to other resilience research that infers resilience based on positive physical or mental health outcomes as markers of resilience; while both approaches are important, our approach may help to shed more light on the mechanisms behind these favorable trajectories.[39,40] Our study is also unique in that it explores resilience among Y-GBMSM living with HIV, a group among whom the bulk of the existing research focuses on risk.

Implications

Our findings have significant implications for the field, as there is an urgent need to develop interventions to support the health and well-being of Y-GBMSM, given their HIV burden. Currently, few evidence-based interventions exist specifically for Y-GBMSM living with HIV. Furthermore, those behavioral interventions that do exist focus mainly

on decreasing the risk of secondary transmission. Our findings could inform more holistic interventions that aim to improve generalized coping mechanisms and well-being in this population. The associations between positive identity development and cognitive resilience suggest that programs which aim to strengthen cultural awareness and pride, with respect to race/ethnicity, gay/bisexual identity, and HIV-positive identity, could help to promote resilience among these young men. Certain programs like this have already been developed for HIV prevention purposes, such as the Many Men, Many Voices intervention for Black GBMSM, and could potentially be modified for youth already living with HIV.[41] The prominence of social support satisfaction, as a predictor of both behavioral and cognitive dimensions of resilience, suggests that there may also be a particularly useful role for group-based interventions or those that involve peers or other support persons from Y-GBMSM social networks. Finally, given the association between education level and cognitive dimensions of resilience, initiatives to promote educational attainment may also be helpful for building resilience among Y-GBMSM living with HIV.

Strengths and limitations

Our study examined cognitive and behavioral dimensions of resilience using quantitative methods, which build on and correspond well with previous qualitative findings from our parent study.[8] This mixed methods approach adds to the extant literature by confirming findings previously reported by Harper et al.[8] In addition, we are contributing to the small but growing body of research in youth living with HIV that focuses on resilience as opposed to a pure risk paradigm.

However, there are limitations that warrant mention. This was a secondary data analysis that did not originally aim to measure resilience. That being said, our measures of cognitive and behavioral resilience were grounded in our prior qualitative work,[8] theoretically similar to established measures of resilience,[20–22] and demonstrated good reliability. Future work could build on these preliminary findings to further refine these measures, so that they could be used again in future studies of youth living with HIV.

Our measurements of resilience dimensions were dependent on self-report, and the behavioral dimensions in particular might be vulnerable to social desirability and recall biases (e.g., participants might report stopping smoking). Future studies could aim to incorporate biologic health outcomes (e.g., HIV viral load) to depict health behaviors more accurately. It is also important to note that resilience is not theorized to be a static characteristic, but rather made up of dynamic processes that change with time and context.[13] Given this, a more ideal study of resilience would be longitudinal; the cross-sectional nature of this analysis is a limitation that we hope can be addressed in future work.

Finally, our patients were recruited from clinical care settings for youth living with HIV and, therefore, had the resourcefulness and motivation to test for HIV and seek healthcare. It is estimated that over 50% of youth living with HIV are unaware of their status, and many youth who are living with HIV are not linked to care.[42] Our participants may, therefore, represent a more resilient population relative to Y-GBMSM overall, even though wide variability was still seen in our group.

Conclusions

Our study highlights the importance of both cognitive and behavioral dimensions of resilience among Y-GBMSM living with HIV, an area that is understudied in the literature. Our findings highlighted identity development, education, and social support satisfaction as key psychosocial factors that were closely related to resilience. Future intervention development should focus on these promotive factors to more effectively support health and well-being in this population. Ultimately, this line of research can inform positive, resilience-based efforts to optimize healthcare outcomes among Y-GBMSM living with HIV.

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References

1. Centers for Disease Control and Prevention (CDC): Vital signs: HIV infection, testing, and risk behaviors among youths-United States. MMWR Morb Mortal Wkly Rep 2012;61:971–976.
2. Prejean J, Song R, Hernandez A, et al.: Estimated HIV incidence in the United States, 2006–2009. PLoS One 2011;6: e17502.
3. Forney JC, Miller RL: City Project Study Team: Risk and protective factors related to HIV-risk behavior: A comparison between HIV-positive and HIV-negative young men who have sex with men. AIDS Care 2012;24:544–552.
4. Balaji AB, Bowles KE, Le BC, et al.: High HIV incidence and prevalence and associated factors among young MSM, 2008. AIDS 2013;27:269–278.
5. Hart T, Peterson JL: Community Intervention Trial for Youth Study Team: Predictors of risky sexual behavior among young African American men who have sex with men. Am J Public Health 2004;94:1122–1124.
6. Celentano DD, Sifakis F, Hylton J, et al.: Race/ethnic differences in HIV prevalence and risks among adolescent and young adult men who have sex with men. J Urban Health 2005;82:610–621.
7. Herrick AL, Stall R, Goldhammer H, et al.: Resilience as a research framework and as a cornerstone of prevention research for gay and bisexual men: Theory and evidence. AIDS Behav 2014;18:1–9.
8. Harper GW, Bruce D, Hosek SG, et al.: Resilience processes demonstrated by young gay and bisexual men living with HIV: Implications for intervention. AIDS Patient Care STDS 2014;28:666–676.
9. Hussen SA, Andes K, Gilliard D, et al.: Transition to adulthood and antiretroviral adherence among HIV-positive young black men who have sex with men. Am J Public Health 2015;105:725–731.
10. Cameron CA, Ungar M, Liebenberg L: Cultural understandings of resilience: Roots for wings in the development of affective resources for resilience. Child Adolesc Psychiatr Clin N Am 2007;16:285–301.
11. Luthar SS, Cicchetti D, Becker B: The construct of resilience: A critical evaluation and guidelines for future work. Child Dev 2000;71:543–562.
12. Kubicek K, McNeeley M, Holloway IW, et al.: ''It's like our own little world'': Resilience as a factor in participating in the Ballroom community subculture. AIDS Behav 2013;17: 1524–1539.
13. Fergus S, Zimmerman MA: Adolescent resilience: A framework for understanding healthy development in the face of risk. Ann Rev Public Health 2005;26:399–419.
14. Ungar M: The social ecology of resilience: Addressing contextual and cultural ambiguity of a nascent construct. Am J Orthopsychiatry 2011;81:1–17.
15. Harper GW, Fernandez IM, Bruce D, et al.: The role of multiple identities in adherence to medical appointments among gay/bisexual male adolescents living with HIV. AIDS Behav 2013;17:213–223.
16. Zimmerman MA, Stoddard SA, Eisman AB, et al.: Adolescent resilience: Promotive factors that inform prevention. Child Dev Perspect 2013. doi: 10.1111/cdep.12042.
17. Caldwell CH, Kohn-Wood LP, Schmeelk-Cone KH, et al.: Racial discrimination and racial identity as risk or protective factors for violent behaviors in African American young adults. Am J Community Psychol 2004;33:91–105.
18. Gwadz MV, Clatts MC, Yi H, et al.: Resilience among young men who have sex with men in New York City. Sex Res Social Policy 2006;3:13–21.
19. Jain S, Buka SL, Subramanian SV, Molnar BE: Protective factors for youth exposed to violence: Role of developmental assets in building emotional resilience. Youth Violence Juv Just 2012;10:107–129.
20. Windle G, Bennett KM, Noyes J: A methodological review of resilience measurement scales. Health Qual Life Outcomes 2011;9:8.
21. Clauss-Ehlers CS: Sociocultural factors, resilience and coping: Support for a culturally sensitive measure of resilience. J Appl Dev Psychol 2008;29:197–212.
22. Liebenberg L, Ungar M, LeBlanc JC: The CYRM-12: A brief measure of resilience. Can J Public Health 2013;104: e131–e135.
23. Zimbardo PG, Boyd JN: Putting time in perspective: A valid, reliable individual-differences metric. J Pers Soc Psychol 1999;77:1271–1288.
24. Evers AW, Kraaimaat FW, van Lankveld W, et al.: Beyond unfavorable thinking: The illness cognition questionnaire for chronic diseases. J Consult Clin Psychol 2001;69: 1026–1036.
25. Phinney JS: The multigroup ethnic identity measure: A new scale for use with diverse groups. J Adolesc Res 1992;7: 156–176.
26. Mayfield W: The development of an Internalized Homonegativity Inventory for gay men. J Homosex 2001;41:53–76.
27. Berger BE, Ferrans CE, Lashley FR: Measuring stigma in people with HIV: Psychometric assessment of the HIV stigma scale. Res Nurs Health 2001;24:518–529.
28. Cauce AM, Felner RD, Primavera J: Social support in high-risk adolescents: Structural components and adaptive impact. Am J Community Psychol 1982;10:417–428.
29. Roberts RE, Phinney JS, Masse LC, et al.: The structure of ethnic identity of young adolescents from diverse ethnocultural groups. J Early Adolesc 1999;19:301–322.
30. Umaña-Taylor AJ, Updegraff KA: Latino adolescents' mental health: Exploring the interrelations among discrimination, ethnic identity, cultural orientation, self-esteem, and depressive symptoms. J Adolesc 2007;30: 549–567.
31. Umana-Taylor AJ, Tynes BM, Toomey RB, et al.: Latino adolescents' perceived discrimination in online and offline settings: An examination of cultural risk and protective factors. Dev Psychol 2015;51:87–100.
32. Sellers RM, Caldwell CH, Schmeelk-Cone KH, Zimmerman MA: Racial identity, racial discrimination, perceived stress, and psychological distress among African American young adults. J Health Social Behav 2003;44:302–317.
33. Tynes BM, Umana-Taylor AJ, Rose CA, et al.: Online racial discrimination and the protective function of ethnic identity and self-esteem for African American adolescents. Dev Psychol 2012;48:343–355.
34. Bruce D, Harper GW, Bauermeister JA: Minority stress, positive identity development, and depressive symptoms: Implications for resilience among sexual minority male youth. Psychol Sex Orientat Gend Divers 2015;2:287–296.
35. Walker JJ, Longmire-Avital B, Golub S: Racial and sexual identities as potential buffers to risky sexual behavior for Black gay and bisexual emerging adult men. Health Psychol 2015;34:841–846.

36. DiFulvio GT: Sexual minority youth, social connection and resilience: From personal struggle to collective identity. Soc Sci Med 2011;72:1611–1617.
37. Doty ND, Willoughby BL, Lindahl KM, Malik NM: Sexuality related social support among lesbian, gay, and bisexual youth. J Youth Adolesc 2010;39:1134–1147.
38. Hammack PL, Richards MH, Luo Z, et al.: Social support factors as moderators of community violence exposure among inner-city African American young adolescents. J Clin Child Adolesc Psychol 2004;33:450–462.
39. Bhana A, Mellins CA, Small L, et al.: Resilience in perinatal HIV+ adolescents in South Africa. AIDS Care 2016;28:49–59.
40. Zhao J, Chi P, Li X, et al.: Extracurricular interest as a resilience building block for children affected by parental HIV/AIDS. AIDS Care 2014;26:758–762.
41. Wilton L, Herbst JH, Coury-Doniger P, et al.: Efficacy of an HIV/STI prevention intervention for black men who have sex with men: Findings from the Many Men, Many Voices (3MV) project. AIDS Behav 2009;13:532–544.
42. Zanoni BC, Mayer KH: The adolescent and young adult HIV cascade of care in the United States: Exaggerated health disparities. AIDS Patient Care STDS 2014;28:128–135.

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