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Ethnic Identity as a Moderator Between HIV Knowledge, Viral Hepatitis Knowledge, and Psychological Antecedents Among Racial-Ethnic Minority Youth Living in an Urban Community

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Abstract

Racial-ethnic minority youth between the ages of 13 and 24 in the USA are disproportionately impacted by HIV. Low HIV knowledge and psychological antecedents such as low perception of risk and low sexual negotiation skills have all been associated with HIV risk behaviors; however, the role of ethnic identity on these factors is unclear in the literature. Ethnic identity, which is a critical part of identity development among racial-ethnic minority youth, has been found to be a protective factor in risk-taking behaviors. However, limited research is available on the role of ethnic identity in HIV prevention research among youth. For this study, data were collected as part of a larger HIV prevention education program using a sample of 564 students of color ($Mean_{age}$ = 16.30, standard deviation [SD] = 1.26; 67.4% Hispanic, 29.5% Black) from an underserved northeastern US urban community. We examined whether ethnic identity moderated the relationship between psychological antecedents (e.g., perception of risk and sexual negotiation skills), gender, and viral hepatitis knowledge on HIV knowledge. Findings revealed that ethnic identity significantly moderated the relationship between psychological antecedent variables and HIV knowledge by strengthening these associations as ethnic identity increased. Female adolescents were also more likely to have higher levels of HIV knowledge than males. Findings provide support for cultural and gender-specific prevention programs for racial-ethnic minority youth that seek to reduce HIV risk behaviors by increasing ethnic identity, particularly in under-resourced communities.

Keywords Ethnic identity · HIV · Urban youth · Prevention · Education

Introduction

The United Nations and the US federal government declared a goal of not only eradicating HIV by 2030 but also included viral hepatitis (VH) into their agenda of ending epidemics of infectious diseases by 2030 [1, 2]. About 21% of new HIV diagnoses are youth between the ages of 13 and 24 years old [3]. An important focus of HIV and VH prevention interventions has been to provide racial-ethnic minority youth between the ages of 13 and 24 years old with access to education including increasing knowledge of HIV and VH and psychological antecedents such as increasing perception of risk [4–7], and teaching youth negotiation skills to promote healthier sexual behaviors such as using condoms during sexual intercourse [8]. Sexual negotiation skills refer to an individual's ability to discuss alternative ways to engage in a sexual behavior safely with their partner. Research on sexual negotiation skills posits that adolescents may not be aware of how to discuss topics relating to HIV, how to use condoms correctly, and may lack confidence in negotiating safe sexual practices

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or abstinence with partners [8]. This leaves adolescents more at risk of contracting a sexually transmitted infections (STI) [8]. Perception of risk is a subjective measure that refers to an individual's belief that they face potential harm. Research has indicated that perception of risk is an important factor in influencing youths' sexual risk behaviors with youth typically having very low perception of HIV risk [5, 6].

While HIV prevention interventions have acknowledged the importance of HIV education to reduce transmission, racial-ethnic minority youth continue to have a higher risk of being diagnosed with HIV than White youth [3]. Among racial-ethnic minority youth, Black and Hispanic youth have the largest number of HIV infections [3, 9]. Black youth between the ages 13 to 24 years old designate approximately 55% of new HIV cases in the USA [3, 10] while Hispanic youth between the ages 13 and 24 comprised 23% of new HIV diagnoses within this age group [11].

VH and HIV literature both suggest that knowledge of the disease and how it is transmitted are associated with lower engagement in risky behaviors and a lower likelihood of contracting the disease [12]. While VH rates in the USA have dropped over the past decade, Black and Hispanic youth continue to be at risk. VH is a group of viruses (e.g., hepatitis A [HAV], B [HBV], C [HCV], D [HDV], E viruses [HEV]) that are etiologically and epidemiologically distinct and all result in liver inflammation and damage [13]. There are various modes of transmission based on the strain of VH infection. While HBV and HAV incidence rates are low in the USA based on vaccination efforts, there is no vaccination for HCV, which is the most common form of VH in the country. It is critical for innovative methods in prevention to be introduced in programming to increase awareness of risk and testing for high-risk groups. However, VH knowledge and awareness research continues to be limited in the USA.

The existing research on VH supports that youth from low-income, vulnerable backgrounds are at the greatest risk of infection, yet prevention research and programming is minimal. Those studies that are available on VH knowledge have focused largely on homeless [14] and injecting drug using US youth [15]. Unfortunately, prevention intervention efforts for VH, specifically catered to youth, are infrequent. Promising results from one study found that infusing VH education within a HIV prevention intervention has the potential to increase VH knowledge and reduce sexual risk behaviors among racial-ethnic minority youth [7].

HIV prevention intervention programming is shown to reduce participation in sexual risk behaviors, increase perception of risk of unhealthy behaviors, and increase youth's ability to use sexual negotiation skills [16–19]. For instance, a study using latent class analysis with a sample of racial-ethnic minority youth living in an urban community found that youth within the "high sexual negotiation skills and low risk" subgroup reported greater HIV knowledge, fewer sexual partners, and greater perception of risk behaviors [8]. Yet, while HIV research suggests the importance of knowledge in prevention of transmission, few studies have explored specific factors that contribute to knowledge risk processes and behaviors.

Racial-ethnic minority youth face numerous systemic factors that place them at risk to engage in individual-level behaviors that may contribute to poor health outcomes. Factors, such as residential segregation, poverty, racism, and discrimination, all influence access to essential prevention education that can reduce risk and increase self-efficacy to engage in healthy behaviors [20]. As racial-ethnic minority youth are often the focus of prevention intervention research due to widely documented health disparities [21, 22], understanding cultural variables, such as ethnic identity, can provide valuable insight in the promotion of positive developmental outcomes to reduce HIV risk among these populations.

Ethnic Identity

Ethnic identity refers to a sense of belonging to one's ethnic group, positive views of their ethnic group, and an understanding of their group's heritage and customs [23]. As adolescence is defined by a period of significant identity development, ethnic identity has been theorized to emerge during early adolescence as youth begin to explore and commit to new social identities [24, 25]. Research also suggests that the emergence of ethnic identity is a critical milestone in normative youth development [26] and can serve as a catalyst to promote positive psychosocial outcomes (e.g., confidence, self-esteem, self-control, etc.) among Black and Hispanic adolescents especially [27]. Higher levels of ethnic identity have been found to yield positive cultural values that provide a buffer against negative experiences resulting from racism, prejudice, and discrimination [28, 29].

Previous studies have examined the protective role of ethnic identity on other types of individual-level behaviors. Research on ethnic identity among racial-ethnic minority adolescents have mostly yielded positive results as ethnic identity has been associated with less drug use [7, 30–33], less engagement in violent behavior [29], and positive school outcomes [34]. However, the role of ethnic identity on HIV knowledge, perception of risk, and sexual negotiation skills among racial-ethnic minority adolescents is limited in HIV prevention research.

Although ethnic identity has been incorporated in HIV prevention interventions, it has been mostly examined in adult and adolescent female populations and has yielded inconsistent results to determine whether it is protective against sexual risk-taking behaviors [35]. One study found that specific dimensions of ethnic identity (e.g., affirmation, belonging, and commitment) significantly predicted lower substance use, but these dimensions were not associated with sexual risk

behaviors or perception of risk [36]. Opara et al. (2020) found that ethnic identity provided a protective buffering effect that was much stronger than social support and empowerment, which resulted in lower levels of sexual risk behaviors among a sample of Black adolescent girls [37]. Beadnell et al. (2003) showed that Black adolescents who had higher levels of ethnic identity were less likely to engage in risky sexual acts and exhibited greater motivation to remain monogamous or abstinent [38]. Corneille et al. (2007) examined the association between ethnic identity (measured as pro-Black attitudes) and sexual behavior among a sample of African American female adolescents and found that higher levels of ethnic identity were associated with higher sexual negotiation skills, such as self-efficacy to refuse sex and less intention to use drugs in the future [30]. As racial-ethnic minority youth become more closely connected to their culture during adolescence, they may feel more pride in themselves, receive more social support from members of their community, and may be more likely to engage in behaviors that align with their cultural values and promote positive outcomes [39]. A greater understanding of ethnic identity may provide youth with protective assets such as a heightened perception of risk and enhanced negotiation skills to reduce risk behaviors that may contribute to sexual health disparities.

The Role of Gender

Within the USA, there are significant racial and gender disparities in HIV diagnoses. While Black youth between the ages of 13 and 24 years old account for 57% of HIV diagnoses within that same age group, Black females and Black and Hispanic males are the most affected by HIV diagnoses [3]. While HIV modes of transmissions are like modes of transmission for VH, there continues to be a need to understand gender-specific differences related to perception of risk, sexual negotiation skills, and HIV and VH knowledge. Few studies that have investigated gender differences in knowledge suggest that females have greater knowledge of HIV including understanding the etiology of the virus and modes of transmission of the virus, than males [40]. The level of HIV knowledge an individual possesses has been shown to be associated with perception of HIV risk and engagement in risky sexual behaviors [40, 41]. Other studies have examined gender-specific differences in the relationship between HIV knowledge, perceived sexual partner HIV risk, and engagement in sexual risk behaviors. Collado et al. (2015) found that HIV knowledge was associated with risky sexual behaviors during college when females perceived their sexual partner having a low HIV risk and males perceived their sexual partner having a high HIV risk [42].

There is little research on gender-specific differences in sexual negotiation skills among adolescents. Studies have shown that youth who reported high sexual negotiation skills were more likely to report higher levels of self-esteem and self-confidence in making healthy choices pertaining to their health [37, 43]. The effects of increasing sexual negotiation skills have been reported largely among samples comprised of heterosexual adolescent girls due to issues related to male condom coercion and gender power dynamics within heterosexual relationships [43, 44]. Studies have indicated that due to power imbalances within heterosexual relationships, adolescent girls may be less likely to feel confident in communicating their desires to engage in safe sexual practices with their male partners [43, 44]. In one study, adolescent females were perceived to engage in more verbal condom negotiation, whereas adolescent males were perceived to engage in more nonverbal condom negotiation [45]. In contrast, in a large national sample of youth 15–19 years old (Copen, 2017), 53.5% of males and only 35.6% of females reported condom use "every time" the youth had intercourse [46]. The gender disparities in consistent condom use are concerning and can be explained through adolescents' inability to engage in sexual negotiation skills. Particularly for Black and Hispanic youth, understanding factors that can be seen as protective is crucial given their high risk of contracting STIs/HIV due to systemic and structural issues.

Purpose of Study

Given the disproportionate rates of HIV among racial-ethnic minority youth, innovative approaches are needed to resolve this disparity. Research on ethnic identity has shown promising results for its role in promoting positive developmental outcomes among racial-ethnic minority youth [26, 34]. However, few studies have examined the role of ethnic identity on HIV knowledge and psychological antecedents in prevention research. Therefore, the purpose of this study is to examine the relationship between HIV knowledge and several predictor variables, including VH knowledge and psychological antecedents which are conceptualized in this study as perception of risk, sexual negotiation skills, and gender. Additionally, this study will focus on urban racial-ethnic minority youth to examine whether ethnic identity functions as a moderator that strengthens the protective role of these predictor variables. We hypothesize that ethnic identity will have a protective moderating effect on the relationship between HIV knowledge and VH knowledge, perception of risk, and sexual negotiation skills. We also hypothesize that gender will have an effect due to differences across gender on the relationship between these tested variables, as well.

Methods

Data were collected among students as part of a federally funded Minority AIDS Initiative (MAI) prevention grant targeting racial-ethnic minority adolescents in a low-income, urban community in the northeastern USA. A convenience

sample of students from grades 9 to 12 ($N = 564$) were recruited from health education classes from a large public high school and summer camp programs throughout the same local community. School and camp administration approval were obtained before recruiting students. Students participated in a baseline and exit survey, following a 7-week intervention comprised of weekly 60-min sessions containing an HIV/AIDS, VH, and substance abuse prevention-intervention curriculum. Questionnaires were in English, standardized and developed by the federal funding agency.

For the current study, only baseline responses ($N = 564$) were examined to prevent the target variables from being influenced by the intervention. Students were predominantly Hispanic (67.4%) and African American/Black (29.5%). At the time of the investigation, males (48.1%) and females (51.9%) were approximately evenly split, with 0.9% of the sample identifying as gender non-conforming. The average age was 16.30 years old ($SD = 1.26$). In addition, 82% identified as heterosexual, and approximately 18% identified as either bisexual (8.2%), gay or lesbian (2.9%), or queer (7.2%). See Table 1 for demographic characteristics.

Table 1 Demographic characteristics of participants (N = 564)

	Full sample	
	n	%
Gender identity		
Male	272	48.1
Female	292	51.9
Sexual orientation identification		
Non-LGBQ	462	82.0
Gay or lesbian	16	2.9
Bisexual	46	8.2
Queer	40	7.2
Age (in years)[a]		
13 to 15	290	51.5
16 to 18	274	48.5
Education level completed		
Elementary School	29	5.1
Middle School	452	80.1
High School	78	13.8
Beyond High School	5	.9
Race-ethnicity [b]		
Hispanic/Latinx	380	67.4
African American/Black	399	29.5
Non-Hispanic White	74	13.1
Asian	28	5.1

Note. [a] Participants were on average 16.30 years old (SD = 1.26). [b] Values equal greater than 100% due to participants identifying with intersecting racial-ethnic identities.

Measures

Dependent Variable

HIV Knowledge was assessed using eight items that measured participants' HIV knowledge (sample item: only people who look sick can spread the HIV/AIDS virus). Responses were recorded using *True* (1) or *False* (0). Items were summed and higher scores indicated greater HIV knowledge ($M = 6.58$, $SD = 1.29$; Cronbach's $\alpha = .91$)

Independent Variables

Viral hepatitis knowledge was assessed using eight items that measured participants' VH knowledge. See Table 2 for questions. Responses were recorded using *True* (1) or *False* (0). Items were summed and higher scores indicated greater VH knowledge (M = 6.24, SD = 1.43; Cronbach's $\alpha = .86$)

Sexual negotiation skills were assessed using six items that examined participants' perceived ability to engage in sexual negotiation (sample item: I could say no if someone pressured me to have sex when I did not want to). Responses were recorded using a 4-point Likert scale ranging from *Strongly Disagree* (1) to *Strongly Agree* (4). Items were summed and higher scores indicated greater perceived ability to engage in sexual negotiation skills (M = 20.25, SD = 3.64; Cronbach's $\alpha = .81$).

Perception of risk was assessed using eight items that measured participants' perception of sexual risk (sample item: How much do you think people risk harming themselves physically if they have sex without a condom or dental dam?) and substance use risk (sample item: How much do people risk harming themselves physically or in other ways when they smoke marijuana once or twice a week?). Responses were recorded using a 4-point Likert scale ranging from *no risk* (1) to *great risk* (4). Items were summed and higher scores indicated greater perceived risk (M = 24.51, SD = 4.13; Cronbach's $\alpha = .91$).

Ethnic identity was measured using five items that measured participants' perceived ethnic identity exploration (sample item: I have spent time trying to figure out more about my ethnic group) and ethnic commitment (sample item: I have a strong sense of belonging to my own ethnic group). Participants responded to each item on a 5-point Likert scale ranging from *strongly disagree* (1) to *strongly agree* (4). This measure was developed by the federal funding agency; however, it mirrors the Multigroup Ethnic Identity Measure-Revised (MEIM-R). Studies using the MEIM-R have demonstrated levels of internal consistency with Cronbach's α ranging from .71 to .92. For the current ethnic identity measure, items were summed, and higher scores indicated greater ethnic identity (M = 13.14, SD = 3.02; Cronbach's $\alpha = .93$).

Table 2 Descriptive statistics and bivariate correlations for main analytic variables (N = 564)

	1	2	3	4	5	6	6	Mean (SD)	Range	Cronbach's α
1. HIV knowledge	-							6.58 (1.29)	1 to 8	.91
2. VH knowledge	.37***	-						6.24 (1.43)	1 to 8	.86
3. Sexual negotiation skills	.31***	.16***	-					20.25 (3.64)	6 to 24	.81
4. Perception of risk	.16***	.11**	.10*	-				24.51 (4.13)	8 to 30	.91
5. Ethnic identity	.12***	.01	.11**	.06	-			13.14 (3.02)	5 to 20	.93
6. Gender (female = 1)	.09**	.06*	.13***	.10**	.11***	.25**	-	.50 (.50)	0 to 1	--

*p< .05, **p <.01, ***p <.001

Gender was examined as a dichotomous main analytic variable (1 = female, 0 = male; M = .50, SD = .50). Results indicated that there were significant group differences between gender and HIV knowledge (t [545] = −2.01, p < .05), sexual negotiation skills (t [545] = −4.58, p < .001), perception of risk (t [545] = −2.99, p < .003), and ethnic identity (t [506] = −3.25, p < .01).

Several *covariates* were tested as statistical controls including LGBQ (lesbian, gay, bisexual, and queer) identity and age. Between-group differences were examined among potential covariates and main analytic variables. No findings were identified among covariates and main analytic variables.

Analysis Plan

All statistical analyses were performed with STATA v.15. Missing data were examined using Little's missing completely at random (MCAR) test. Little's MCAR test assessed the level and type of missingness [47]. This test revealed that these data were likely not MCAR χ^2 = (37) 228.17, p = .002. Further inspection of missing data also revealed there was little evidence for covariate dependent missingness (CDM) χ^2 = (66) 93.27, p = .01. The largest proportion of missing data were <10%. Therefore, for these data, we used a chained-imputation approach.

Following missing data analyses, descriptive statistics for all variables were examined, normality was assessed, and zero-order bivariate correlations were conducted among the main analytic variables (see Table 2). Continuous variables approximated a normal distribution. No conspicuous outliers were noted. Multicollinearity was also examined. All variables were within the designated parameter ranges for variance inflation factor (<10) and tolerance (>0.2).

Using linear regression analyses, model one examined the association between VH knowledge, sexual negotiation skills, perception of risk, ethnic identity, and gender on HIV knowledge. In model two, interaction terms were added to examine whether ethnic identity moderated the association between VH knowledge, sexual negotiation skills, perception of risk, and gender on HIV knowledge. Continuous variables including VH knowledge, sexual negotiation skills, perception of risk, and ethnic identity were mean centered prior to the inclusion of interaction terms. Simple slope analyses were used to probe the strength and significance of interaction effects by examining the moderator (ethnic identity) at one standard deviation (SD) above and one SD below the mean [48].

Results

Zero-order bivariate correlations and descriptive statistics are presented in Table 2. HIV knowledge was correlated with all main analytic variables, with some variation between independent variables. Ethnic identity was not correlated with VH knowledge, nor perception of risk. Gender identity was correlated with all variables.

Table 3 displays the linear regression findings. Model 1 examined the direct effects of VH knowledge, sexual negotiation skills, perception of risk, and ethnic identity on HIV knowledge. VH knowledge (β = .26, t = 9.29, p < .001), sexual negotiation skills (β = .26, t = 6.26, p < .001), perception of risk (β = .13, t = 3.00, p < .01), and ethnic identity (β = .14, t = 7.37, p = .05) were positively associated with HIV knowledge. Gender also showed a positive association with HIV knowledge (β = .22, t = 9.10, p < .05). This model accounted for a significant amount of the variance in HIV knowledge (R^2= .19, F (3) = 51.96, p < .001).

Model 2 examined the interaction effects of ethnic identity. Direct effects maintained significance in this model. The interaction effect of ethnic identity on both VH knowledge (β = .12, t = 2.04, p =.04) and sexual negotiation skills (β = .13, t = 2.72, p < .001) was statistically significant. This model accounted for a significant amount of variance in HIV knowledge: R^2= .22, F (7) = 24.45, p < .001. Simple slope analyses were used to probe the interaction effects by examining the moderator (ethnic identity) at one SD above and below the mean [48]. The results for the interaction between VH knowledge and ethnic identity (see Fig. 1) demonstrated that the slope was positive and significant for low ethnic identity (m = .80, t = 2.42, p = .01), but the slope increased dramatically

Table 3 Linear regression analyses on HIV knowledge and moderated by ethnic identity (N = 564)

	Model 1			Model 2		
	Coefficient (SE)	95% CI		Coefficient (SE)	95% CI	
		LL	UL		LL	UL
Viral hepatitis knowledge	.26 (.04)***	.20	.33	.28 (.15)***	.27	.58
Sexual negotiation skills	.26 (.04)***	.17	.35	.30 (.16)***	.20	.88
Perception of risk	.13 (.01)**	.01	.05	.19 (.04)**	.08	.32
Ethnic identity	.24 (.01)*	.20	.37	.30 (.12)*	.10	.59
Gender (female = 1)	.22 (.12)*	.05	1.11	.30 (.17)*	.05	1.15
Viral hepatitis × ethnic identity				.12 (.01)*	.03	.33
Sexual negotiation skills × ethnic identity				.13 (.01)***	.08	.22
Perception of risk × ethnic identity				.01 (.003)	-.07	.19
R^2	.19***			.22***		
Adj. R^2	.19			.20		

Note. CI, confidence interval; *SE*, standard error; *LL*, lower level; *UL*, upper level

*p< .05, **p <.01, ***p <.001

and remained positive and significant when ethnic identity was high (m = 2.68, t = 2.04, p = .03). The results for the interaction between sexual negotiation skills and ethnic identity (see Fig. 2) also demonstrated that the slope was positive and significant for low ethnic identity (m = .30, t = 6.71, p < .001) and the slope increased dramatically when ethnic identity was high (m = 2.90, t = 2.21, p = .03). Interaction effects were also examined between the primary analytic variables and gender as a dichotomous categorical variable for males and females. There were no statistically significant interactions with gender (all p's > .05); however, gender maintained a positive direct association with HIV knowledge (β = .30, t = 9.29, p < .001), such that females reported more HIV knowledge than males.

Discussion

The purpose of the current study was to 1) examine the extent to which HIV knowledge among racial-minority adolescents was determined by VH knowledge, perception of risk, and sexual negotiation and 2) to identify whether cultural processes, such as ethnic identity, influenced these relationships, ethnic identity was tested as a moderator in the study. Demographic differences were also examined across gender. Results indicated that ethnic identity significantly moderated the relationship between VH knowledge and HIV knowledge. First, youth with high ethnic identity had a stronger positive association between VH knowledge and HIV knowledge compared to youth with lower ethnic identity. Consistent with

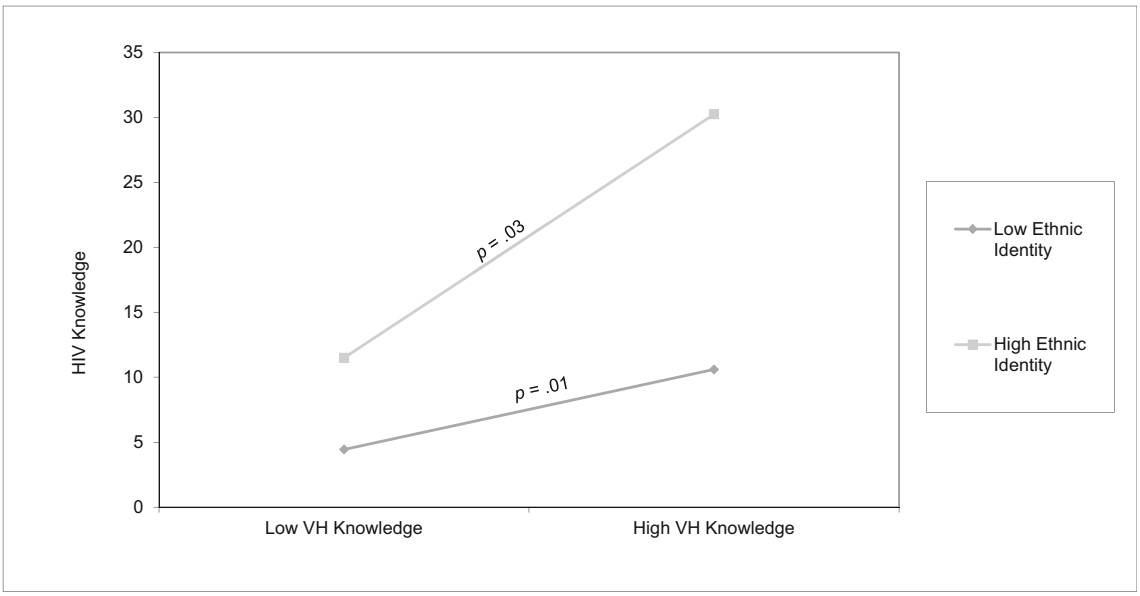

Fig. 1 Slope of interaction between VH knowledge and ethnic identity. *Note*. VH = viral hepatitis

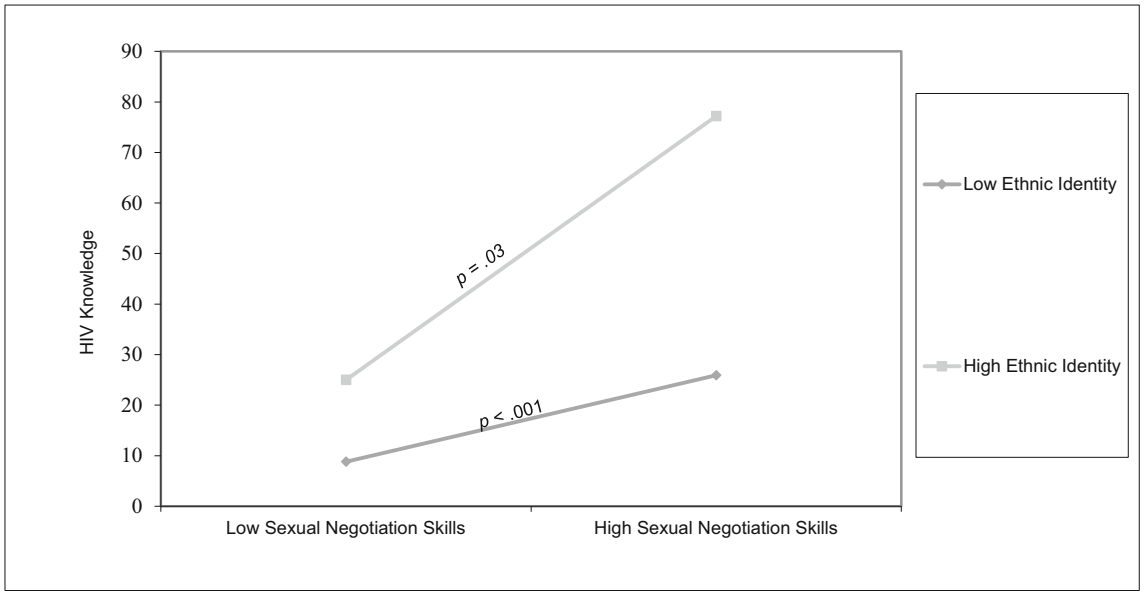

Fig. 2 Slope of interaction between sexual negotiation skills and ethnic identity

the limited research on this topic, incorporating VH knowledge within a HIV curriculum has a beneficial effect, as modes of transmission for both viruses are similar and can be easier to translate to youth when discussed within the same context [20].

In addition, ethnic identity significantly moderated the relationship between sexual negotiation skills and HIV knowledge, such that high levels of ethnic identity dramatically increased the positive association between sexual negotiation skills and HIV knowledge. This is an important finding as ethnic identity is a valuable developmental process that can shape youth behaviors and may motivate the retention of knowledge pertaining to health outcomes such as HIV. This finding also supports prior empirical research demonstrating that the formation of ethnic identity is an essential component of normative youth development that helps to promote positive psychosocial outcomes [26, 34]. Gender demonstrated a positive association with HIV knowledge, indicating that racial-ethnic minority female adolescents in this study possessed more HIV knowledge than males.

Although the study findings contribute significantly to HIV research, there are a few limitations. Due to the correlational and cross-sectional nature of the study, the authors are unable to determine causation or temporal ordering of the findings. Future research should employ longitudinal methods to examine the development of ethnic identity and its impact on sexual health behaviors over time. Additionally, the sample for the present study was recruited from a single urban community in the northeastern USA that contained a large population of Black and Hispanic residents. Therefore, these findings may not be generalized to racial-ethnic minority youth in other parts of the USA that are less populous or have less racial-ethnic diversity. Furthermore, the base rate of HIV knowledge and other risk-antecedent processes among adolescents may also be different in various parts of the country where sexual health education may be discussed more or less frequently than the community sampled in the present study. Therefore, drawing on the principles of community-based participatory research, it is essential that youth's voices and experiences are included in the design and application of sexual health curriculums in target communities.

The study's findings have implications for future HIV and VH research and prevention programs. To adequately tailor culturally appropriate programs to racial-ethnic minority youth, prevention programs must be able to understand how cultural variables such as ethnic identity relate to not only identity development but understand its association to health behaviors. Therefore, future research guided by an intersectional framework is needed in order to understand how multiple social identities may be related to perception of risk, sexual negotiation skills, ethnic identity, and VH and HIV knowledge in order to guide effective HIV prevention programs for racial-ethnic minority youth. Also, our findings indicated that females in the sample possessed more HIV knowledge than males. Since Black and Hispanic males have the highest rates of HIV, it is critical that prevention programming be gender-specific and targeted towards this group. In order to encourage retention and engagement in such programs, it is essential for initiatives to receive community input and be grounded in community-based principles utilizing an empowerment and strengths-based approach. Such an approach can be motivating and rewarding for youth participants and the community in which they are nested within.

Within under-resourced, urban neighborhoods, promoting ethnic identity, may be particularly important for reducing HIV risk-related behaviors. This study provides empirical

support for tailoring HIV prevention interventions to promote ethnic identity development. Enhancing ethnic and cultural pride, for example, may result in higher self-esteem which can attribute to youth wanting to engage in healthier behaviors and practice coping mechanisms that can promote healthier outcomes [26, 27]. Future studies should examine other mechanisms through which ethnic identity may impact risk behaviors and other psychological antecedents.

Conclusion

The goal of the current study was to better understand the moderating role of ethnic identity on the relationship between VH knowledge, sexual negotiation skills, perception of risk, gender and the target outcome HIV knowledge, among racial-ethnic minority youth living in an urban community. As racial-ethnic minority youth continue to be disproportionately impacted by HIV, it is essential that innovative measures be employed to reduce their risk. Our study suggests that ethnic identity moderates the relationships between HIV knowledge, VH knowledge, sexual negotiations skills, perception of risk, and gender.

Continuing to investigate the role of ethnic identity on individual-level behaviors can have practical public health implications for racial-ethnic minority youth. Though few studies have supported the protective effect of ethnic identity on sexual risk behaviors among adolescents, more research on ethnic identity's impact on the internalization of HIV knowledge, in addition to its impact on sexual negotiation skills and perception of risk, can be beneficial to racial-ethnic minority youth who are disproportionately impacted by sexual health disparities, thus enhancing positive sexual health outcomes.

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Availability of Data and Materials Data is available upon request only.

Code Availability Data codes are not available.

Declarations

Ethics Approval Study was approved by Montclair State University's Institutional Review Board

Consent to Participate Written consent was obtained from parents of youth participants that were under 18 years old at the time of the data collection and youth assent was obtained for all youth included in the study.

Consent for Publication All authors approved this manuscript and consent for the manuscript to be published.

Conflict of Interest The authors declare no competing interests.

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