EXAMINING TRAUMA PATHWAYS AND THEIR IMPACT ON HIV RISK BEHAVIOR AMONG BLACK YOUTH ENTERING ADULTHOOD

by

SHANTESICA MEARSHÉ GILLIAM

(Under the Direction of Tamora A. Callands)

ABSTRACT

Over many decades, Black youth and adults continue to be disproportionately impacted by HIV/AIDS in the United States. Traumatic stress experiences can have a detrimental impact on the development and mental functioning of youth. Given the need to understand the processes underlying traumatic experiences such as community violence exposure, childhood trauma and discrimination that may influence HIV risk behaviors, the aims of the dissertation were to: 1) Examine the pathway of childhood trauma to HIV risk through the change trajectories of community violence exposure and depression using longitudinal data (Waves I-IV) from the National Longitudinal Study of Adolescent to Adult Health (Add Health) dataset, and 2) : Examine the underlying association between community violence exposure, perceived discrimination and HIV risk through the pathways of depression and perceived stress using cross-sectional data (Wave IV) from the Add Health data set. Results from the first aim showed an indirect effect from childhood trauma to HIV risk through the change trajectories of depression and community violence exposure. Findings from the second aim showed no indirect effect from perceived discrimination and community violence exposure to HIV risk through

depression and perceived stress. However, direct effects between perceived discrimination and HIV risk and community violence exposure and HIV risk were found. Study results may inform the conceptualization of culturally relevant HIV prevention strategies to simultaneously address mental health coping and safer sex practices and address social stressors stemming from perceived discrimination and community violence exposure. In the absence of evidence-based interventions, STI and HIV health disparities will remain a significant public health problem among Black adolescents.

INDEX WORDS: HIV/AIDS, Sexual risk, Depression, Stress, Community Violence Exposure, Discrimination, Adolescents, African American, Childhood Trauma

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SHANTESICA MEARSHÉ GILLIAM

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SHANTESICA MEARSHÉ GILLIAM

Major Professor:	Tamora Callands
Committee:	Nathan Hansen
	Isha Metzger
	Donte Boyd
	Timothy Heckman

Electronic Version Approved:

Ron Walcott
Vice Provost for Graduate Education and Dean of the Graduate School
The University of Georgia
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DEDICATION

To my grandmother Murtice Gilliam (deceased), because of you, I am.

This dissertation is dedicated to all Black girls who were told that they weren't smart enough. May this be an inspiration to you and your life goals. You are enough; you deserve to be where you are and where you are going… don't ever let anyone tell you otherwise.

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TABLE OF CONTENTS

Page

LIST OF TABLES

Page

LIST OF FIGURES

Page

CHAPTER 1

INTRODUCTION

Background

Exposure to traumatic stress is a major public health concern that contributes to various adverse health outcomes and conditions. Trauma is defined as an experience or event that is extremely upsetting, temporarily overwhelming to a person's internal resources, and associated with long-term psychological symptoms (CDC, 2014). Traumatic exposure is associated with the development of mood disorders including anxiety, depression, suicidal ideation and post-traumatic stress disorder (PTSD) (McDonald & Richmond, 2008). The psychological sequelae stemming from trauma disproportionately affects Black youth (ages 15 - 24, defined by the World Health Organization (WHO) when compared to their white counterparts—this is particularly true for those living in neighborhoods affected by crime, poverty and violence (Fitzpatrick & Boldizar, 1993; López et al., 2017).

Trauma exposure is associated with health disparities in sexually transmitted infections (STIs), including HIV/AIDS. Previous studies explored the influence of trauma, particularly childhood sexual abuse, on sexual risk behaviors (Fiscella, Kitzman, Cole, Sidora, & Olds, 1998; Hatzenbuehler, Corbin, & Fromme, 2011; Jonson-Reid, Kohl, & Drake, 2012; Helen W. Wilson, Samuelson, Staudenmeyer, & Widom, 2015). Few studies, however, explore the pathways of multiple forms of trauma, specifically discrimination, interpersonal trauma, and community violence exposure on HIV/STI risk behaviors among Black youth.

Understanding HIV/STI and Sexual Health Disparities among Black Youth

STIs, including HIV/AIDS, are a public health concern among Black youth in the United States (CDC, 2017) . Black youth are less likely to test for HIV and less likely to be linked to care if they test positive. According to the CDC, in 2017, youth aged 13-24 made up around 21% of new HIV diagnoses in the United States (CDC, 2019). In 2017, Black youth comprised only 14% of the U.S. youth population; however, 61% of new HIV infections in the United States were among Black youth, and Black youth accounted for 50% of HIV diagnoses (CDC, 2019). At the end of 2016, of the youth living with HIV in the U.S., 56% of males and 63% of females were Black.

According to Youth Risk Behavior Surveillance System (YRBSS), youth are less likely than adults to be tested for HIV/AIDs. Reports indicate that only 9% of youth have been tested for HIV, and only 15% of youth males who have sex with youth males had ever been tested for HIV. Of the nineteen percent of all youth who are currently sexually active, 20% of males reported using a substance before their most recent sexual activity. Additionally, 26% of sexually active youth and 48% of youth males who have sex with youth males did not use a condom during their last sexual intercourse. Finally, 24% of youth males who have sex with youth males reported sexual intercourse with four or more people during their lifetime compared to 10% of all youth (CDC, 2019).

Youth aged 15 to 24 years account for half of new STIs (CDC, 2018). Further, 1 in 4 female youth have an STI, with the most common STIs being chlamydia and human papillomavirus infection (HPV) (Workowski & Bolan, 2015). In 2017, Black youth had the highest rates of chlamydia with Black female youth between the ages of 15 and 19 years old being the most affected. In fact, Black female youth were 4.5 times more likely to have

chlamydia compared to their white counterparts (CDC, 2018). Furthermore, among all age groups, reported cases of gonorrhea were the highest among youth aged 15 to 24. In 2017, Black youth between the ages of 20 and 24 had rates of gonorrhea 7.4 times higher than their White counterparts, while young Black youth between the ages of 15 and 19 had rates of gonorrhea 9.3 times higher than their White counterparts. Similarly, Black male youth between the ages of 20 and 24 had rates of gonorrhea 9.3 times higher than their white counterparts (CDC, 2018).

Despite alarming rates of STIs among Black youth, the rates of teen births have been on a steady decline since 2017 (CDC, 2019). According to the Center for Disease Control and Prevention (CDC), from 2017 to 2018, teen birth rates declined by 7% among most racial groups, with a 9% decline (7.2 births per 1,000 women) among youth 15-17 years old, and an 8% decline (32.3 births per 1,000 women) among youth 18-19 years old (Hamilton, Martin, Osterma, & Rossen, 2019). Although teen birth rates declined nationally in 2017, rates among non-Hispanic Black youth were two times (27.5%) higher than the rate for non-Hispanic white youth (13.2%) (Hamilton, Osterman, Driscoll, & Rossen, 2018).

There is less data on the prevalence of HPV among youth. One particular study examined the prevalence of HPV from 2009 to 2012 among youth ages 14 to 24 and found that youth between the ages of 14 and 19 years old accounted for 29% of HPV cases and youth between the ages of 20 and 24 years old accounted for 58.7% of HPV cases within that age group (Markowitz et al., 2016).

Community Violence Exposure among Black Youth

The leading cause of death among Black male youth between the ages of 15 and 24 is homicide (CDC, 2017; J. R. Smith & Patton, 2016). Many Black youth in the United States have experienced community violence. Community violence exposure (CVE) includes direct

victimization, witnessing, and/or hearing about someone else's violence exposure or victimization within a community (Fowler, Tompsett, Braciszewski, Jacques-Tiura, & Baltes, 2009). In 2015, an estimated 2.7 million people ≥ 12 years of age experienced some form of violent victimization in the community (e.g., sexual assault, homicide, robbery, intimate partner violence, police violence, and/or physical assault) (Truman, 2016). In the United States, an estimated 45% to 96% of Black youth have witnessed community violence; and 16% to 37% have reported some type of victimization (Gaylord-Harden, Dickson, & Pierre, 2016; Self-Brown et al., 2006). Trauma stemming from community violence is associated with mental health problems, such as PTSD, depression, generalized anxiety and suicidal ideation.

Crime, poverty, and violence have harmful effects not only on the mental health outcomes of Black youth but also their sexual health outcomes. CVE is related to an elevated risk for developing and experiencing mental distress and these symptoms are associated with increased sexual activity and high-risk behaviors in youth. A growing amount of evidence has linked community violence exposure to sexual risk behaviors (Voisin, 2003; Voisin, Chen, Fullilove, & Jacobson, 2015; Voisin, Hotton, & Neilands, 2018; Voisin, Hotton, & Neilands, 2014; Voisin & Neilands, 2010; Voisin, Patel, Hong, Takahashi, & Gaylord-Harden, 2016; H. Wilson et al., 2015; H. Wilson, B. Woods, E. Emerson, & G. Donenberg, 2012; H. W. Wilson et al., 2015).

Adverse Mental Health Outcomes among Black Youth

According to the National Institute of Mental Health (NIMH), youth between the ages of 18-25 years old have the highest prevalence (25.8%) of any mental illness compared to adults (22.2%) and older adults (13.8%). About 49.5% of youth between the ages of 13-18 reported a mental disorder ("Mental Illness," 2019). Suicide is one of the leading causes of youth morbidity

and mortality in the United States (Lawrence, Gootman, Sim, & Council, 2009). In addition, it is estimated that 31.9% of youth report experiencing some form of anxiety disorder (e.g., panic disorder, generalized anxiety disorder, and social anxiety disorder) ("Any Anxiety Disorder," 2017). As youth are transitioning cognitively, physically, and socially to adulthood, they are also experiencing emotional stress which may contribute to other mental health outcomes.

Stress

Psychological stress is defined as an individual's perception of environmental stimuli that exceeds their capacity to adapt or cope (Cohen, Janicki-Deverts, & Miller, 2007). Perceived stress has been hypothesized to increase susceptibility of diseases such as adverse sexual reproductive outcomes as well as depression (Cohen et al., 2007). Significant research indicates that stress is a risk factor for depression and anxiety among youth (Anyan & Hjemdal, 2016; J. L. Hamilton, Stange, Abramson, & Alloy, 2015; L. M. Henry et al., 2020; LeMoult et al., 2020; McLaughlin & Hatzenbuehler, 2009). While there is limited research on stress on Black youth development, racism related-stress is one form of stress that is prominent in research (Brody et al., 2014; Gaylord-Harden, Burrow, & Cunningham, 2012; Spence, Wells, Graham, & George, 2016). Some other social behavioral issues that are linked to stress among Black youth is chronic poverty (Heinze, Stoddard, Aiyer, Eisman, & Zimmerman, 2017), financial, parenting, neighborhood (Estrada-Martínez, Caldwell, Bauermeister, & Zimmerman, 2012)and exposure to violence (Self-Brown et al., 2006)

Depression

Although much of the youth mental health data available is from White, affluent samples, according to the Substance Abuse and Mental Health Service Administration (SAMHSA), the incidence of major depressive episodes has increased from 9.0% to 10.3% among Black youth

between the ages of 12 and 17, as well as from 6.1% to 9.4% among Black youth between the ages of 18 and 25 (SAMHSA, 2018). Current research suggests that negative life experiences (exposure to violence) and events are related to depressive symptoms (Fitzpatrick, Wright, Piko, & LaGory, 2005; Ofonedu, Percy, Harris-Britt, & Belcher, 2013). Similar to stress, racial discrimination contributes to depression among Black youth (Assari, Gibbons, & Simons, 2018; Benner et al., 2018; Brody et al., 2006; R. M. Sellers, Copeland-Linder, Martin, & Lewis, 2006).

Childhood Trauma among Black Youth

Adverse Childhood Experiences (ACEs) (which includes forms of interpersonal trauma) are stressful or traumatic events experienced throughout childhood. ACEs have been linked to general risk behaviors (Meldrum et al., 2020; Sheffler, Stanley, & Sachs-Ericsson, 2020; Wekerle, Hébert, Daigneault, Fortin-Langelier, & Smith, 2020). The prevalence of ACEs has mostly been among studies of predominantly White affluent samples. Of the studies that did examine ACEs among more nationally representative groups, ACEs were found to be more prevalent among minority youth (Cronholm et al., 2015; Duke, Pettingell, McMorris, & Borowsky, 2010; Slopen et al., 2016). Research has linked ACEs not only adverse mental health outcomes, but also substance use, risky sex and teenage pregnancy (Bair-Merritt, Blackstone, & Feudtner, 2006; Brockie, Dana-Sacco, Wallen, Wilcox, & Campbell, 2015; Hussey, Chang, & Kotch, 2006; Jonson-Reid et al., 2012; Lansford et al., 2002). There are few studies, however, examining the effects of forms of interpersonal trauma on Black youth.

Interpersonal relationships are integral to human development. They play an important role in both physical and emotional development (Montague, Cavendish, Enders, & Dietz, 2010; Wentzel & McNamara, 1999). However, negative, and maladaptive interpersonal relationships have been linked to HIV/STI risk behavior (M. L. Cooper, Shapiro, & Powers, 1998; Eleuteri,

Saladino, & Verrastro, 2017; Kerpelman, McElwain, Pittman, & Adler-Baeder, 2016). For example, interpersonal trauma, including physical, emotional and/or sexual abuse can negatively impact youth's perception of themselves, their behavior, and other interpersonal relationships (Finkelhor & Browne, 1985). Interpersonal trauma has been associated with PTSD, depression, suicidal ideation, anxiety, and other negative mental health outcomes (Mauritz, Goossens, Draijer, & van Achterberg, 2013; McDonald & Richmond, 2008).

Impact of discrimination on adverse health and psychosocial outcomes

Perceived discrimination is the unfair and unjust treatment of persons based on personal characteristics such as race, ethnicity, age, ability, gender, sexual orientation, and nationality (Fiske, 1998). Discrimination has been identified as a stressor that predicts adverse health outcomes (DeLilly & Flaskerud, 2012; Grollman, 2012; Himmelstein, Young, Sanchez, & Jackson, 2015; Pascoe & Smart Richman, 2009; R. L. Simons et al., 2018). Of the few studies focusing on perceived discrimination, one study conducted among a sample of Black youth found that multiple forms of discrimination were associated with depressive symptoms (Grollman, 2012). Most discrimination research has focused on one form of discrimination, racial discrimination. Racial trauma and race-based stress are defined as dangerous events related to actual or perceived instances of racism or racial discrimination (Comas-Díaz, Hall, & Neville, 2019). Carter (2007) refers to these events as threats of harm and injury, witnessing harm to other People of Color and Indigenous Individuals (POCI), and humiliating and shaming events reflecting actual or perceived instances of racism or racial discrimination. Racism and racial discrimination have emerged as determinants of racial and ethnic health disparities in the United States (Devakumar et al., 2020). Racial discrimination is a stressor, chronic in nature, that has been associated with biological, social and mental health factors that influence health (Clark,

Anderson, Clark, & Williams, 1999). These psychosocial stressors negatively impact Black Americans and have been linked to adverse health outcomes among the population (Brody et al., 2006). Specifically, adverse health outcomes among Black youth include depressive symptoms, anxiety, and chronic stress (S. M. Cooper, Brown, Metzger, Clinton, & Guthrie, 2013; Enrique W Neblett et al., 2008; Seaton, 2009; R. M. Sellers et al., 2006). Further, emerging findings indicate that racial discrimination is linked to HIV-risk (M. L. Stock, Gibbons, Peterson, & Gerrard, 2013); however, studies in this area are sparse and more research is needed, specifically among Black youth.

Study Aims

The following are the primary aims of the study:

(1) Paper 1: Examine the pathway of childhood trauma to HIV risk through the change trajectories of CVE and depressive symptoms using longitudinal data (Waves I-IV) from the Add Health dataset.
    a. Test parallel growth model to examine the direct effect of childhood trauma (Wave III) on depression (in waves I, II, III, and IV) and CVE (in waves I, II, III, and IV).
    b. Test parallel growth model to examine the indirect effect of childhood trauma on HIV risk through CVE and depression.

(2) Paper 2: Examine the underlying association between community violence exposure (CVE), perceived discrimination and HIV risk through the pathways of depression and perceived stress using cross-sectional data (Wave IV) from the Add health data set.
    a. Test the direct effects of CVE on depression and perceived stress.

b. Test the direct effects of perceived discrimination on depression and perceived stress
c. Test the indirect effect of CVE and perceived discrimination on HIV risk through depression and perceived stress.

Study Purpose

The purpose of this study is to understand the processes (e.g., stress and depressive symptoms) underlying the association between community violence exposure, perceived discrimination, childhood/interpersonal trauma and HIV/STI among Black youth entering adulthood. I will test two hypothesized conceptual models (Figures 1 and 2 below).

Study Aim 1

The first aim of the study is depicted in Figure 1. Figure 1 is a hypothesized mediated effect with parallel process growth model. I plan to examine the direct effect of childhood trauma on depression (in waves I, II, III, and IV) and CVE in waves (I, II, III, and IV), and the indirect effect of childhood trauma on HIV risk through CVE and depression. In this model childhood trauma serves as the independent variable, CVE and depression are the mediators and HIV risk is the outcome variable. There are two hypotheses for this model: 1) The change of experiences in community violence exposure and depression will have a direct effect on HIV risk and 2) Childhood trauma will indirectly effect HIV risk through community violence exposure and depression.

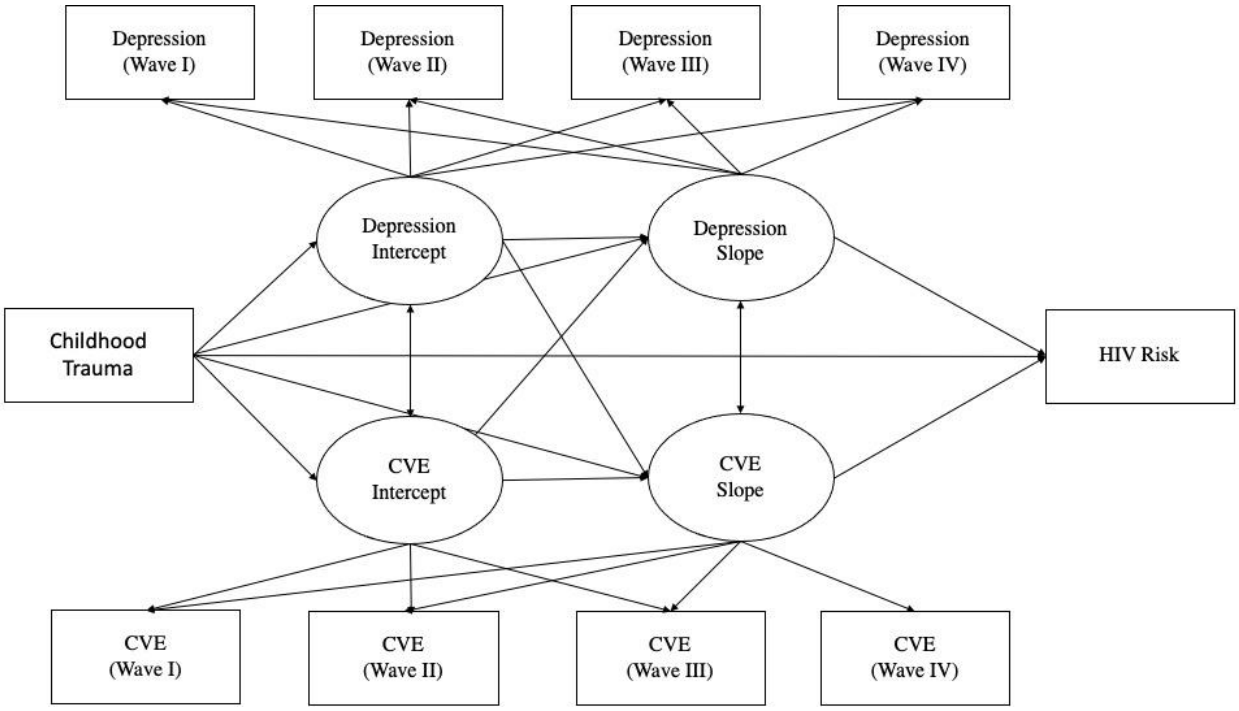

Figure 1.1 Hypothesized Parallel Process Growth Pathway Model.

Study Aim 2

The second aim is depicted in Figure 2. Figure 2 is a hypothesized pathway model will examine the underlying association between perceived discrimination and community violence exposure (CVE) and HIV risk through the pathways of depression and perceived stress. There are three hypotheses for this model: There are four hypotheses for this model: 1) CVE will be directly associated with HIV risk, 2) Perceived discrimination will be directly associated with HIV risk, 3) CVE will be indirectly associated with HIV risk through depression and perceived stress (a_1, a_2, a_3), and 4) Perceived discrimination will be indirectly associated with HIV risk through depression and perceived stress.

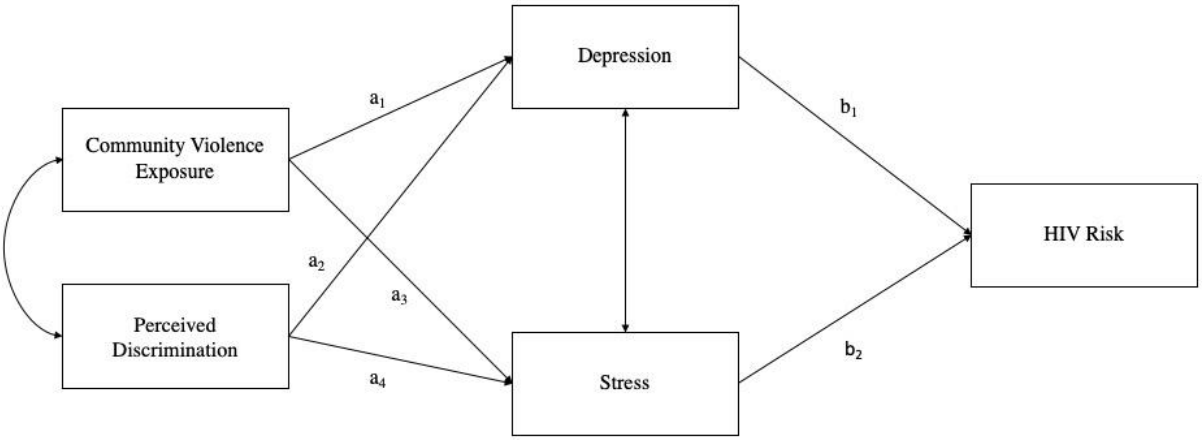

Figure 1.2. Hypothesized Multiple Mediation Pathway Model.

Public Health Implications

As health disparities and health inequity remain prominent issues in public health, there is a need to continue research and intervention efforts to improve inequitable health outcomes. Assessing underlying issues such as racial discrimination, community violence exposure and childhood trauma and their direct and indirect effects on mental and sexual health can ultimately aid in prevention and intervention efforts to improve social, cognitive, and emotional functioning as well as adverse health outcomes among Black youth. The planned study seeks to fill gaps in the current research by exploring the association between traumatic experiences and stressors and HIV/STI risk-behavior. The long-term goal of this research is to inform the development of culturally relevant, trauma informed-HIV prevention strategies and develop effective interventions that significantly improve sexual health outcomes while simultaneously improving adaptive coping behaviors in Black youth who may have developed mental health problems from CVE, childhood trauma, and discrimination.

CHAPTER 2

LITERATURE REVIEW

Youth and Health disparities

Health disparities are of continued concern in the public health field as ethnic/racial and sexual minority groups are and have been disproportionately affected by various health conditions and outcomes. Health disparities are defined as "a specific subset of differences deemed worthy of special attention because of social values, including ethical concepts of distributive justice and core human rights principles" (Braveman, 2006). This section of the paper will summarize the mechanisms underlying disparities in mental and sexual health among youth by using an ecological perspective (DiClemente, Salazar, & Crosby, 2007; Salazar et al., 2010; Voisin, DiClemente, Salazar, Crosby, & Yarber, 2006) to understand individual, interpersonal and societal level effects of two major outcomes among minority youth. Throughout this paper the term "Black" will be used to refer to the heterogenous nature of ethnic and racial groups in the United States. Table 2.1 is a matrix of the multi-faceted risk and protective factors that contribute to mental and sexual health outcomes of Black youth. This matrix is adapted from Kirby, Lepore, and Ryan (2005) matrix of risk and protective factors affecting teen sexual behavior, pregnancy, childbearing and sexually transmitted disease. The purpose of the matrix is to identify and summarize the literature that displays risk and protective factors that influence mental and sexual behaviors among Black youth.

Socio-Ecological Model: Foundation in Literature Review

Bronfenbrenner's Ecological Systems Theory (1979), is one of the initial theories developed to define the ecology of human development considering the contextual influences that impact mental and physical health at multiple levels surrounding youth's environment (Bronfenbrenner, 1977). His thought on human development in the context of health is defined as mechanisms of development that include both social and psychological factors (Bronfenbrenner, 1977). He emphasized the importance of interpersonal relationships, specifically the role of parents and family on the child's development as well as society's and the community's influence. Bronfenbrenner developed the model from considering "ecological thinking" and the interrelatedness of health, behavior and the determinants of health. Social ecology of human development is "The study of mutual transactions between human beings and the properties of environmental systems in which they interact throughout life" (Crosby, Salazar, & DiClemente, 2013). Bronfenbrenner identified four system levels: 1. The microsystem, which are the characteristics of an individual's development; 2. The mesosystem, interactions between different aspects of a person's microsystem; 3. The exosystem, the external settings that have an impact on an individual but the individual does not interact with them directly, and 4. The macrosystem which are the societal influences the individual (Bronfenbrenner, 1977; Voisin et al., 2006). Using the ecological theory as a guiding framework, the Social-Ecological Model was developed to understand the interconnections between a person and their environment. Its constructs consist of individual, interpersonal, community and societal factors. These constructs are similar to the original model. The terms will be used interchangeably as the basic structure has been maintained.

Figure 2.1. Social Ecological Model (CDC, 2020)

Individual-level Factors

Microsystem or the individual level are individual behavioral and biological factors that may explain mental and sexual health disparities among youth. These individual factors include knowledge, attitudes, and beliefs that contribute to behavior. Despite national efforts to reduce disparities, mental health disparities continue to be a challenge among ethnic minority youth. Mental health disparities are of major concern as psychological problems have been linked to negative health outcomes (Alegria, Vallas, & Pumariega, 2010). Many of the mechanisms underlying health disparities among youth are interrelated and have a disproportionate effect on them, in general.

Mood disorders have been shown to be associated with sexual risk behaviors.

An increasing amount of literature has found depressive symptoms to be linked to sexual risk behaviors as lack of mental health utilization and treatment has been common among minority, and specifically Black youth (Olfson, Druss, & Marcus, 2015). Some studies have prospectively found depressive symptoms to be a predictor of sexual risk behaviors, particularly among Black youth (DiClemente et al., 2001; Seth et al., 2011). Previous research has found depressive symptomology to be related to specific risk behaviors such as inconsistent condom use (Brown et al., 2006; Mazzaferro et al., 2006; Seth, Raiji, DiClemente, Wingood, & Rose,

2009), multiple sex partners (Brawner, Gomes, Jemmott, Deatrick, & Coleman, 2012; Mazzaferro et al., 2006; Seth et al., 2011) and lack of sexual communication (Seth et al., 2009). One study found that depressive symptoms were highly prevalent among a sample of Black youth, as these symptoms predicted risky sexual behaviors such as vaginal sex with two or more sexual partners among a sample of female youth. The study also found depressive symptoms to be inversely linked to condom-use self-efficacy and condom use among the sample (Foley et al., 2019). Substance use has also been found to be predictive of sexual risk behaviors such as inconsistent condom use (Jackson, Seth, DiClemente, & Lin, 2015). Mental health and substance use disparities are specifically prominent among sexual minority female youth. One study among a sample of predominately Black, sexual minority girls reported a pattern of vast disparities in substance use and mental health such as oppositional defiant disorder, conduct disorder and borderline personality disorder. The study also found internalizing disorder symptoms such as anxiety, depression and suicide ideation to be particularly high among sexual minority girls (Marshal et al., 2013). Black youth in a qualitative study discussed their attitudes and beliefs towards sexual behaviors and viewed sex as a normal behavior and act within relationships. Participants also discussed condom use as a burden, as well as how increased trust in a relationship leads to a decrease in condom use (Brawner, Jemmott, Wingood, Reason, & Mack, 2018).

HIV and STI knowledge/ PREP knowledge

Health literacy, specifically HIV and STI knowledge have been found to influence the testing behaviors of individuals (Swenson et al., 2010). One community-based participatory study examined the relationship between HIV knowledge, stigma and testing experience among a sample of 508 Black youth. Results from the study found high HIV knowledge among

participants, specifically about HIV transmission; however, lower knowledge was found for domains such as HIV prevention and control. In this study, HIV knowledge was associated with HIV testing (Okumu et al., 2017). Pre-exposure prophylaxis (PrEP) is a preventative method and medication for those who are at risk for HIV (Jiang et al., 2014). Some studies have shown that lack of PrEP intake among youth has been due to lack of awareness, knowledge, and other structural and financial barriers (Doll et al., 2018; Sullivan et al., 2018). One particular study examining awareness and willingness of PrEP intake among 208 Black and Latinx youth found that 38% of participants were aware of PrEP, Black youth among the group were more aware than their Latinx counterparts. As for PrEP willingness, 22% of the sample were willing to use PrEP as a preventative measure, and those who did not have condomless sex within the past 6 months were less interested in using PrEP compared to those who did have condomless sex within the past 6 months (Taggart, Liang, Pina, & Albritton, 2020).

Coping Mechanisms and Sensation Seeking

Very few studies have examined how Black youth cope with daily stress. One study held focus groups among Black youth with mental illnesses to examine psychosocial factors influencing HIV/STI risk-behaviors. Youth throughout the focus groups reported that they coped with their feelings of sadness anger, or depression through writing, listening to music, using substances, and engaging in sexual activities (Brawner et al., 2018). Another mechanism that may explain risk behavior among youth is sensation seeking. Sensation seeking is the desire and need to feel intensity. One cross-sectional study among an sample of 96 Black youth found both sensation seeking and risk-taking propensity to be associated with HIV risk behavior among youth who were exposed to physical, sexual and emotional abuse (Bornovalova, Gwadz, Kahler, Aklin, & Lejuez, 2008).

Black Racial Identity Development

Racial identity is defined as the developmental and cultural beliefs about the significance of race, specifically for Back Americans these include one's own perception about being Black American, other's perceptions about Black Americans and the beliefs attitudes and opinions on how Black Americans should act and behave. Sellers et al. (1998) developed the four dimensions of racial identity in their conceptual Multidimensional Model of Racial Identity to explain the concepts of Black racial identity. The four dimensions are *salience*, *centrality*, *regard*, and *ideology*. *Salience* and centrality address the significance of race in one's self-definition. *Centrality* specifically encompasses how race is central of an individual's concept of self. *Regard* is referred to as an individual's judgement of race, specifically their own feelings towards Black Americans and their membership as well as someone's else's perceptions of Black Americans (R. Sellers et al., 1998). The last dimension, racial *ideology* is one's beliefs, opinions, and attitudes with how Black Americans should act within society. Among racial *ideology* there are four ideologies; *nationalist* (the uniqueness of Blackness), *oppressed minority* (similarities between Black Americans and other oppressed groups), *assimilationist* (similarities between Black Americans and other people in society), and *humanist* (similarities among all humans) (E. Neblett, Smalls, Ford, Nguyen, & Sellers, 2009). Cross (1991; 1971) describes the process of being Black in five stages. The first stage, *pre-encounter*, is the overall beliefs and values of white culture, in which one's membership in a specific racial group isn't emphasized. The second stage, *encounter*, is when an individual experience an event of racism and they realize identity as a centrality to one's membership in their racial group. The third stage is *immersion/emersion*, which is an individual's concept of racial identity in which racial socialization among themselves and peers occur. The fourth stage is *internalization*, in which

one is secure in their identity of being Black. The last stage is *internalization-commitment*, in which one integrates their self-concept of racial identity with a plan of action or commitment to their membership in a specific group (Cross, 1971).

Racial identity is important to the cognitive development as youth are learning and coming into their own identity. One particular study found that Black youth, whose parents practiced racial socialization, believed that race was central to their conception of self and were more likely to emphasize the racial nationalist ideology (E. Neblett et al., 2009). As the psychological consequences of racial discrimination has been exacerbated among Black Americans, racial identity itself has been found to be a protective factor in which it reduces the impact of race-related stress and its effects on physical, emotional, and mental health. One study among 267 Black college students found that racial identity moderated the relationship between perceived discrimination and psychological distress as those who related to the nationalist ideology were protected from the negative effects of perceived racial discrimination and psychological distress. Public regard was also found as a moderator between perceived discrimination and psychological distress (R. Sellers & Shelton, 2003). Particularly in the context of HIV/STI risk, one study found among a sample of 720 Black youth, racial identity was associated with low levels of perceived friends use of substances, as well as substance willingness and use, even with greater access to substances (Michelle Stock et al., 2013).

Racial Socialization

The interpersonal and intrapersonal processes that influence cognitive and behavioral outcomes may be influenced by how Black teenagers view their racial and gender identities (Stevenson, 1995). Racial socialization is “the process of communicating messages and behavior to children to reinforce their sense of identity given the possibility and reality that their

experiences may include racially hostile encounters" (Stevenson, 1995). Stevenson states that the integration of two domains of racial socialization: process to teach racial empowerment and preparing for oppressive experiences into the lives of Black youth is essential in psychological and coping development. As racial socialization has been linked with psychological and socioemotional well-being (Enrique W Neblett et al., 2008), studies have also shown that it shapes racial and ethnic identity among youth (E. Neblett et al., 2009). One particular study among 211 young adults, found significant relationships between racial identity, racial socialization and depressive symptoms, as favorable views of Black Americans were associated with fewer depression symptoms, as racial socialization facilitate (is a precursor) racial identity (Hughes et al., 2006; E. Neblett et al., 2009; E. W. Neblett, Jr., Banks, Cooper, & Smalls-Glover, 2013).

Racial socialization has been found to influence self-esteem through the development of racial identity, as one's centering of race gives them a sense of self-concept (Stevenson & Arrington, 2009). Youth's concept of self, specifically self-esteem, has been linked to reduced risk behavior. A study that was conducted to examine the association between self-esteem and risk behavior found that those with high self-esteem were more likely to have positive attitudes towards condoms, felt more efficacious in negotiating condom use, had more frequent communication with sex partners and parents, perceived fewer barriers to using condoms, and were less fearful of negotiating condom use (Salazar et al., 2005).

Adverse Childhood Experiences (ACEs)

Adverse Childhood Experiences (ACEs) are traumatic events such as physical, emotional, sexual abuse as well as domestic violence, household substance abuse, having an incarcerated household member, parental conflict/divorce and mental illness among a household

member. Recent literature has indicated the emerging high prevalence of ACEs is apparent among youth as 54% have reported one experience of ACEs and around 28% have experienced two or more ACEs (Moore & Ramirez, 2016). As ACEs are a persistent issue of public health concern, subgroups of youth such as LGBTQ youth, Native American youth, and incarcerated youth are at increased risk (Andersen & Blosnich, 2013; Baglivio et al., 2014; Brockie et al., 2015). A few studies have expanded on previous ACE survey work by aiming to capture the prevalence and demographic variation of ACEs in more diverse populations. One recent study with a sample of 1,784 respondents in a predominately Black (43.6%) urban community found higher rates for six (physical abuse, substance abuse among a household member, emotional abuse, mental illness, witnessing of domestic violence (DV) and incarcerated household member) of the nine ACEs categories compared to the sample of the original ACEs study, with almost half (47.6%) of the study population reported experiencing one to three forms of ACEs and a fifth (20.7%) of the population reporting more than one form of ACEs (Cronholm et al., 2015). Another study examining ACE among a diverse (37% Hispanic, 33% non-Hispanic White, 15% Asian, 7% multiracial, and 4% African American) college student population found that almost half of the sample reported exposure to ACEs, with the most common reported ACEs being verbal abuse (25%), household substance abuse (23%), sexual abuse (16%), physical abuse (14%) and witnessing DV (9%) (Forster, Grigsby, Rogers, & Benjamin, 2018). The majority of ACEs studies have focused on adult participants; however, one particular study focused on current childhood experience of ACEs. National and state level representative data from the 2016 National Survey of Children's Health (NSCH) describes the prevalence of ACEs among children under the age of 17 (reported by parents or guardians) (Sacks, 2018). Findings from the data showed that 45% of children in the United States have experienced at least one form of ACE,

and one in ten children have experienced three or more ACEs. Considering demographics, the prevalence of ACEs was the highest among non-Hispanic Black children at 61% and Hispanic children at 51%, with the lowest prevalence of reported ACEs among non-Hispanic Asian children (Sacks, 2018).

Another one of the largest data collection efforts to examine the prevalence of ACEs was among a sample (64,329) juvenile justice-involved youth offenders in Florida. Findings among a sample of majority white (29%) and Black (34%) youth males found an overall high prevalence of ACEs (reported by two-thirds of the study population) in the categories of family violence, parental conflict/divorce, and household member incarceration. Youth females (45.1%) in the study population reported sexual abuse 4.4 times more frequently than youth males. Youth females also reported five or more ACEs more frequently than youth males. Compared to the original ACE study, juvenile justice involved youth offenders were more likely to report ACEs than the original study population, as they were thirteen times less likely to report zero ACEs and four times more likely to report four or more ACEs (50% among the juvenile offender group and 13% among the original ACE study group) (Baglivio et al., 2014). ACEs have also been linked to depression, anxiety, PTSD symptomology, physical health problems, suicidality, substance use, and teenage pregnancy (Bair-Merritt et al., 2006; Brockie et al., 2015; Fiscella et al., 1998; Hussey et al., 2006; Jonson-Reid et al., 2012; Lansford et al., 2002; Margolin, Vickerman, Oliver, & Gordis, 2010).

Socio-economic status

Socio-economic status is one of the root determinants of ethnic/racial health disparities, especially in the areas of mental and sexual health. Black youth are three times more live in poverty level compared to their white counterparts, as the prevalence among Black youth was

around 29% compared to 10.9% (Child Trends Databank, 2019). Past research has indicated that low socioeconomic status is associated with risk behavior such as substance use, depression, and sedentary behaviors that lead to morbidity and mortality among youth (Newacheck, Hung, Jane Park, Brindis, & Irwin, 2003). Racial/ethnic and socioeconomic disparities in family planning (unintended pregnancy and abortion) continue to be a persistent issue in the United States. Due to the historical context of discriminatory practices (eugenics), the epidemiological disparities among ethnic/minority women are still prominent today, as teen pregnancies and unintended births occur more among minority and low SES youth (Dehlendorf, Rodriguez, Levy, Borrero, & Steinauer, 2010).

Racial discrimination and racial trauma

The context of historical trauma, starting from colonization and the exploitation of Black bodies for slave labor to ongoing racism, one of most prevalent forms of oppression today, is a contributing factor to adverse health outcomes from obesity to PTSD among Black Americans. Research has indicated that exposure to racism and racial discrimination is associated with adverse mental and psychosocial health outcomes. A meta-analysis examining effects of racism and racial discrimination on health outcomes (physical, mental and substance use) found that among 105 studies, racial discrimination was strongly related to poor psychological outcomes, as it can contribute to traumatic stress reactions among racial and ethnic minorities in general (Carter, Lau, Johnson, & Kirkinis, 2017). Another meta-analysis specific to exploring the effects of perceived racism with adverse psychological and physiological outcomes among Black Americans found that, among this population, there were more instances of reported racism than among any other racial group. Findings also showed that the greater exposure to stressful racist events, the more likelihood of reporting mental distress. (Pieterse, Todd, Neville, & Carter,

2012). Not only is racial discrimination strongly associated with adverse psychological outcomes, racial discrimination has also been linked to problematic alcohol use among Black Americans (Desalu, Goodhines, & Park, 2019).

Abundant evidence has linked racial discrimination to negative psychological outcomes among Black youth. Research has shown that among a nationally representative sample (n=1170) of Black (African American and Afro-Caribbean) youth, more than 86% of the sample had experienced discrimination at least once. The study also showed a significant relationship between experiences of perceived discrimination and adverse mental health outcomes such as major depressive disorder, and anxiety; including 12 month and lifetime anxiety (Pachter, Caldwell, Jackson, & Bernstein, 2018). The intersectional approach in understanding racism and racial discrimination influence on mental health, has contributed to the notion that it is a factor in contributing to sexual health outcomes, such as HIV infections. One study examining the effects of racial discrimination on HIV risk cognition behaviors of Black youth found that discrimination was associated with greater HIV risk behaviors such as current substance use and risky sex. It was also associated with an increased risk of substance use and risky sex over a three-year period (M. Stock, Peterson, Gibbons, & Gerrard, 2013). Little research has been done on youth's perceptions and experiences with systemic racism. Even though it is understudied, the effects of institutional racism can be direct as it adversely impact the mental and sexual health of youth through neighborhood disorganization, poverty and community violence (Saleem & Lambert, 2016).

Interpersonal Factors

Interpersonal relationships

Interpersonal relationships outside of the home are also important to the development of youth health. Dating violence among youth has been linked to adverse health outcomes such as

substance use (Ramisetty-Mikler, Goebert, Nishimura, & Caetano, 2006), suicide, depression and anxiety (Choi, Weston, & Temple, 2017), sexual risk (Hipwell et al., 2013; Lormand et al., 2013; Reed, Miller, Raj, Decker, & Silverman, 2014), youth pregnancy (Silverman, Raj, & Clements, 2004) and increased weight gain (Silverman, Raj, Mucci, & Hathaway, 2001). As literature is limited about dating violence among minority youth, one study examining the prevalence of dating violence among Black American and Hispanic youth females in Chicago, found that 11% of the sample reported one-time victimization, 9% reported victimization 2 or 3 times and 14% reported victimization more than three times. Majority (45%) reported mild psychological victimization and about 35% reported physical victimization. When considering female perpetration, 51.4% reported an instance of perpetrating dating violence. Sexual risk behavior was also shown among this group, as girls who experienced dating violence were more likely to ever have sex, drink during their sexual encounters, and have an early sexual debut (Alleyne-Green, Coleman-Cowger, & Henry, 2012). Condom use negotiation, sexual and gender-based violence and relationship power imbalances are of another concern among youth. One study among minority urban girls found almost all of the girls in the study population reported emotional abuse from a partner, more than half experienced physical abuse and had been threatened. Consistent with the findings of the previous research cited, findings also showed that those who had experienced any form of intimate partner violence had a significantly increased likelihood of inconsistent condom use (Teitelman, Ratcliffe, Morales-Aleman, & Sullivan, 2008).

Parents also play a role in the mental and sexual health outcomes among youth. Parental monitoring and parental communication have been understudied among minority groups. Parental monitoring and communication has been found as a protective factor among youth in

regard to substance use (A. Tobler & Komro, 2010), mental health and sexual health. Among sexual minority youth, parental support has also been shown as a protective factor against mental health problems such as depression symptomology and substance use (Eisenberg & Resnick, 2006; Padilla, Crisp, & Rew, 2010; L. Simons, Schrager, Clark, Belzer, & Olson, 2013).

Along with the interpersonal interactions that happen within the home, peer relationships are important during emerging adulthood and adolescence. Perceived peer norms have been found as predictors of sexual risk behaviors among youth and it has an influence on their sexual practices (Crosby et al., 2000; Miller-Johnson et al., 2003).

Few studies have examined the contextual factors of sexual partner and mate selection among at-risk youth. One study examined sexual partner selection among 50 inner-city Black youth through semi-structured interviews. Findings from the study found that youth used physical appearance to judge their sexual partner's risk of STIs. Young women specifically stated that if their partner is "clean" in physical appearance, they are "clean" from STIs. Participants also related monogamy and respectfulness to low STI risk (Andrinopoulos, Kerrigan, & Ellen, 2006).

Infidelity is another social factor that is understudied in existing research among Black youth. One exploratory study examined infidelity among 143 Black youth found that few individuals used condoms with their main partners assuming that if they are "clean" from STIs or HIV, their partner is clean, too. Those within the sample reported high rates of infidelity and stated a possibility of high-risk sexual behaviors with those partners as well (Eyre, Flythe, Hoffman, & Fraser, 2012).

Community and Societal Level Factors

Community violence exposure (CVE)

Community violence exposure has been found to be associated with depression, anxiety, PTSD, and aggression among youth living in urban areas. One literature review examined twenty-six articles and found that CVE was linked to increased depressive symptoms, anxiety, PTSD, and aggression. Aggression and PTSD were both found to have the strongest relationships with CVE. The review also found other mechanisms that mediated the effect between CVE and mental health including neighborhood and family characteristics. As CVE was examined in the article it was found to substantially impact both male and female youth in urban areas (McDonald & Richmond, 2008). Another literature review of seven articles examining CVE and risk-taking behaviors among Black youth found that the prevalence of CVE among black youth to be around 83% across all articles (Motley, Sewell, & Chen, 2017). The article also found significant relationships between CVE and substance use as well a few studies yielding significant results between violence perpetration and sexual risk taking behaviors (Motley et al., 2017). One group that is understudied in this context are young Black MSM (YBMSM), as Black men are exposed to higher levels of violence as well as are disproportionately impacted by HIV. One of few studies that examined that examined the relationship between community violence exposure, substance use, psychological distress, and sexual risk behavior among YBMSM with HIV found high exposure to community violence among the group. More than half of the sample have been exposed to community violence, specifically as a victim, and about 17% of those who were victims were seriously injured. Other common occurrences among the group were hearing gun shots, witnessing gun-related incidents, and witnessing someone being beaten. The study also found significant relationships between community violence and

psychological distress, lifetime use of substances, and condomless sex (Quinn, Voisin, Bouris, & Schneider, 2016).

Similar to community violence exposure, neighborhood disorganization has been found as a correlate to poor mental health outcomes among youth. Findings of one study indicated that Black youth had experienced the highest rates of neighborhood disorganization compared to other racial/ethnic, as well as the lowest rates of mental health diagnosis, and mental health literacy. Structural factors such as access to mental health care may explain this relationship (Glassgow et al., 2019).

Youth homelessness

Youth homelessness is also of concern as homeless youth have been found to engage in risky sexual behaviors (Ennett, Federman, Bailey, Ringwalt, & Hubbard, 1999). One study examining sexual risk among a sample of youth experiencing homelessness showed that majority US-Born Latinx (33%) and African American (29.9%) youth had significant relationships between living situations and multiple sex partners and lack of condom-use. The study also found a significant association between alcohol and drug use and risky sexual behaviors among male and female youth (Solorio et al., 2008), which has been shown in other samples as well (Halcón & Lifson, 2004) and supports the need for addressing structural factors in reducing disparities among youth.

Stigma

Stigma is a prominent issue that contributes to disparities in mental and sexual health, as it prevents youth from seeking mental health help (Lindsey, Joe, & Nebbitt, 2010; Rose, Joe, & Lindsey, 2011) as well as getting tested for STIs and HIV. In one study, minority youth reported

privacy concerns, waiting for results and social stigma (fear that rumors would start) as perceived barriers to getting tested (Schnall, Rojas, & Travers, 2015).

Other forms of discrimination

Racial and sexual minorities deal with multiple forms of discrimination as homophobia and racism are issues that have been both linked to psychological distress. A qualitative study examining racism, homophobia and HIV stigma among Black male youth found all study variables to be related. Participants described apparent experiences of homophobia in the church, among their family members and HIV-stigma was apparent in the gay Black community. Participants also discussed how they participated in unprotected sex to cope with both homophobia and racism (Arnold, Rebchook, & Kegeles, 2014).

Cultural Orientation/Black youth socialization

Cultural values, attitudes, and beliefs play major roles in the fundamental development and social functioning of Black American youth. The multidimensional orientations of Black culture include *affect*, *communalism*, and *spirituality*. Boykin (1995) describes *affect* as the integration of feelings with thought, the importance of emotional expressiveness, the value of affective information, and sensitivity to other's emotional cues and responses. *Communalism* is described as the awareness of the interdependence of people, social orientation, and the feelings of one's duty to their social group. *Spirituality*, another dimension of cultural orientation, is defined as the vitalistic approach to life, "the belief in governing powers that are non-observable and nonmaterial and the belief in a greater power than oneself" (Alfred Boykin & Ellison, 1995; A Boykin & Toms, 1985). Other dimensions of cultural orientation include *collectivism*, *fairness*, and *social justice*. Among Black youth, cultural orientation has been found to be a protective factor that promotes positive psychological well-being as well as positive development outcomes

and self-esteem as it plays a role in racial identity development, positive group attitudes and group-oriented ethnic behaviors (Bentley, Adams, & Stevenson, 2009). One study examined how cultural group factors predicted positive youth development. Findings of the study indicated that cultural orientation positively predicted positive youth development such as future orientation, prosocial behavior (kindness, care and concerns for others) and civic mindedness as well as future orientation (plans for the future) (Constantine, Alleyne, Wallace, & Franklin-Jackson, 2006; Grills et al., 2016; Lesane-Brown, 2006; E. Neblett, Philip, Cogburn, & Sellers, 2006; Enrique W Neblett, Hammond, Seaton, & Townsend, 2010).

Table 2.1. Matrix of Risk and Protective Factors Affecting the Mental and Sexual Health of Black Youth.

(inspired/adapted from (Kirby et al., 2005)

Socioecological level of risk and protective factors	Outcomes	Citation of Literature
Individual-Level		
Condom use/contraceptive knowledge	Knowledge about condom and contraceptive use	(Akers, Schwarz, Borrero, & Corbie-Smith, 2010; Sales, Latham, Diclemente, & Rose, 2010; Swenson et al., 2010)
PrEP Knowledge and awareness	Awareness and knowledge about PrEP	
HIV Knowledge	Knowledge about HIV	(Okumu et al., 2017; Swenson et al., 2010)
Early sexual debut	Sex before or during adolescent years	(McBride, Paikoff, & Holmbeck, 2003)
Substance use/Misuse	Substance use in result of psychological outcomes and substance use before sex	(Brawner et al., 2018; Jackson et al., 2015; Marshal et al., 2013; Silverman et al., 2001; Michelle Stock et al., 2013; M. Stock et al., 2013; A. Tobler & Komro, 2010)
Socio-economic status	Socio-economic status as a predictor for sexual risk	(Dariotis, Sifakis, Pleck, Astone, & Sonenstein, 2011; Sionean et al., 2001)
Sensation-seeking	Sensation-seeking as a risk factor for risk behavior	(Bornovalova et al., 2008)
Adverse Mental health outcomes: PTSD, Depressive symptomology, anxiety, and chronic stress	Depressive symptomology prevalence and depressive symptomology related to risky sex	(Brawner et al., 2012; Brown et al., 2006; Choi et al., 2017; Foley et al., 2019; Jackson et al., 2015; Mazzaferro et al., 2006; Miller, Reed, McNall, & Forney, 2013; Seth et al., 2011)
Racial Identity	Protective factors related to risky sex and adverse mental health outcomes	(Jones & Neblett, 2017; McClain et al., 2016; E. W. Neblett, Jr. et al., 2013; Enrique W. Neblett, Roth, & Syed, 2019; Seaton, Neblett, Upton,

		Hammond, & Sellers, 2011; R. M. Sellers et al., 2006; Stevenson, 1995; Willis & Neblett, 2019)
Sexual Behavior Attitudes and Beliefs	Beliefs and attitudes towards sexual behaviors	(Brawner et al., 2018)
Adverse childhood experiences	Sexual risk: Inconsistent condom use, unprotected intercourse, sex under influence; internalizing and externalizing psychological symptomology and PTSD	(Bornovalova et al., 2008; Munroe, Kibler, Ma, Dollar, & Coleman, 2010; Radcliffe, Beidas, Hawkins, & Doty, 2011)
Racism and racial discrimination	Sexual risk and mental health problems including anxiety, stress and depressive symptoms	(Brody et al., 2014; Errol L Fields et al., 2013; Pachter et al., 2018; Spence et al., 2016; M. Stock et al., 2013; A. L. Tobler et al., 2013)
Perceived discrimination		(Bogart et al., 2013; Grollman, 2012)
Interpersonal-Level		
Sexual Partners	How youth choose sexual partners	(Andrinopoulos et al., 2006)
Deviant peer groups	Problem behaviors: substance use, sexual risk behaviors	(Miller-Johnson et al., 2003)
Relationship Responsibility	Relationship responsibility regarding sexual health	(Gilliam, Woodhams, Sipsma, & Hill, 2017)
Gender-Based violence	Teen dating and intimate partner violence influence on mental and sexual health outcomes	(Alleyne-Green et al., 2012; R. R. Henry & Zeytinoglu, 2012; Teitelman et al., 2008; Younge et al., 2010)

Parental communication/monitoring	Parental communication/monitoring as protective factor	(Akers et al., 2010; DiClemente et al., 2001; Voisin, Takahashi, Berringer, Burr, & Kuhnen, 2016) (Farkas et al., 2015; Kapungu, Holmbeck, & Paikoff, 2006; Usher-Seriki, Smith Bynum, & Callands, 2008)
Familial conflict	Familial conflict associated with sexual risk	(McBride et al., 2003)
Sex communication	Lack of sex communication	(Seth et al., 2009)
Community-level		
Stigma	Mental and sexual health stigma associated to adverse outcomes	(Arnold et al., 2014; Lindsey et al., 2010; Schnall et al., 2015)
Access to mental health care	Lack of access and utilization	(Angold et al., 2002; Freedenthal, 2007; Olfson et al., 2015; Snowden, 2001; P. Wu et al., 2001)
Access to HIV preventative services and testing	Lack of access and utilization	(Parrish & Kent, 2008)
Community violence exposure/community trauma	Effects of CVE on mental and sexual health outcomes	(Horowitz, Weine, & Jekel, 1995; McDonald & Richmond, 2008; Seth, Jackson, DiClemente, & Fasula, 2017; Voisin, 2003; Voisin et al., 2015; Voisin et al., 2006; Voisin et al., 2018; Voisin et al., 2014; Voisin & Neilands, 2010; Voisin, Patel, et al., 2016; Helen W Wilson, 2018; Helen W Wilson, Donenberg, & Emerson, 2014; H. W. Wilson, B. A. Woods, E. Emerson, & G. R. Donenberg, 2012)

Masculinity	Masculinity and sexual and mental health risks	(Errol Lamont Fields et al., 2015; Watkins, Allen, Goodwill, & Noel, 2017)
Cultural Orientation/Racial Socialization	Cultural orientation and racialization as protective factors	(Anderson, Jones, Anyiwo, McKenny, & Gaylord-Harden, 2019; Constantine et al., 2006; Elmore & Gaylord-Harden, 2013; Grills et al., 2016; Lesane-Brown, 2006; E. Neblett et al., 2006; Enrique W Neblett et al., 2010).
Societal-Level		
Other Discrimination (e.g. Homophobia)		(Arnold et al., 2014; Errol L Fields et al., 2013)

CHAPTER 3

METHODOLOGY

Sample

Unrestricted data from the National Longitudinal Study of Adolescent to Adult Health (*Add Health*) data set will be used for the analysis of this study (Harris 2009). In 1994 a cohort of youth (from 7th through 12th grade, ages 11 to 18) were asked a survey of questions about their physical, mental, sexual health as well as school and at home experiences in the United States. The study used a cluster stratified sampling technique in which students from various demographic groups, regions, and public and private schooling were represented. A total of 20,745 youth participated in the first wave of the study. Data were also collected from the parents of the participants in the in-home sample and school administrators. Participants were followed up in four different waves until the recent data that was collected in 2019 (Lang, McKean, & Peterson, 1997). Wave II was collected in 1996 and 14,738 of the original samples returned to complete the results. Wave III was collected in 2001 with a sample of 15,197 from the first wave. Wave IV of the study was complected in 2008 and 15,701 of the original sample completed the survey. The most recent wave, Wave V was completed in 2019, currently public use data for Wave V was not released in time for this study. This study used multiple waves (Waves I-IV) and measures of the *Add Health* data set to understand trauma, discrimination, and violence exposure among Black participants (n=1249) in the weighted sample. For the current study 370 participants were dropped due to missing sampling weights.

Paper 1: Examine the pathway of childhood trauma to HIV risk through the change trajectories of community violence exposure and depression using longitudinal data from the *Add Health* dataset.

Measures

Independent Variable

Childhood trauma is defined as any type of physical, emotional, sexual abuse or neglect experienced by the participants from another individual (Buchanan, Gewirtz, Lucke, & Wambach, 2020; Copeland et al., 2018; Mauritz et al., 2013). Questions from this measure were only asked retrospectively in Wave III of the study. Interpersonal trauma items were constructed from four items from the dataset. Items in this measure include questions about emotional abuse, sexual abuse and neglect from parents, and adult caregivers. An example item from the measure is "By the time you started 6th grade, how often had your parents or other adult care-givers left you home alone when an adult should have been with you?" Participants endorsed items on a scale from 0 = "this has never happened" to 5 = "More than 10 times". Total items were summed into an ordinal indicator of childhood trauma.

Mediator Variables

Community Violence Exposure was measured across all four waves in the data set as direct victimization of violence within the community. Participants in the study indicated if they had been exposed to violent events. An example item from this measure is "During the past 12 months, did the following happen? If so, how often? Someone pulled a knife or gun on you." Participants endorsed items from a scale from 0 = "never" to 2 = "more than once."

Depressive symptoms were measured from the Center for Epidemiologic Studies Depression Scale (CES-D), with scores ranging from 0 to 18 and higher scores indicating more

depressive symptoms (Radloff, 1977). This variable was measured across all waves, though items varied in some waves. For the current study, we included only the six CES-D items that were common across all four waves of data. An example item from this measure is "You could not shake off the blues, even with help from your family and your friends, during the past seven days." Participants endorsed items from a scale from 0 = "never or rarely" to 3 = most of the time or all of the time."

Outcome variable

HIV/ Sexual risk behavior is the outcome variable for this study. This variable was only measured in Wave IV of the *Add Health* study. Questions about participant substance use during sex, sex with multiple partners, transactional sex, and self-reported STI diagnosis were included in a composite variable indicating any engagement in HIV risk. Items were dichotomized to 0 = "no risk" and 1 = "yes, risk was present". Participants indicating "yes" to any item was included in the "risky" category. An example item from this measure is "In the past 12 months, how many times have you paid someone to have sex with you or has someone paid you to have sex with them?"

Data Analysis Plan

Structural Equation Modeling *(*SEM), a time varying co-variate growth curve model will be used to analyze the data. First, the data was extracted, and all waves were merged. To account for the oversampling of the population in a longitudinal study such as *Add Health*, we used sampling weights for Wave IV of the study to adjust for the sample size differences among racial and ethnic groups in the sample (Kaplan & Ferguson, 1999). The data was examined for outliers, skewness, and kurtosis in which variables that are non-normally distributed were using IBM SPSS 27 software. Using MPLUS 8 software, we first examined individual growth curves

for each of the two mediator variables: community violence exposure and depression. The intercept factor loadings were set to 0 at the first time-period and 1 to the last time-period, and freeing the middle two waves, since the data was collected at inconsistent time periods. Based on model fit, we decided to identify linear growth terms for both CVE and depression. Each curve was estimated assessing the regression coefficient of the intercept, slope, and variance parameters of each model. To test a latent growth curve model, the growth curves of both variables were combined into one model and the independent/predictor variable was added to create a path model for all waves of data. The full model included pathways from childhood trauma to the intercept and slope factors of CVE and Depression, as well as pathways leading to HIV risk behaviors. We assessed direct and indirect effects of the variable paths. Absolute model fit was assessed through examining the χ^2, comparative fit index (CFI), Tucker-Lewis index (TLI) and root mean square error of approximation (RMSEA).

Missing data. Dummy coding was used to account for all missing data for each variable in the hypothesized model.

Model Fit Indices. Absolute model fit will be assessed through examining the Chi square, CFI, GFI, RMSEA, and SRMR. Statistical significance of the chi-square value will indicate poor model. RMSEA (root mean square error of approximation) of less than .03 is ideal. The CFI (comparative fit index) value $\geq .95$ indicates good model fit. A GFI (Goodness of fit index) value close to 1 indicates a good model fit. SRMR (Standardized root mean square residual) $\leq .08$ indicates a good model fit.

Paper 2: Examining the underlying association between community violence exposure (CVE), perceived discrimination and HIV risk through the pathways of depression and perceived stress.

Measures

This study used cross-sectional data that was collected during Wave IV of the study. The total sample comprised of 1249 Black adults between the ages of 26 and 34 years old. The variables for paper 2 include independent variables: community violence exposure and perceived discrimination, outcomes variable: HIV/ sexual risk behavior and mediating variables: depressive symptoms and perceived stress,

Independent variable

Community Violence Exposure was measured in the data set as direct victimization of violence within the community. A survey of questions pertaining to CVE were collected during all waves of the study, but for the purpose of this paper data from wave IV will be used. Participants in the study indicated if they had been exposed to violent events. An example item from this measure is "During the past 12 months, did the following happen? If so, how often? Someone pulled a knife or gun on you." Participant endorsed items "never, once or more than once."

Perceived Discrimination was measured from a single question looking at perceived discrimination was used in Wave IV of the study. The question is "In your day-to-day life, how often do you feel you are treated with less respect or courtesy than other people?" Responses for this question include, "Never, rarely, sometimes, and often"

Mediating Variables

Psychological outcomes were collected throughout various waves of the study and examined depression and stress among the participants. Two types of mental health in Wave IV of the study, depressive symptoms, and perceived stress will be used for the analysis of the study.

Depressive symptoms were measured from the Center for Epidemiologic Studies Depression Scale (CES-D), with scores ranging from 0 to 30, higher scores indicating more depressive symptoms (Radloff, 1977). An example item from this measure is "How often was the following true during the past week? It was hard to get started doing things." Participants endorsed items from a scale from 0= "never or rarely" to 3= most of the time or all of the time.

Perceived stress was measured though a (6-item) shortened version of the Cohen Perceived Stress Scale (Cohen, 1988), which measures stressful life events through questions asking "In the past week, how often did they feel… "lonely, people disliked you, too tired to do things, etc.). Participants endorsed items from "0=never" to "4=very often"", scale ranges from 0 to 24 in which higher scores indicated higher levels of perceived stress.

Outcome Variable

HIV/ Sexual risk behavior is the outcome variable for this study. Various items measuring alcohol use during sex, sex with multiple partners, self-reported STI diagnosis, and transactional sex will be included in the analysis of the study. Items were dichotomized to 0 = "no risk" and 1 = "yes, risk was present". Participants indicating "yes" to any item was included in the "risky" category. An example item from this measure is "How often have you been under the influence of alcohol when you could have gotten yourself or others hurt, or put yourself or others at risk, including unprotected sex?"

Ethnicity was measured sing a self-reported measure of ethnic identity in Wave 1, where participants endorsed the ethnic category of African American.

Data Analysis Plan

Structural Equation Modeling (SEM), a pathway analysis was used to analyze the data. First, the data was extracted, and all waves were merged. To account for the oversampling of the

population in a longitudinal study such as *Add Health*, we used sampling weights for Wave IV of the study to adjust for the sample size differences among racial and ethnic groups in the sample (Kaplan & Ferguson, 1999). The data was examined for outliers, skewness, and kurtosis in which variables that are non-normally distributed were transformed using IBM SPSS 27 software. Using MPLUS 8 we first tested bivariate correlations. and a mediation path analysis were conducted to examine the direct and indirect (through depression and perceived stress) pathways to HIV risk behaviors. The mediation analysis consisted of two pathways. The first path included the assessment of the effect of the first independent variable (community violence exposure) on HIV risk through the mediators (stress and depression). The second paths included the assessment of the effect of the second independent variable (perceived discrimination) on HIV risk through the mediators. We regressed perceived discrimination, CVE, and the mediators onto HIV risk to assess the indirect effect of the independent variables on the outcome variable through the mediators.

Missing data. Dummy coding was used to account for all missing data for each variable in the hypothesized model.

CHAPTER 4

THE PATHWAY OF CHILDHOOD TRAUMA TO HIV RISK FOM EARLY ADOLESCENCE TO EMERGING ADULTHOOD: IMPLICATIONS FOR HIV PREVENTION STRATEGIES

[1]Gilliam, S.M. To be submitted to Journal of Adolescent Health

Abstract

Purpose

Childhood trauma, depression, and community violence exposure have been found to be predictors of HIV risk behaviors among adolescents. The purpose of this study is to examine the association between childhood trauma and HIV risk behavior through the change trajectories of community violence exposure and depression from adolescence to emerging adulthood among the Black population.

Methods

We used data from four waves of the National Longitudinal Study of Adolescent to Adult health (Add Heath) to examine the individual growth of community violence exposure and depression throughout time. The growth curves were combined into one model and childhood trauma was added as the independent variable and HIV risk was added as the outcome variable to create a pathway model. We tested the direct and indirect effects of the study variables.

Results

Childhood trauma was a positive predictor of the slope of depression and intercept of community violence exposure. There was a significant indirect effect of childhood trauma and HIV risk through the change trajectories of community violence exposure and depression. No direct effects of childhood trauma and HIV risk was found.

Conclusions

Multiple traumas are associated with HIV risk behavior, with experiences of childhood trauma leading to HIV risk behavior through socio-environmental and mental health outcomes. Results show the need to consider trauma and mental health in HIV prevention programing and strategies.

Introduction

Health disparities, specific to human immunodeficiency virus (HIV) and sexual health, are of a significant public health concern as various racial/ethnic minorities are disproportionately impacted by adverse health outcomes. Black youth are particularly vulnerable as they account for one-third of new HIV diagnoses (CDC, 2019). While rates of HIV have decreased over the past two decades, rates of HIV continue to remain high in the Black community (Laurencin, Murdock, Laurencin, & Christensen, 2018). In addition, Black women and young Black men who have sex with men (MSM) have an elevated burden of higher rates of HIV infection compared to their counterparts of other racial and ethnic groups (CDC, 2019). Various research among this population has examined HIV risk behaviors such as substance use during sex, condomless sex, transactional sex, sex with multiple partners, and STI diagnosis (Boyer, Rivera, Chiaramonte, & Ellen, 2018; Jackson et al., 2015; Mulatu, Leonard, Godette, & Fulmore, 2008). The elevated HIV rates in the Black community echo the syndemic effects of systematic influences, multiple forms of trauma, and adverse mental health outcomes on HIV/STI-risk behaviors.

Adverse Childhood Experiences are traumatic experiences that can have an impact on the cognitive functioning of youth. These experiences have been linked to negative health outcomes such as mental health (Brockie et al., 2015), physical (Bair-Merritt et al., 2006), and higher engagement in risk behaviors (Sartor et al., 2018). There has been substantial research examining the association between childhood trauma and sexual risk behavior (Peterson et al., 2018; Tsuyuki et al., 2019; Walsh, Latzman, & Latzman, 2014; E. Wu, 2018), but few studies have examined this longitudinally. For example, one study conducted among 177 Black girls seeking mental health treatment found that childhood physical abuse and neglect were associated with

internalized (anxiety/depression) and externalized (aggression) symptomology and sexual risk behavior (Wilson et al., 2015).

Understanding the processes underlying the link between childhood trauma and risk behavior is essential, including both individual-level and sociocultural factors. As youth transition to adulthood, challenges (e.g., increased in autonomy, changes in school and social environments, financial and employment responsibilities, and decrease in parental involvement) persist as they go through life changes (Arnett, 2000; Jaworska & MacQueen, 2015). Some of these challenges also consist of mood disorders such as depression (Dunn & Goodyer, 2006; Mondi, Reynolds, & Ou, 2017; Riggs & Han, 2009; Thapar, Collishaw, Pine, & Thapar, 2012; Wickrama, Noh, & Elder, 2009). Particularly relevant to the current study, one study examined the association between depression, sexual risk behaviors, and sexually transmitted infections in black and white youth in waves 1 and 3 of the National Longitudinal Study of Adolescent Health. Black participants had higher rates of recent or chronic depression in adulthood compared to white participants. In addition, Black men had a strong association between depression and STI prevalence (Khan et al., 2009). Mood disorders can also be a result of these challenges; research has found the exposures to these stressors in early childhood and adolescence can disrupt neurodevelopment which leads to social, emotional, and cognitive impairment (Sheffler et al., 2020).

It is well documented that community factors such as violence, residential disadvantages, and displacement contribute to childhood trauma and poor mental health outcomes (Hong & Burnett-Zeigler, 2017; Humphreys et al., 2020; Norton, 2017; Topalian, 2020). For example, a recent study exploring interactions between childhood trauma, neighborhood factors, and mental health outcomes found that those who experienced crime in their neighborhoods had heightened

experiences of childhood trauma and major depression (Lowe et al., 2016). However, the potential impacts of community violence exposure (CVE) on sexual risk behavior have not received as much attention in the scientific literature.

Community violence exposure is generally defined as direct and indirect experiences of interpersonal harm within one's community or neighborhood (Kennedy & Ceballo, 2014). CVE is a particular form of trauma and violence that influences youth's mental health and functioning. Depression has been found to be both a predictor and outcome of community violence exposure (A. C. Kennedy, Bybee, Sullivan, & Greeson, 2010; Sharon F. Lambert, Nylund-Gibson, Copeland-Linder, & Ialongo, 2010; Slopen, Fitzmaurice, Williams, & Gilman, 2012). Recent research has also found depression to mediate the relationship between community violence exposure and sexual risk behavior. For example, a study among a majority Black sample found that higher exposure to community violence was linked to higher levels of depression, leading to sexual risk behavior, for both men and women (Senn, Walsh, & Carey, 2016).

Although, many studies have explored the interactions of community violence exposure, depression, childhood trauma and sexual risk behaviors separately, few have examined the interactions between all factors using a longitudinal approach. The study aims explores the pathway of childhood trauma to HIV risk through the change trajectories of community violence exposure and depression using longitudinal data from The National Longitudinal Study of Adolescent to Adult Health *(Add Health).* There are three hypotheses for this study: 1) Longitudinal trajectories of community violence exposure and depression will have a direct effect on HIV risk at Wave IV of the study, 2) Childhood trauma will indirectly affect HIV risk through the longitudinal trajectories of community violence exposure and depression, and 3)

Childhood trauma during childhood will directly affect HIV risk. These hypotheses are displayed in the conceptual model in Figure 1.

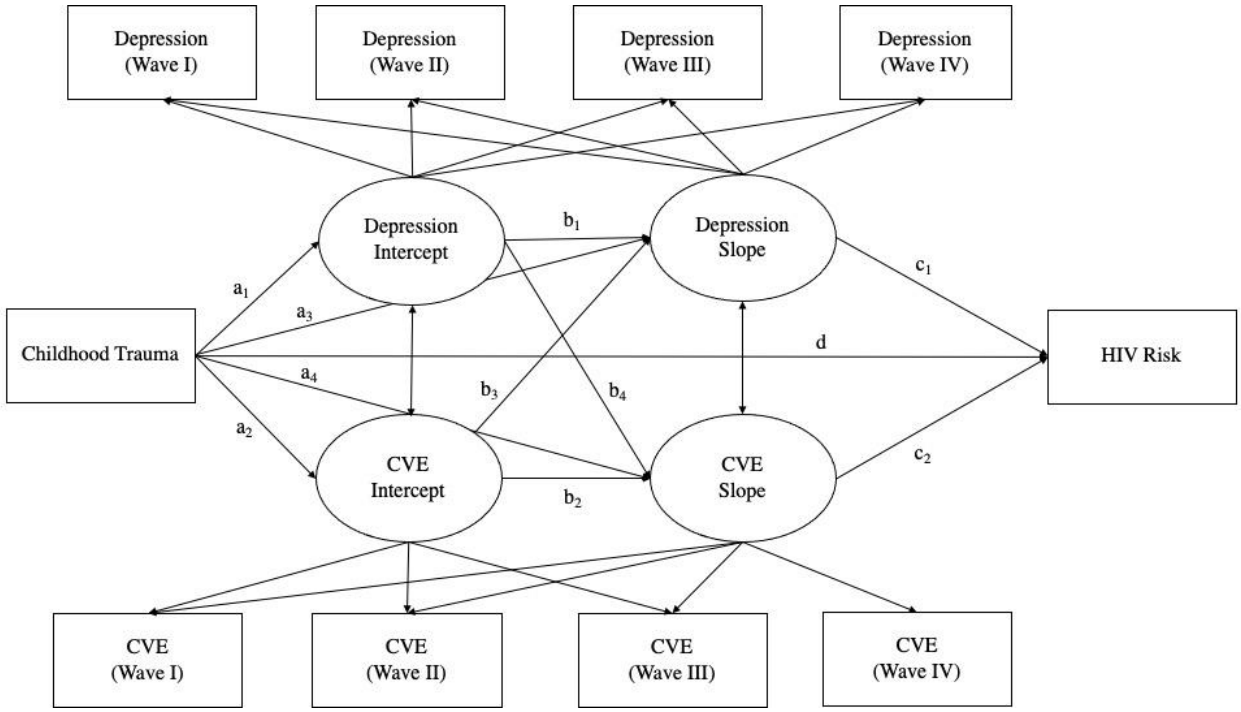

Figure 4.1 Hypothesized Parallel Process Growth Pathway Model.

Note. Lines with double arrows indicate correlation.

Methods

Unrestricted data from the National Longitudinal Study of Adolescent to Adult Health data set will be used for the analysis of this study (Harris 2009). In 1994 a cohort of youth in the United States (from 7th through 12th grade) were asked a survey of questions about their physical, mental, and sexual health as well as school and at home experiences. The study used a cluster stratified sampling technique in which students from various demographic groups, regions, and public and private schooling were represented. A total of 20,745 youth participated in the Wave I of the study. Data were also collected from the parents of the participants in the in-home sample

and from school administrators. Participants were followed up in four subsequent follow-up waves (making five waves in total), with the most recent collected in 2019. Wave II was collected in 1996 and 14,738 of the original samples returned to complete the results. Wave III was collected in 2001 with a sample of 15,197 from the first wave. Wave IV of the study was complected in 2008 and 15,701 of the original sample completed the survey (Chen & Chantala, 2014). The most recent wave, Wave V was completed in 2019. The current study used data collected during Waves I-IV of the *Add Health* study to conduct a longitudinal examination of childhood trauma, depression, and community violence exposure among Black participants (n=1249) in the weighted sample.

Measures

Independent variable

Childhood trauma is defined as any type of physical, emotional, sexual abuse or neglect experienced by the participants from another individual (Buchanan et al., 2020; Copeland et al., 2018; Mauritz et al., 2013). Questions from this measure were only asked retrospectively in Wave III of the study. Interpersonal trauma items were constructed from four items from the dataset. Items in this measure include questions about emotional abuse, sexual abuse and neglect from parents, and adult caregivers. An example item from the measure is "By the time you started 6th grade, how often had your parents or other adult care-givers left you home alone when an adult should have been with you?" Participants endorsed items on a scale from 0 = "this has never happened" to 5 = "More than 10 times". Total items were summed into an ordinal indicator of childhood trauma.

Mediator Variables

Community Violence Exposure was measured across all four waves in the data set as direct victimization of violence within the community. Participants in the study indicated if they had been exposed to violent events. An example item from this measure is "During the past 12 months, did the following happen? If so, how often? Someone pulled a knife or gun on you." Participants endorsed items from a scale from 0 = "never" to 2 = "more than once." The Cronbach's α ranged from .62 - .80 across the four waves of data.

Depressive symptoms were measured from the Center for Epidemiologic Studies Depression Scale (CES-D), with scores ranging from 0 to 18 and higher scores indicating more depressive symptoms (Radloff, 1977). This variable was measured across all waves, though items varied in some waves. For the current study, we included only the six CES-D items that were common across all four waves of data. An example item from this measure is "You could not shake off the blues, even with help from your family and your friends, during the past seven days." Participants endorsed items from a scale from 0 = "never or rarely" to 3 = most of the time or all of the time". The Cronbach's α ranged from 0.78 - 0.80 across the four waves of data.

Outcome variable

HIV/ Sexual risk behavior is the outcome variable for this study. This variable was only measured in Wave IV of the *Add Health* study. Questions about participant substance use during sex, sex with multiple partners, transactional sex, and STI diagnosis were included in a composite variable indicating any engagement in HIV risk. Items were dichotomized to 0 = "no risk" and 1 = "yes, risk was present". Participants indicating "yes" to any item was included in the "risky" category. An example item from this measure is "In the past 12 months, how many

times have you paid someone to have sex with you or has someone paid you to have sex with them?"

Data Analysis Plan

To account for the oversampling of the population in a longitudinal study such as *Add Health*, sampling weights were used to adjust for the sample size differences among racial and ethnic groups in the sample (Kaplan & Ferguson, 1999). Using MPLUS 8 software, we first examined individual growth curves for each of the two mediator variables: community violence exposure and depression. The intercept factor loadings were set to 0 at the first time-period and 1 to the last time-period, and freeing the middle two waves, since the data was collected at inconsistent time periods. Based on model fit, we decided to identify linear growth terms for both CVE and depression. Each curve was estimated assessing the regression coefficient of the intercept, slope, and variance parameters of each model. To test a latent growth curve model, the growth curves of both variables were combined into one model and the independent/predictor variable was added to create a path model for all waves of data. The full model included pathways from childhood trauma to the intercept and slope factors of CVE and Depression, as well as pathways leading to HIV risk behaviors. We assessed direct and indirect effects of the variable paths. Absolute model fit was assessed through examining the χ^2, comparative fit index (CFI), Tucker-Lewis index (TLI) and root mean square error of approximation (RMSEA).

Results

Participants ages ranged from 11 to 20 at Wave I, 13 to 22 at Wave II, 18 to 27 at Wave III, and 25 to 34 at Wave IV. Forty three percent of the study population identified as male and 57% of the study population identified as female. At Wave IV 86.1% identified as heterosexual, 7.2% identified as mostly heterosexual, but somewhat attracted to same sex, 2.2% identified as

bisexual, .8% as mostly homosexual, but somewhat attracted to either males or females, 1.5% as homosexual and 1.2% as not sexually attracted to either males or females. Descriptive statistics for the study variables are displayed in Table 1. Table 2 displays correlations among all the slope and intercept factors of depression and CVE and childhood trauma and HIV risk.

Table 4.1. Descriptives of Longitudinal Study Variables

Variable	Range	Wave 1 M(SD)	Wave 2 M(SD)	Wave 3 M(SD)	Wave 4 M(SD)
Depression	0-18	3.607 (3.236)	3.747 (3.07)	2.783 (2.891)	3.477 (3.071)
Community Violence Exposure	0-10	0.832 (1.391)	0.673 (1.374)	0.275 (.704)	0.514 (1.094)
Childhood Trauma	0-16	-	-	2.82 (3.106)	-
HIV Risk	0-1	-	-	-	0.28 (0.45)

Table 4.2. Correlation Table

	CVE Intercept	CVE Slope	Depression Intercept	Depression Slope	HIV Risk	Childhood Trauma
CVE Intercept	--					
CVE Slope	**-.972**	--				
Depression Intercept	**.372**	**-.388**	--			
Depression Slope	**-.215**	**.402**	**-.322**	--		
HIV Risk	**.257**	**-.175**	-.016	**.335**	--	
Childhood Trauma	**.176**	-.134	.035	**.265**	.119	--

Note: Bolded items indicate significant correlation $p<0.05$

Growth Trajectories

The growth trajectory of depression achieved good model fit (CFI = 0.963 and TFI = 0.927). CVE achieved an acceptable model fit with a CFI of 0.956 and marginal TLI of 0.892 (see Table 2). All slope (depression slope mean = -0.371, $p < 0.05$; CVE slope mean = -0.416, $p < 0.05$) and intercept terms (depression intercept mean= 3.431, $p < 0.05$; CVE intercept mean =

0.738, $p < 0.05$) as well as the variance of the intercept and slope terms were significant (see Table 2).

The full model examining the influence of childhood trauma on the intercept and slope factors of CVE and depression on HIV risk demonstrated good fit with the data (χ^2 of 42.029 with 45 *df* ($p \leq .001$; CFI = 0.979, TLI= 0.966, and RMSEA= 0.020).

Table 4.3. Univariate Growth Curve Models

Variable	Intercept Mean	Variance of Intercept	Slope Mean	Variance of Slope	Model Fit Indices
Depression	3.431*	4.70*	-0.371*	1.34*	X2=29.3*; CFI=0.963; TFI=0.927; RMSEA=.074
Community Violence Exposure	0.738*	1.139*	-0.416*	0.651*	X2=28.656*. CFI= 0.956; TLI= 0.892, RMSEA= 0.073

Note. CFI – Comparative fit index; TLI- Tucker-Lewis Index, RMSEA- Root mean square error approximation
*p<0.05

Direct effects:

Findings for direct effects are displayed in figure 2. We found that childhood trauma was a significant predictor of the linear slope of depression ($a_3 \beta = 0.304$; SE= 0.087 p=0.001) and the intercept of community violence exposure ($a_2 \beta = 0.176$; SE=0.055; p= 0.001). However, we did not find childhood trauma to be directly associated with the slope of community violence exposure ($a_4 \beta = 0.037$; SE=0.037; p= 0.322) or the intercept of depression ($a_1 \beta = 0.035$; SE=0.063; p= 0.576).

As for the growth curves, we found the intercept of CVE to be a significant and negative predictor of the slope of CVE (b_2 β = -0.967; SE=0.022; p<0.001). However, the intercept of depression was not a significant predictor of the slope of CVE (b_4 β = -0.029; SE=0.034 p= 0.393). We also found the intercept of CVE to be a significant negative predictor of the slope of depression (b_3 β = -0.029; SE=0.022; p< 0.001). Finally, the intercept of depression was a significant negative predictor of the slope of depression (b_1 β = -0.271; SE=0.098 p= 0.006).

The slope of depression was a significant negative predictor of HIV risk (c_1 β = -0.390 SE=0.081; p<0.001) while the slope of CVE was a significant positive predictor of HIV risk (c_2 β = 0.510 SE=0.150; p= 0.001). Childhood trauma, however, was not a significant predictor of HIV risk (d β = -0.069 SE=0.096; p= 0.474).

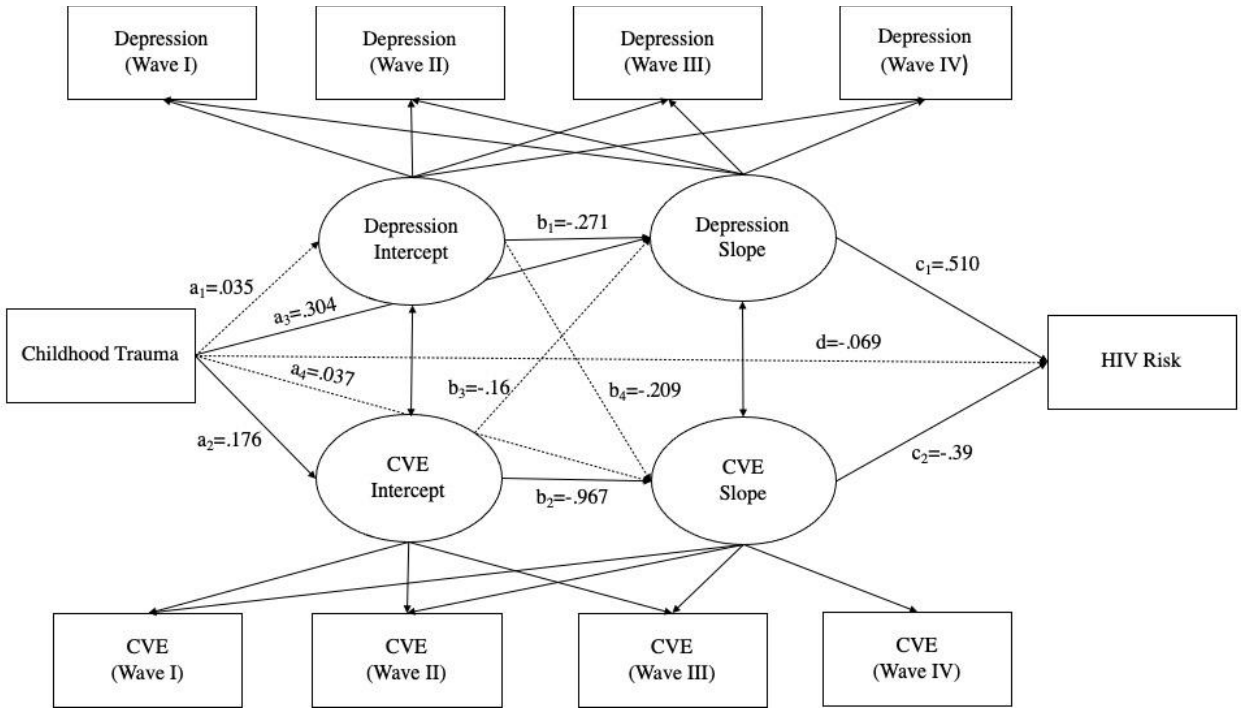

Figure 4.2. Direct Effects of Study Variables

Note. Solid lines indicate significant pathways at p<0.05

Indirect effects:

Findings for the indirect effect paths are displayed in Figure 3. Overall, we found a significant total indirect effect of the full model, from childhood trauma through the slopes and intercepts of CVE and depression to HIV risk ($\beta = 0.060$; SE=0.026 $p= 0.022$). As for specific indirect effects, there was a significant indirect effect of childhood trauma through the slope of depression to HIV risk (a_3c_1 $\beta = 0.050$; SE=0.025 $p= 0.044$). There was also a significant indirect effect of childhood trauma through the slope and intercept of CVE to HIV risk ($a_2b_2c_2$ $\beta = 0.021$; SE=0.009 $p= 0.015$).

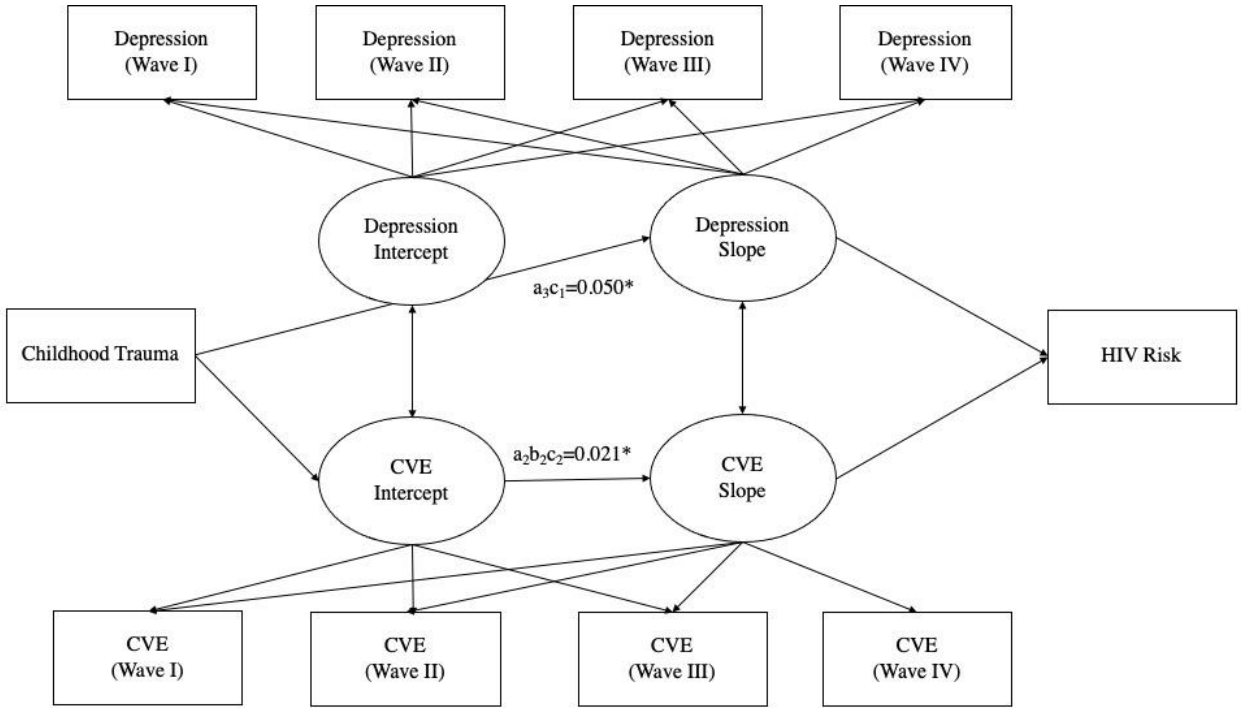

Figure 4.3: Specific Significant Indirect effects

Note. * p<0.05

Discussion

The purpose of the study was to examine the pathway of childhood trauma to HIV risk through the change trajectories of community violence exposure and depression. This model is innovative and significant since there is limited longitudinal research exploring these factors. Further, there is little longitudinal research on these variables among under-represented groups, specifically Black adolescents and emerging adults. Adolescence and emerging adulthood are critical periods throughout the life course. Exploring individual and social influences during this period is important to characterize challenges and changes to significant developmental, intellectual, and emotional outcomes (Wood et al., 2018). Our study had three hypotheses: 1) Longitudinal trajectories of community violence exposure and depression will have a direct effect on HIV risk at Wave IV of the study, 2) Traumatic events during childhood will indirectly affect HIV risk through the longitudinal trajectories of community violence exposure and depression and 3) Childhood trauma will directly affect HIV risk.

We found that depression and CVE slopes increased together overtime among the population. As for direct effects, we found a link between the slope of community violence exposure and HIV risk. We also found a direct effect of the slope of depression and HIV/sexual risk. Our findings support previous research linking both community violence exposure and depression to HIV risk among the population (Jackson et al., 2015; Voisin et al., 2014). Our findings also showed that childhood trauma in adolescence contributes to depression across emerging adulthood which may lead to HIV risk behaviors in adulthood. These findings are in line with research that suggests that depression is a potential mediator between childhood trauma and HIV risk (Chartier, Walker, & Naimark, 2009).

We also found evidence that the change trajectories of community violence exposure mediate the relationship of childhood trauma to HIV risk. This finding adds to our understanding of the influence of multiple traumatic experiences on risk behaviors over time. This extends prior limited research that has found that increased trauma during a critical developmental period such as adolescence can have a negative effect on sexual health throughout emerging adulthood (London, Quinn, Scheidell, Frueh, & Khan, 2017; H. Wilson et al., 2012). More research is needed to understand that with the added effects of multiple trauma experiences, sexual risk is heightened.

Contrary to our expectations, we did not find a direct association between childhood trauma and HIV risk. This finding appears inconsistent with results from other research on the association between childhood trauma and HIV risk (Bornovalova et al., 2008; Oshri, Tubman, & Burnette, 2012; H. W. Wilson et al., 2015). A few studies that have reported diffident or no associations between childhood trauma, specifically sexual abuse to HIV risk behaviors (London et al., 2017; H. W. Wilson et al., 2012). This could explain that for some, sexual abuse can lead to sexual aversion and problems with sexual functioning which ultimately decreases risk for HIV. However, our research underscores the importance of examining underlying contextual and psychosocial factors over time.

Limitations

This study is not without limitations. First, the data is self-reported, which may result in recall bias, under-reporting, and selecting socially desirable responses. Research exploring sensitive and stigmatizing issues can lead to self-reporting biases, especially when measured in the adolescent period (Althubaiti, 2016). The measure of childhood trauma may have failed to capture participants' experiences of mistreatment in childhood due to it being measured

retrospectively, and there is no data among the population to validate the reporting of these experiences. It was, however, in the best interest of the participants to answer questions regarding childhood trauma at a later age. Further, research has shown no major difference in prospective and retrospective maltreatment recall (Reuben et al., 2016; Scott, McLaughlin, Smith, & Ellis, 2012). In addition, CVE was inconsistently measured in this study, limiting variability in items capturing indirect and direct violence experiences. This is a common limitation across research on CVE in general as there is a lack of consistent data collection or general measures for CVE (T. M. Kennedy & Ceballo, 2014). Finally, the current study focused only on Black participants in the *Add Health* data set; thus, findings may not be generalizable beyond this population.

Implications

HIV risk behavior was assessed at Wave IV of the *Add Health* study, which is temporally distant from childhood trauma experiences. Further, participants experienced various other types of stress and violence in the community, which was significantly related to HIV risk. Thus, a summative or recency effect may be operating to mask the effects of childhood trauma exposure and is something for future research to examine. Future research could also explore the direct and indirect effects of various forms of CVE on mental and sexual health, including HIV risk, and how different forms of adverse childhood experiences may impact these relationships. Clearly, more research is needed to understand the long-term effects of traumatic experiences on HIV risk behaviors.

These findings can contribute to HIV prevention strategies and interventions. There is a need for culturally competent HIV risk reduction programs that focus on trauma experiences such as maltreatment by parents and guardians and violence exposure in the community.

Research examining the underlying processes, considering both mental-health related factors and social context, can aid in the development of these interventions. These intervention efforts can improve social, cognitive, and emotional functioning among this population as they transition to adulthood.

To our knowledge, this study is the first to examine the impact of multiple trauma experiences and depression on HIV risk behaviors from adolescence to adulthood among the Black population. The findings of this study provide added understanding to the relationships between childhood trauma, depression, community violence exposure, and HIV/STI risk behaviors among Black Americans. In addition, these findings support the need for trauma-informed HIV prevention and intervention strategies, such as promoting adaptive coping skills and safer sex practices among this population.

CHAPTER 5

EXPLORING PATHWAYS LINKING COMMUNITY VIOLENCE EXPOSURE AND PERCEIVED DISCRIMINATION TO HIV RISK AMONG BLACK ADULTS

[1]Gilliam, S.M. To be submitted to Journal of Racial and Ethnic Health Disparities

Abstract

Black Americans have an elevated risk of HIV compared to any other racial and ethnic group in the United States. Community violence exposure, perceived discrimination, and mental health problems have been linked to HIV risk among the population. We used cross-sectional data from Wave IV of the National Longitudinal Study of Adolescent to Adult Health (n=1249). Structural equation modeling was used to test a multiple mediation pathway model to examine the pathway from community violence exposure and perceived discrimination to HIV risk through perceived stress and discrimination. Overall, there was no indirect effect of the full model. Depression and stress did not mediate the relationships between community violence exposure, perceived discrimination and HIV risk Direct effects were found between community violence exposure and depression, stress, and HIV risk. Direct effects were also found between perceived discrimination and depression, stress, and HIV risk. This study provides evidence for the need of more research conceptualizing the processes underlying HIV risk behavior among Black Americans and the design of HIV prevention and intervention strategies that consider social stressors such as discrimination and community violence exposure.

Introduction

HIV continues to be one of the biggest public health issues for Black Americans, as Black adults male up 13% of the United States population, and account for over 40% of new HIV diagnoses in the U.S. (CDC, 2021). According to the Center for Disease Control and Prevention (CDC), there was a 7% increase in HIV diagnoses in Black adults ages 25-34 from 2014 to 2018, which is the highest amount of increase among all age groups in the Black population (CDC, 2021). Sex with multiple partners, inconsistent condom use, transactional sex, alcohol, and drug use during sex, and STI diagnosis have been found to be contributing factors to elevated HIV rates (Green et al., 2017; Jolly et al., 2016; I. W. Metzger, Cooper, Ritchwood, Onyeuku, & Griffin, 2017; L. Smith et al., 2019).

Social stressors such as discrimination and community violence exposure (CVE) have been linked to poor mental health outcomes (Britt-Spells, Slebodnik, Sands, & Rollock, 2018; Hotton, Quinn, Schneider, & Voisin, 2019; McDonald & Richmond, 2008; I. W. Metzger et al., 2017; Pierre, Burnside, & Gaylord-Harden, 2020; A. L. Tobler et al., 2013). The psychological symptoms resulting from discrimination and community violence exposure are associated with higher rates of HIV/AIDS and STIs (Voisin, Patel, et al., 2016). Community violence exposure (CVE) is defined as direct victimization, witnessing, and/or hearing about someone else's exposure or victimization within a community (Fowler et al., 2009; Lee, 2012; Richters & Saltzman, 1990). There is a plethora of research examining the effect of CVE on the mental and sexual health among Black adolescents (Voisin et al., 2015; Voisin & Neilands, 2010; H. W. Wilson et al., 2012). A study among a sample of 638 Black adolescents found that adolescents who reported higher rates of CVE were more likely to experience poor mental health outcomes, drug use, and risky sexual behaviors including alcohol use during sex, lack of condom use,

unplanned pregnancy, and early sexual debut (Voisin, Patel, et al., 2016). However, as many of these studies were conducted among Black adolescents, more research is needed to examine the association between community violence exposure and HIV risk among Black young adults (ages 18 to 25?).

The influence of perceived discrimination, and specifically racial discrimination, on various health outcomes such as mental, physiological, and sexual health is well documented (Alhusen, Bower, Epstein, & Sharps, 2016; Assari et al., 2018; Benner et al., 2018; Britt-Spells et al., 2018; Seaton, 2010; R. M. Sellers, Caldwell, Schmeelk-Cone, & Zimmerman, 2003). Discrimination is defined as unjust/unfair distinctions and treatments based on personal characteristics such as race, gender, sexual orientation, religion, age, disability, etc. (Fiske, 1998). Black Americans have a high burden of experiencing discrimination (Bleich et al., 2019; R. L. Simons et al., 2018). One meta-analysis of 12 studies that examined the relationship between depression and perceived discrimination among Black men in the U.S. found that more experiences of perceived discrimination were linked to higher levels of depressive symptoms (Britt-Spells et al., 2018).

Few studies have examined the mechanisms underlying the association between perceived discrimination and sexual risk behaviors among Black adults, specifically Black heterosexual men (L. Bowleg et al., 2013; Hicks & Kogan, 2019; Reed et al., 2013; Roberts et al., 2012). Among these studies, experiences of racial discrimination have been linked with HIV risk behaviors, and posttraumatic stress strengthens the relationship between discrimination and sexual risk behaviors (Bowleg et al., 2014). However, research is needed to understand the processes that may influence the relationship between social and environmental factors and HIV risk behaviors.

The association between mental health (i.e., depression and stress) and HIV risk behaviors is well documented. Perceived stress has been hypothesized to increase susceptibility of diseases such as adverse sexual and reproductive health outcomes as well as mental health problems, such as depression (Cohen et al., 2007). Previous research has also found depressive symptomology to be related to specific risk behaviors such as inconsistent condom use (Brown et al., 2006; Mazzaferro et al., 2006; Seth et al., 2009), multiple sex partners (Brawner et al., 2012; Mazzaferro et al., 2006; Seth et al., 2011) and lack of sexual communication (Seth et al., 2009).

To inform HIV prevention efforts, it is important to understand the pathways through which social factors may lead to HIV risk among Black adults. Gaps exist in research examining the influence of psychosocial factors such as perceived discrimination and community violence exposure on the engagement of sexual behaviors and risk taking among Black adults. This study investigated depression and stress as mediators between community violence exposure, perceived discrimination, and HIV risk among Black adults in a national cohort. Drawing from previous research we developed a hypothesized conceptual model in which community violence exposure and perceived discrimination served as predictor variables and depression and stress served as mediators leading to HIV risk. There are four hypotheses for this study: 1) CVE will be directly associated with HIV risk, 2) Perceived discrimination will be directly associated with HIV risk, 3) CVE will be indirectly associated with HIV risk through depression and perceived stress and 3) Perceived discrimination will be indirectly associated with HIV risk through depression and perceived stress. The hypothesized model is displayed in figure 1.

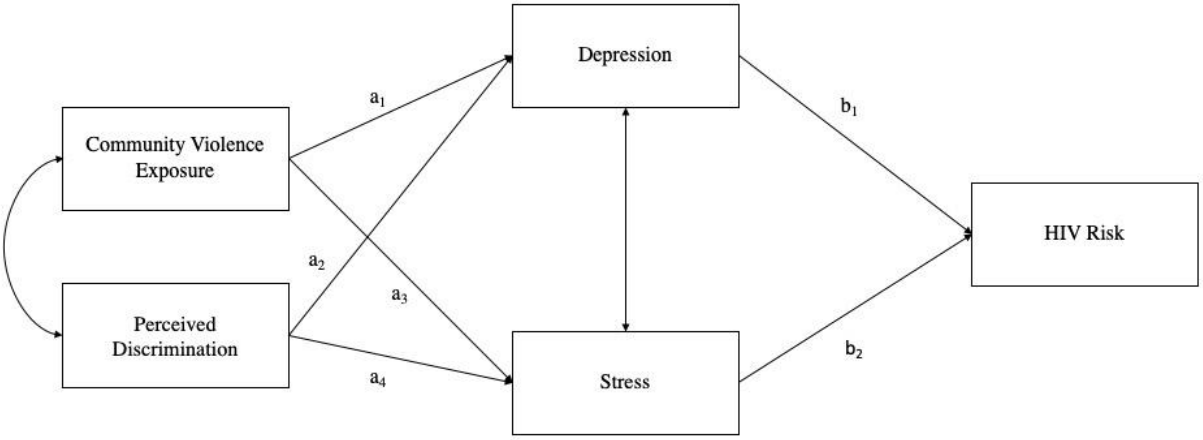

Figure 5.1. A conceptual model of the hypothesized multiple mediation model of the relationship between community violence exposure, perceived discrimination, and HIV risk Note. Double arrows depict correlations between variables

Methods

Sample

Unrestricted data from the National Longitudinal Study of Adolescent to Adult Health (*Add Health*) data set will be used for the analysis of this study (Harris 2009). In 1994 a cohort of youth in the United States (from 7th through 12th grade) were asked a survey of questions about their physical, mental, sexual health as well as school and at home experiences. The study used a cluster stratified sampling technique in which students from various demographic groups, regions, and public and private schooling were represented. A total of 20,745 youth participated in the first wave of the study. Data were also collected from the parents of the participants in the in-home sample and from school administrators. Participants were followed up in four follow-up waves, with the most recent data collected in 2019 (Lang et al., 1997). The most recent wave, Wave V was completed in 2019, though public use data for Wave V has not yet been released.

This study used cross-sectional data that was collected during Wave IV of the study. The total sample comprised of 1249 Black adults between the ages of 25 and 34 years old

Independent variables

Community Violence Exposure was measured as direct violence victimization within the community. A survey pertaining to CVE was administered allowing participants to indicate if they had been exposed to violent events in the past 12 months. Five items were summed into a total. An example item from this measure is "During the past 12 months, did the following happen? If so, how often? Someone pulled a knife or gun on you." Participant endorsed items "never, once or more than once." The Cronbach's $\alpha = 0.79$ for the study.

Perceived Discrimination was measured using a single question, "In your day-to-day life, how often do you feel you are treated with less respect or courtesy than other people?" Responses for this question include, "Never, rarely, sometimes, and often"

Mediating Variables

Depressive symptoms were measured from the Center for Epidemiologic Studies Depression Scale (CES-D), with scores ranging from 0 to 30 and higher scores indicating more depressive symptoms (Radloff, 1977). Ten items were summed into a total. An example item from this measure is "How often was the following true during the past week? It was hard to get started doing things." Items indicating positive symptoms were reverse coded before summation of the variable. Participants endorsed items from a scale from 0 = "never or rarely" to 3 = "most of the time or all of the time". The Cronbach's $\alpha = 0.71$ in this study.

Perceived stress was measured though a shortened (6-item) version of the Cohen Perceived Stress Scale (Cohen, 1988), which measures stressful life events through questions such as "In the past week, how often did they feel… "lonely", "people disliked you", and "too

tired to do things". Participants endorsed items from 0 = "never" to 4 = "very often", scale ranges from 0 to 24 in which higher scores indicated higher levels of perceived stress. The Cronbach's $\alpha = 0.66$ in this study.

Outcome Variable

HIV/ Sexual risk behavior is the outcome variable for this study. Items measuring alcohol use during sex, sex with multiple partners, STI diagnosis, and transactional sex were included in the current analysis to construct a dichotomous variable indicating whether the participant had or had not engaged in HIV risk behavior. Participants indicating "yes" on any of these items was included in the "risky" category. An example item from this measure is "How often have you been under the influence of alcohol when you could have gotten yourself or others hurt, or put yourself or others at risk, including unprotected sex?"

Ethnicity was measured using a single self-reported measure of ethnic identity from the Wave I survey. Participants who endorsed the ethnic category of African American were included in the current data analysis.

Data Analysis Plan

A pathway analysis was used to analyze the data. To account for the oversampling of the population in a longitudinal study such as *Add Health*, sampling weights for Wave IV of the study was used to adjust for the sample size differences among racial and ethnic groups in the sample (Kaplan & Ferguson, 1999). The data was examined for outliers, skewness, and kurtosis in which variables that are non-normally distributed will be transformed using IBM SPSS 27 software. Using MPLUS 8 bivariate correlations and a mediation path analysis were conducted to examine the direct and indirect (through depression and perceived stress) pathways to HIV risk behaviors. The mediation analysis consisted of two pathways. The a paths included the

assessment of the effect of the independent variables (community violence exposure and perceived discrimination) the mediators (stress and depression). The b paths included the assessment of the effect of mediators (stress and depression) on HIV risk. For the c' and d' paths, we regressed perceived discrimination, CVE, and the mediators onto HIV risk to assess the indirect effect of the independent variables on the outcome variable through the mediators.

Dummy coding was used to account for all missing data for each variable in the hypothesized model. Model fit was not determined since the outcome was dichotomous. Akaike's Information Criteria (AIC) and Bayesian Information Criteria (BIC) are as reported AIC=20666.001, BIC= 20763.473.

Results

A total of 1249 participants were included in the analyzed sample. Participants' ages ranged from 25-34. Forty three percent of the study population identified as male and 57% of the study population identified as female. Table 1 displays descriptive data and bivariate correlations of the variables included in the path model. Perceived discrimination was not associated with community violence exposure. All other correlations were statistically significant ($p < 0.05$).

Path analysis

Bivariate correlations did not exceed 0.70, therefore multicollinearity was not detected. There was no violation of assumption of normality within the data as skewness of all variables did not exceed 3 and kurtosis of variables were less than 7. Path coefficients were calculated using logistic regression. We found only direct effects between perceived discrimination, community violence exposure and HIV risk. Community violence exposure was found to be statistically significant and a positive predictor of stress ($a1\beta = 0.123$ $p < 0.001$) and depression ($a2\beta = 0.072$; $p < 0.05$). CVE was also found to be a statistically significant positive predictor of

Table 5.1. Descriptive information and bivariate correlations

	Mean	SD	Scale	Range	HIV risk	Community Violence Exposure	Perceived Discrimination	Depression	Stress
HIV risk	0.28	0.45	0-1	0-1	--				
Community Violence Exposure	0.43	1.03	0-5	0-5	**.144**	--			
Perceived Discrimination	1.01	0.86	0-3	0-3	**.071**	.013	--		
Depression	7.68	3.93	0-27	3-27	**.014**	**.077**	**.357**	--	
Stress	5.22	2.92	0-16	0-15	**.093**	**.094**	**.304**	**.618**	--

HIV risk (c β = 0.254; $p < 0.001$). Perceived discrimination was found to be statistically significant and a positive predictor of depression (a3 β = 0.358; $p < 0.001$), and stress (a4 β = 0.299; $p < 0.001$). Perceived discrimination was also found to be a positive predictor of HIV risk (d β = 0.241; $p = 0.001$). Depression (b1 β = 0.039; p=0.372) and stress (b2 β = 0.032; p=0.482) were not statistically significant predictors of HIV risk. The regression coefficients for community violence exposure (β = 0.25) and perceived discrimination (β = 0.24) on HIV risk both increased to (β = 0.27) and (β = 0.29) when the two mediators were controlled for.

No significant indirect pathways were identified. Exposure to community violence and was not associated with HIV risk through depression (a2b1 β = 0.005; $p = 0.412$) or stress (a1b2 β = 0.007; p =0.491). Similarly, perceived discrimination was not associated with HIV risk through depression (a3b1 β = 0.030; $p = 0.369$) or stress (a4b1 β = 0.020; p =0.492).

Table 5.2. Path Coefficients on Final Model

Outcome variable	R2	Predictor variables	Unstandardized coefficient estimate	SE	P-value	Standardized coefficient estimate
HIV risk behaviors	0.045	Community violence exposure	0.254	3.994	≤0.001	0.150
		Perceived discrimination	0.241	3.254	≤0.001	0.112
		Stress	0.20	0.702	>0.001	0.032
		Depression	0.018	0.892	>0.001	0.039

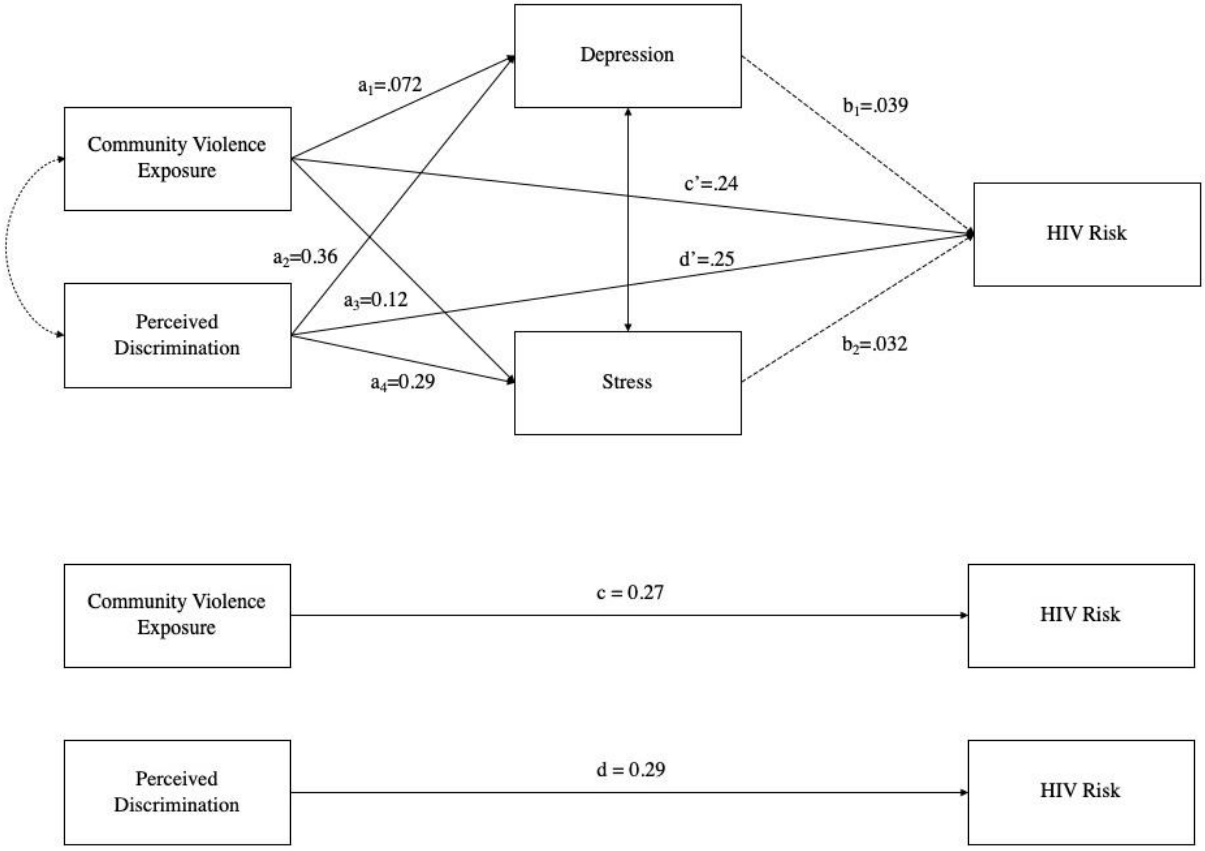

Figure 5.2. Standardized path coefficients for full model

Note. Solid lines indicate significant paths, dotted lines indicate non-significant paths. The coefficients c and d is the total effect between trauma and HIV risk and c' and d' is the direct effect of trauma on HIV risk, controlling for the three mediators.

Discussion

The purpose of the current study was to examine the mediating role of stress and depression on the relationship between community violence exposure, perceived discrimination, and HIV risk. The hypothesized model linking CVE, perceived discrimination, and HIV risk was not supported for the population of interest. Despite these findings, however, the study did find

that perceived discrimination and community violence exposure were directly associated with depression, stress, and HIV risk.

Thus, our findings supported current research that shows that social factors, such as community violence exposure are associated with HIV risk behaviors. This study extends current literature linking community violence exposure and sexual risk behaviors among the Black population (Voisin et al., 2015; Voisin et al., 2018; Voisin et al., 2014; H. Wilson et al., 2015; H. Wilson et al., 2012). Most research among this group considering community violence exposure has been among youth. More research is needed to understand neighborhood and contextual factors that may contribute to HIV risk among Black adults.

Regarding experiences of discrimination, we found that perceived discrimination was related to HIV risk behaviors. This is in line with studies that have examined discrimination, specifically race-related discrimination, and HIV risk behavior. For example, one study among a population of young Black men found racial discrimination predicted emotional distress which was associated with substance use and reduced self-regulation, which were both predictors of sexual risk behaviors (Hicks & Kogan, 2019). These findings have implications for HIV and sexual risk prevention efforts to consider social and environmental factors and inequities such as experiences of violence and discrimination.

We did not find support for indirect (mediating) effects of depression or stress on the relationships between CVE and perceived discrimination with HIV risk. However, it is still important to consider the roles of CVE and perceived discrimination on mental health variables such as stress and depression. Our findings are consistent with previous research that has found racial discrimination to be associated with emotional distress among young Black men (Britt-Spells et al., 2018; Hicks & Kogan, 2019). Similarly, extant research has also demonstrated the

role of CVE on mental health outcomes (Mohammad, Shapiro, Wainwright, & Carter, 2015; Pierre et al., 2020; Woods-Jaeger et al., 2019). For example, in a study examining the effects of family and community violence on adolescent mental health, it was shown that exposure to violence significantly predicted depression, anxiety, and post-traumatic stress disorder (PTSD) (Sargent, Zahniser, Gaylord-Harden, Morency, & Jenkins, 2020).

Limitations

The study is not without limitations. This study data is cross-sectional, thus temporal and causal relationships cannot be determined. The current analysis focused only on data collected from Black adults from within a national cohort consisted, thus, the results may not be generalizable beyond this population. Future longitudinal studies ae needed to further understand the effects of community violence exposure, perceived discrimination, depression, and stress on HIV risk. The data from this study was collected in 2008-2009. Given advancements in HIV prevention, mental health research and stigma reduction, the results may not reflect the current HIV epidemic. Further, the study measures were not developed specifically for this population of Black Americans. More studies developing and adapting measures specifically to assess mental health, social factors, and risk-related behaviors unique to this population are needed. Lastly, the study consisted of self-report data which may result in under-reporting of risks and over-reporting of socially desirable responses.

Implications

Despite limitations, the findings of this study have implications for culturally tailored and appropriate HIV prevention intervention and strategies. There is a need to integrate trauma-informed approaches that consider the lived experiences of community violence exposure and

perceived discrimination among Black youth and adults. HIV strategies that address alcohol use, transactional sex, and sex with multiple partners are needed to improve health outcomes.

As for research implications, more research is needed among Black adults. Majority of studies focus on adolescent health and the impact of social issues on their development and functioning, however it is important to study the underlying mechanisms to HIV risk among emerging adults, as they are also disproportionately impacted by HIV compared to other races and ethnicities. Racial discrimination is heavily studied among Black Americans, other experiences of discrimination such as colorism, ageism, sexism, and classism are important experiences to consider when investigating social influences on mental health. Further understanding the intersectional experiences of Black Americans can aid in multifaceted and culturally competent public health preventions and strategies.

Conclusion

The current study suggests that perceived discrimination and community violence exposure may be important to understanding HIV risk behaviors among Black emerging adults. Evidence from our study found a direct relationship between CVE and HIV risk as well as a direct relationship between perceived discrimination and HIV risk. CVE and perceived discrimination were also predictors of stress and depression. We did not find any indirect relationships between CVE, perceived discrimination and HIV risk through depression and stress. The findings from this study suggest the need for public health programs to address mental and sexual health issues stemming from social-contextual factors such as violence exposure and discrimination. Research exploring processes that may lead to HIV risk through violence exposure and discrimination are needed, especially among Black emerging adults.

CHAPTER 6

DISCUSSION

Adolescence is an important period in the life course. Individual, environmental, and social factors can impact emotional, cognitive, and neurodevelopmental mechanisms. With transitioning into adulthood, the added effects of traumatic experiences can have an impact on human functioning and responses to stress. These can lead to adopting risk behavior, specifically HIV and sexual risk behavior. Black adolescents and adults are at increased risk of HIV/AIDS, and it is crucial to investigate the mechanisms underlying risk behavior among the population. Mental health problems such as depression and anxiety, social factors such as community violence exposure and discrimination, and traumatic experiences such as childhood trauma have been linked to HIV risk behavior. This study explores the syndemic effect of these factors on HIV risk behavior, which carries public health research, policy, and practice implications.

Study aims

The purpose of the study was to examine the processes underlying the association between various forms of trauma and HIV risk behaviors of Black adolescents and emerging adults. Findings from the study are consistent with current research about Black adolescents and adults' HIV risk behaviors(Brawner et al., 2018; Hicks & Kogan, 2019; M. Stock et al., 2013; Werner et al., 2018). Results from this study indicate that community violence exposure, depression, perceived discrimination, and childhood trauma are associated with HIV risk behaviors among this population.

Study Aim 1 examined the longitudinal impact of depression and community violence exposure from adolescence to adulthood among the population. Childhood trauma was a predictor variable, and the change trajectories of depression and community violence exposure were the mediators to HIV risk behaviors. Significant findings of the study included a) an indirect pathway from childhood trauma to HIV risk through the intercepts and slopes of community violence exposure and depression, b) specific indirect effects from childhood trauma to the intercept and slope of community violence exposure to HIV risk, c) specific indirect effect from childhood trauma to the slope of depression to HIV risk and d) no direct effect of childhood trauma as a sole predictor of HIV risk.

Study Aim 2 examined cross-sectional data from Wave IV of the *Add Health* dataset to examine the pathway from perceived discrimination and community violence exposure to HIV risk through depression and stress. Major findings included: a) There was a positive direct effect of community violence exposure to HIV risk, b) There was a positive direct effect of perceived discrimination to HIV risk, c) There was no indirect effect from perceived discrimination to HIV risk through depression and stress, and d) there was no indirect effect from CVE to HIV risk through depression and stress.

Limitations

This study is not without limitations. Survey data is self-reported, which may result in recall bias, under-reporting, and selecting socially desirable responses. In addition, there are limitations on how various variables were measured. First, childhood trauma was measured retrospectively; thus, this measure may have failed to capture the true experiences of mistreatment during childhood. However, due to the ages of the participants, it was best to capture this information at a later age. Second, community violence exposure was inconsistently

measured, limiting the measurement of experiences of indirect and direct, and vicarious violence exposure. To date, there are few scales measuring community violence exposure due to the complex and lack of uniform definition of community violence across research. Events that are considered community violence are not of similar or equal implication. For instance, hearing about bullying in school does not hold the same significance as being a victim of gun violence. The few scales measuring CVE have created a composite score of items through the summation of the severity of events (Suglia, Ryan, & Wright, 2008). This presents as a limitation due to the lack of characterization of severity, proximity, and the chronic nature of CVE. Third, using one scale to determine depressive symptoms among different racial/ethnic, gender, and sexual minority groups could be problematic in reporting accurate results, especially when cultural values, attitudes, and language were not a consideration during the development of the scale. The internal psychometric properties and factor structure of the CES-D could be a major limitation in addressing symptomology among various groups. It is important to integrate measurement in public health research to control for biases in item reporting. It is also important to consider intersectionality in measurement and survey research because contextual identity plays a significant role in the influence of endorsement on items in depression scales.

The latest results of this study were collected in 2008. in the past fourteen years, there has been further development in sexual health and HIV research, practice, and policy. Therefore, there may be changes in how often and if people among this population engage in sexual risk behaviors. However, current epidemiological data shows that Black youth and adults are disproportionately impacted by HIV (CDC, 2019).

Finally, the study focused only on Black participants in the *Add Health* data set. Thus, findings may not be generalizable beyond this population.

Implications

The findings of this study have implications for public health research, practice, and policy. This study was a formative examination of possible mental health and trauma experiences that are associated with HIV risk behaviors. There is a need for more longitudinal research to assess not only risk behaviors, but also protective factors among this population. Qualitative methods such as focus groups and interviews could also capture the lived experiences of this group and can also be innovative in telling the stories of Black youth, which is rarely studied in the field. Research is needed in this context as historically oppressed groups are often underrepresented and understudied in research

Community violence exposure does not have a uniform definition or measurement across studies. Considering the retrospective nature of CVE and survey methodology in general, the development of a scale testing CVE longitudinally could help capture the current and past experiences of CVE (Sharon F Lambert, Copeland-Linder, & Ialongo, 2008; Ramchand, Marshall, Schell, & Jaycox, 2008). To make causal inferences between CVE and other health outcomes, determining at what point and what violent event may impact on one's health or behavior. The development of one conceptual definition of CVE and the development of a scale of CVE should be driven by the lived experiences of a community. Therefore, a mixed-methods approach could potentially be effective in developing valid and culturally competent measures for these variables. As research continues to understand CVE and its relation to health disparities, it is important to conceptualize CVE and understand the phenom contextually.

Findings from the study indicate the need for trauma-informed HIV intervention, prevention, and risk reduction strategies among this population. Intervention strategies that integrate mental and sexual health could help reduce risk behaviors, and maladaptive coping strategies.

Specifically, among Black adolescents, integrating constructs such as racial socialization ("the process of communicating messages and behavior to children to reinforce their sense of identity given the possibility and reality that their experiences may include racially hostile encounters" (Stevenson, 1995)), cultural orientation (the vitalistic approach to life, the belief in governing powers that are non-observable and nonmaterial and the belief in a greater power than oneself (Alfred Boykin & Ellison, 1995; A Boykin & Toms, 1985)), and racial identity ("the developmental and cultural beliefs about the significance of race: one's perception about being Black American, other's perceptions about Black Americans and the beliefs attitudes and opinions on how Black Americans should act and behave." (R. Sellers et al., 1998)) can aid with developmental growth and healthier coping behaviors among this group. Integrating known protective processes into a well-known public health theory can bring about culturally sensitive and relevant prevention programming. Culturally sensitive and relevant prevention programming can ultimately improve health outcomes and increase positive development among adolescents (I. Metzger, Cooper, Zarrett, & Flory, 2013). Culture should be integrated at all levels of programming, especially at the theoretical level can ultimately help with understanding processes that may or may not induce change.

Policy implications include the need for an understanding of HIV risk and the trauma experiences that play a role in developing these behaviors. Funding towards comprehensive sex education, trauma-informed HIV strategies, and innovative HIV testing, care and linkage could be of benefit to populations that are disproportionately impacted by HIV. Culturally, the impact of community violence exposure and discrimination are social-cultural factors resulting from institutional and systemic racism. Addressing racism as a public health issue, a fundamental

cause of health disparities, health inequalities, and inequities, can be the beginning of reducing adverse health outcomes of Black and historically disadvantaged groups.

Overall, Black adolescents are impacted by major health disparities. The increasing rates of HIV and STIs are of major concern among this group. Understanding the underlying mechanisms causing the disproportionate rates of sexual health outcomes can help alleviate these disparities. Opportunities to develop culturally relevant and trauma-informed interventions are important and needed.

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