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The Intersection of Social Stress, Mental Well-Being, and Sexual Health Among Black Women
in Emerging Adulthood

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of
Philosophy at Virginia Commonwealth University School of Medicine

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“For I can do everything through Christ, who gives me strength” –Philippians 4:13

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Abstract

With an estimated 37,000 new HIV infections each year, HIV continues to be a major public health concern. HIV affects some populations more than others. Young Black women, in particular, are disproportionately affected by HIV. While being a woman does not typically increase a person's HIV risk, being Black *and* being a woman does.

Data indicate that individual-level factors do not fully address the differences in HIV and STIs between Black emerging adult women and their White counterparts. Thus, it is critical to better understand contextual factors such as social stress and mental-wellbeing which might better account for these disparities. To that end, the current study sought to answer the following questions: 1) Do depressive symptoms mediate the relationship between social stress (as measured by financial strain, perceived discrimination, and perceived neighborhood disorder) and sexual risk (as measured by condom use and number of partners)? 2) Does hope moderate the mediated relationship between social stress and sexual risk behaviors?

Path analysis was used to examine the relationship between social stress, depressive symptomology, hope, and sexual risk among Black women during emerging adulthood. Results showed discrimination significantly predicted depressive symptoms, whereas financial strain and perceived neighborhood disorder did not. Depressive symptoms significantly predicted condom use and number of partners. Depressive symptoms mediated the relationship between social stress and sexual risk behaviors. Consequently, hope did not moderate the relationship between social risk behaviors, depressive symptoms, and sexual risk behaviors.

Clinicians caring for Black women in emerging adulthood should be aware of the systemic, interpersonal, and cultural factors that contribute to the mental health of clients.

Cultural competence training and education is imperative for anyone who engages with this

population regularly including clinicians, university staff, administrators, and professors.

Interventions and treatment should focus on healthy coping methods and education surrounding mental and sexual health.

The Intersection of Social Stress, Mental Well-Being, and Sexual Health Among Black Women in Emerging Adulthood

After three decades, HIV continues to be a leading public health threat. There are an estimated 37,000 new infections every year (CDC, 2020). HIV, which stands for human immunodeficiency virus, is a virus that weakens a person's immune system. If left untreated, a person becomes more susceptible to other viruses, infections, and diseases. While HIV can be transmitted a number of ways, it is most commonly transmitted sexually or through intravenous drug use (CDC, 2020). Despite the fact that sexual contact is one of the most common ways to transmit HIV, progress in reducing HIV-related sexual behaviors has largely stalled over the past decade. Moreover, disparities exist between various groups. Compared to other racial/ethnic groups, Blacks carry the greatest burden of HIV disease. Blacks account for approximately 40% of the people living with HIV in the U.S. and almost 45% of new HIV infections (CDC, 2017).

HIV and Blacks

While there has been a decline in the number of new HIV diagnoses over the years, stark differences still exist between various subpopulations. The early HIV epidemic was mostly associated with white, gay males; however, over the past 15 to 20 years, people of color, particularly Blacks, have become the new face of HIV (CDC, 2017; CDC, 2018). Blacks represent just 14% of the U.S. population, but they account for 44% of the new HIV infections. In 2018, the rate of new HIV diagnoses among Blacks was 8 times higher than the rate of new diagnoses among Whites, and 2 times higher than Hispanics (CDC, 2020). Patterns of AIDS and AIDS deaths show stark racial disparities as well; 8,035 Blacks were diagnosed with AIDS in 2018, compared with 4,018 Whites and 3,887 Hispanics. Furthermore, in 2017, almost 5,600

Blacks died with an AIDS diagnosis compared to 3,848 Whites and 2,183 Hispanics (CDC, 2020).

Black women, in particular, experience higher rates of HIV compared to other subpopulations. After MSMs (men who have sex with men) of all racial/ethnic groups, Black women have the highest rate of new HIV diagnoses compared to other subpopulations in the U.S. While only making up 13% of the female population in 2018, Black women accounted for 58% of the HIV diagnoses in females. Conversely, White women comprised 62% of the female population in 2018 and only accounted for 21% of the HIV diagnoses (CDC, 2020). These disparities are also evident between various racial/ethnic subpopulations of adolescent and young adult women. From 2011 to 2018, Blacks had the highest rate and the largest percentage of new HIV diagnoses among persons aged 15 to 24 years (CDC, 2020). In 2018, Black women accounted for 66% of the new HIV diagnoses in young adult women aged 15 to 24 years, while White women and Latinas each accounted for 15% (CDC, 2020). The persistent pattern of HIV risk throughout the U.S. population coupled with the disproportionate rate at which HIV is affecting the Black community add up to an urgent need to understand potential determinants of HIV within the Black community. The purpose of this study is to understand more about the determinants of HIV among Black women.

Risky Sexual Behaviors

Sexual contact is the transmission category that accounts for the majority of the diagnoses of HIV infections (CDC, 2020). Risky sexual behaviors increase an individual's risk of contracting HIV and other STIs. Since there is not a universal definition for high-risk sexual behaviors/risky sexual behaviors, these behaviors are usually defined based on the population of interest. High-risk behavior includes multiple sex partners and alcohol and substance use with

sex (Jonsson, Karlsson, Rylander, Gustavsson, & Wadell, 1997; Ericksen, & Trocki, 1992). Inconsistent or noncondom use during sexual intercourse, especially anal intercourse, is considered one of the riskiest behaviors. Despite the risks related to unprotected intercourse, many adolescents and adults do not use condoms. In a national sample of adolescents and adults, only 24.7% of the men and only 21.8% of the women reported condom use during last vaginal intercourse. According to data from the 2017 Youth Risk Behavior Survey, approximately 59% of sexually active 12th-grade males and 41% of 12th-grade females used condoms during last intercourse (Kann et al., 2018). Risky sexual behaviors increase the risk of STIs among emerging adults. Therefore, it is important to understand the factors that influence risk behaviors such as inconsistent condom use.

Factors Influencing Sexual Risk Behaviors

Emerging adulthood

Emerging adulthood (EA) is the period of transition from adolescence to early adulthood. The specific years vary for this developmental period based on the individual, but experts note that most individuals aged 18 to 25 years are in this stage (Arnett, 2000). This developmental transition is not limited to those enrolled in college, and it exists across race and ethnic groups as well as socioeconomic strata (Arnett & Tanner, 2011). Emerging adulthood is a time of identity exploration, experimentation, transition, and instability in the areas of work, residence, values, and love. Consequently, this developmental period lends itself to risky behaviors as individuals navigate new relationships, new freedoms, and more responsibilities (Arnett, 2004).

Sexual risk taking is common among emerging adults as they experiment in romantic and sometimes casual sexual relationships. Unprotected sex is one of the most common sexual risk factors among emerging adults. In 2016, approximately 86 (85.7) percent of heterosexual women

aged 18 to 24, and 73 percent of heterosexual men reported engaging in condomless vaginal and anal sex with partners of the opposite sex within the past 12 months (CDC, 2017). Moreover, other sexual risk behaviors such as concurrent relationships are common in this group (Senn, Carey, Vanable, Coury-Doniger, & Urban, 2009; Rosenberg, Gurvey, Adler, Dunlop, & Allen). In one study, heterosexual men and women reported having an average of 3 sexual partners each (Vasilenko & Lanza, 2013). Even though concurrent relationships are common, consistent condom use with every relationship is not. In 2016, approximately 35 percent of heterosexual women aged 18 to 24, and 44 percent of heterosexual men reported engaging in condomless vaginal and anal sex with a *casual* partner of the opposite sex (CDC, 2017).

Black women in emerging adulthood

The transition from adolescence to adulthood is not a universal experience (Arnett, 2010). This developmental transition is influenced by culture, education, and socioeconomic status (Arnett, 2010; Syed & Mitchell, 2013). Social, political, and economical factors can also influence a person's experience during emerging adulthood. For example, individuals in lower socioeconomic statuses are more likely to transition into work and family roles earlier than those in higher socioeconomic statuses due to higher rates of unintended pregnancies, barriers to higher education, and family obligations (Arnett, 2000; Arnett 2003). Moreover, experiences can differ by race and gender. Emerging adulthood can be stressful and complex for people of color, particularly Black women. As these women transition beyond their smaller communities of families and friends into the larger society, they become exposed to additional barriers related to racial discrimination, sexism, and classism (Arnett & Brody, 2008; Syed & Mitchell, 2013). These experiences can affect many aspects of their lives, including their sexual health (Hall, Lee, & Witherspoon, 2014).

Black women in emerging adulthood experience higher rates of STIs, HIV, and unplanned pregnancies than women of other races/ethnicities during this developmental transition. In 2015, Blacks represented over 60% of all new HIV diagnoses among young people aged 13 to 19, and almost 55% of new HIV diagnoses among young people aged 20 to 24. Among young women aged 13 to 24, Black women accounted for almost 65% of the people currently living with HIV. Not only do Black women experience higher rates of HIV, but they also experience higher rates of STIs and unplanned pregnancies. In 2018, the rate of chlamydia among Black women aged 15 to 19 was almost five (4.5) times higher than it was among White women and almost four (3.7) times higher than it was among Latinas. The reported rate of chlamydia among Black women aged 20 to 24 was almost four (3.7) times higher than White women and almost three (2.8) times higher than Latinas of the same age group. Greater disparities were reported in the rates of gonorrhea between Black women in emerging adulthood and other races/ethnicities of women in the same age group. The rate of gonorrhea for Black women aged 15 to 19 was almost nine (8.8) times higher than it was among White women and approximately seven (7.3) times higher than it was among Latinas. Similarly, the rate of reported gonorrhea among Black women aged 20 to 24 was almost seven (6.9) times higher than it was among White women and six (5.9) times higher than it was among Latinas of the same age group (CDC, 2020).

Many of the factors that influence disparities in HIV and STIs, also contribute to the high rates of unplanned and teen pregnancies among Black women (Finer & Zolna, 2016). In 2018, the birth rates for non-Hispanic Blacks (26.3) and Latinas (26.7) were two times higher than non-Hispanic Whites (12.1) aged 15 to 19 years old (Martin et al., 2020). Even though birth rates are similar among non-Hispanic Black teens and Latinas, non-Hispanic Black teens have a higher

pregnancy rate. Pregnancy rates include births, abortions, miscarriages, and stillborn. According to the latest available data, the pregnancy rate among Black women aged 15 to 19 was 76 per 1000 women compared to a rate of 30 for non-Hispanic whites and 61 for Latinas (Kost, Maddow-Zimet, & Arpaia, 2017). Moreover, the abortion rate was two times higher for Black women than it was for Latinas, suggesting that some of the pregnancies experienced by Black women aged 15 to 19 were considered unintended or mistimed (Kost, Maddow-Zimet, & Arpaia, 2017).

While Black women participate in risk behaviors similar to other races/ethnicities of women, the factors that influence these behaviors can be different (Reece, Herbernick, Schick, Sanders, Dodge, & Fortenberry, 2010; Gakumo, Enah, & Azuero, 2011; Mojola & Everett, 2012). Multiple social, economic, cultural, and individual factors influence the sexual risk behaviors of Black women in emerging adulthood.

Mental well-being

One possible factor related to sexual risk taking during emerging adulthood is a person's mental well-being. During emerging adulthood, individuals face many challenges as they take on adult responsibilities such as finding a job, securing a place to live, and engaging in serious relationships. Mood swings, stress, and depressive symptoms are common in this age group. In 2017, approximately 30% of college students reported feelings of depression, and young women represented a higher proportion of those reporting symptoms. (National Institute of Mental Health, 2017). Some studies suggest that even though White women experience depression more often than Black women do, Black women experience a greater severity and persistence of depression (McKnight-Eily, Presley-Cantrell, Elam-Evans, Chapman, Kaslow, & Perry, 2009;

Earl, Williams, & Anglade, 2011). It is important to note that this could be due to measurement issues with available scales and/or differences in how symptoms manifest or are reported.

Depression can impact various aspects of young adults' lives, making them susceptible to risky behaviors such as substance use, unprotected sex, and multiple sexual partners (Audrain-McGovern, Rodriguez, Rodgers, & Cuevas, 2010; Brawner, Gomes, Jemmott, Deatrck, & Coleman, 2012; Lee, Salman, & Fitzpatrick, 2009). For example, both depression and stress have been linked to incorrect contraceptive use, multiple sex partners, and inconsistent condom use among young adults and adolescents (Hall, Moreau, Trussell, & Barber, 2013; Mazzaferro et al, 2006). In one study, researchers found that Black women ages 14 to 20 who reported depressive symptoms were more likely to engage in risky sexual behaviors and acquire an STI (Jackson, Seth, DiClemente, & Lin, 2015). Moreover, results from one meta-analysis indicated that reducing depression plays a role in reducing risky sexual behaviors (Lennon, Huedo-Medina, Gerwien, & Johnson, 2012). In sum, depression and other mental health symptoms should be considered when examining sexual risk behaviors, especially among emerging adults. The stress of this developmental period can have a significant effect on a person's mental health and subsequently on health behaviors and health outcomes.

Social context

HIV is a disease that is affected by a number of social factors. Fee & Krieger (1993) argue that HIV cannot be understood solely within the health system but must be examined within a person's social and historical context. HIV risks and sexual risk behaviors are shaped by history, policies, gender and power dynamics. Individual behaviors, such as unprotected sex, cannot be properly assessed without considering how they are influenced by environmental and social factors. For example, there are variations in how men and women experience emerging

adulthood depending on race, culture, and socioeconomic status. Socially disadvantaged emerging adults do not have the same opportunities and experiences as those in the middle and upper class. This developmental transition can be a time of struggle instead of a time of freedom and self-focus (Arnett & Tanner, 2011). The difference in how the developmental period is experienced affects educational opportunities, access to health care, and health behaviors. For this reason, behavior and disease cannot be decontextualized from a person's social environment. The differences in disease and risk among Black women should be viewed within a context that considers the multiple cultural, political, and social factors that influence health behaviors and outcomes.

Theoretical Framework

This study is guided by the Social Stress Theory (SST), which addresses how social, structural, and cultural factors can influence health behaviors and outcomes (Pearlin, Schieman, Fazio, & Meersman, 2005). The SST suggests that stress is not the result of a single personal event that occurs at one point in time. Instead, social stress is the result of exposure to poor social conditions and events over a period of time. These events and experiences can become stressors to an individual (Pearlin et al., 2005). Persons in disadvantaged or stigmatized groups are more vulnerable to stress due to discrimination, racism, and prejudice. Stressors such as discrimination can limit an individual's access to employment, education, and other resources, which subsequently affects a person's physical and mental health, including the ability to engage in healthy behaviors as well as access to preventive care and early treatment – both of which impact disease onset and progression and severity (Schwartz & Meyer, 2010). Persistent exposure to social stress influences health behaviors and outcomes.

Stressors vary by gender, race, religious beliefs, sexual identity, and many other factors. Among Black women, the most common social stressors are related to their race and gender (Crenshaw, 1997; Collins, 2004, Smith, 2013). Poor health outcomes have been related to social stressors such as racial discrimination and/or racial inequality, gendered racism, and financial difficulties. In a study that explored the psychological and cardiovascular response of social stressors among Black and White women, Lepore et al (2006) found that Black women had higher blood pressures than White women in response to a racial social stressor.

Discrimination, another racial stressor, has been linked to smoking, low birth weight babies, and depression among Black women (Cokley, Hall-Clark, & Hicks, 2011; Collins, David, Handler, Wall, & Andes, 2004; Nguyen, Subramanian, Sorsensen, Tsang, & Wright, 2010;

Taylor & Turner, 2002). Other social stressors, such as exposure to crime and violence, have been linked to increased psychological distress (Stockdale, Wells, Tang, Belin, Zhang, & Sherbourne, 2007; Simning, Wijngaarden, Conwell, 2012; Giurgesco, Mirsa, Sealy-Jefferson, Caldwell, Templin, Slaughter-Acey, & Osypuk, 2015). In an ongoing longitudinal study of Black emerging adults, Estrada-Martinez, Caldwell, Bauermeister, & Zimmerman (2012) found that continued exposure to stressors such as racial discrimination and daily stress increased the risk for violent behavior in emerging/young adulthood. Additionally, exposure to other stressors (e.g., financial strain, neighborhood stress) increased the risk of depression.

Social stress has also been associated with sexual risk behaviors among Black emerging adults. A few studies have explored how social stressors affect the sexual behaviors of Black heterosexual men. Racial discrimination, neighborhood context, and unemployment have all been associated with high sexual risk behaviors among Black men (Bowleg, Lucas, & Tschann, 2004; Bowleg, Malebranche, & Tschann, 2013; Bowleg, Neilands, Tabb, Burkholder, Malebranche, & Tschann, 2014). Few studies, however, have explored these same stressors among heterosexual Black emerging adult women (Kogan, Brody, Gibbons, Murry, Cutrona, C. E., Simons,... & DiClemente, R., 2008; Rosenthal, L. & Lobel, M., 2018). The majority of studies exploring the relationship between experiences of social stress and Black women have been among HIV positive Black women and Black lesbians. Thus, more studies are needed to examine the relationship between social stress and sexual risk among heterosexual Black emerging adult women.

Determinants of Social Stress

Social stress occurs because of a person's place within the social system. The social stress theory suggests that individuals in disadvantaged social positions are susceptible to increased stress and mental health disorders, which subsequently affects their health. A social

stressor can be a personal event or a condition in the social environment (Meyer, 2003). As such, social stress might affect people belonging to social categories including race, gender, and religion. For Black women, those stressors include racism and discrimination, sexism, and classism, all of which have been associated with poor sexual health outcomes. It is important to know and understand the context in which social stress occurs. Knowing the origins, or determinants, of social stress helps provide a framework for addressing sexual health disparities.

Racism

Racial discrimination can be described as differential treatment and disparate impact, which is understood as a two-part definition: Differential treatment that occurs based on an individual's race. This differential treatment is unequal and disadvantages a particular racial group. The second component of discrimination includes rules, decisions, and processes that are not explicitly discriminatory or racist, but still contribute to disadvantaging a racial group (NAP, 2004). Discrimination can influence health in several ways including reduced access to adequate housing, education, and health services. Additionally, discrimination can lead to increased exposure to the criminal justice system (e.g., frequent arrests). For Black women, racial discrimination can also affect health behaviors and health outcomes.

Racial discrimination and Black women. Since enslavement, stereotypes about Black sexuality have shaped the ways in which Blacks, particularly women, have been viewed and treated. Negative beliefs and theories about the intelligence, work ethics, and sexuality of Black women are rooted in falsehoods stemming from the antebellum period. In "Notes on the State of Virginia," Thomas Jefferson suggested that Blacks were inferior to Whites, especially in "the endowments of body and mind (Jefferson, 1785). According to Jefferson, Blacks were a people of sensation rather than reflection and rationality, which made them hypersexual beings.

Hypersexuality assumed Black men were dangerous predators who were prone to commit rape. Black women were considered vessels of temptation due to the shape of their bodies. Jefferson suggested that Black women were so tempting that both men (Black and White) and apes desired them (Jefferson, 1785). Theories such as Jefferson's, justified rape and other sexual abuses of many Black women during slavery. It also justified the use of Black women's bodies as reproductive vessels of profit. These stereotypes have endured long after slavery's end. In the present day, caricatures of Black women as jezebels, mummies, and hood rats continue to fuel racism, discrimination, and biases (Kelly Brown Douglas, 2005).

The myth of the Black woman as a sexual deviant, unable to control her libido was originated from the "Jezebel" label. This image depicts Black women as hypersexual beings who are unable to control their desires. Jezebel is a promiscuous female with an excessive sexual appetite. She seduces men into her bed to satisfy her physical needs. "Jezebels" use their sexuality for their own benefit; sleeping with men for love, money, or pleasure (Collins, 2000). During slavery, the idea of "Jezebel" justified the sexual abuse of Black women. In the present day, the depiction of Black women as hypersexual beings has justified the need to control their reproductive plans through sterilization and other contraceptive methods (Roberson, 2007; Washington, 2006). This notion has close associations with another label, the "Welfare Queen."

The welfare queen is an unmarried, unemployed woman with multiple children. This image depicts Black women as lazy women who sit and wait to collect government checks (Collins, 2000; Douglas, 1999). Associated with themes of laziness and dependence on others, welfare queens "breed children uncontrollably and the unwanted offspring became a burden to society (Collins, 2000)." This perception of increased sexual behavior became another reason to control the reproduction and sexual behavior of Black women.

Finally, the matriarch became popular in the United States after the release of Moynihan's (1965) report *The Negro Family: The Case for National Action*. In this report, Moynihan attempted to explain the economic and health disparities between Blacks and Whites. He suggested that the disparity was due to "the deterioration of the Negro family." The cause of this deterioration was the independent, emasculating, controlling Black woman, better known as the matriarch. According to the report presented by Moynihan (1965), the role of the Black woman as the matriarch was part of the "tangle of pathology" that was causing weakness in the family structure. This image perpetuated the idea that women were unsupportive and emotionally unavailable for Black men. For the Black family, the image of the matriarch reinforced gender subordination. It also positioned Black women at the center of blame for the economic and health issues of the Black family.

Stereotypes such as jezebel and welfare queen characterize Black women as unintelligent, irresponsible, sexually promiscuous women. This derogatory depiction of Black women has endured beyond slavery into the present day. Before and during slavery, these sexual stereotypes justified sexual abuse and painful reproductive experiments among Black women (Washington, 2006). Today, social and media messages in reality television shows and rap videos have normalized the negative sexual stereotypes of Black women. In fact, for some adolescents and young adults, the women in music videos and reality shows are considered a standard of beauty and success (Stephens & Phillips, 2003; Davis & Tucker-Brown, 2013). As such, sexual stereotypes have influenced sexual risk behaviors of Black women by compromising condom negotiation within heterosexual relationships and by negatively affecting sexual decision-making skills (Stephens & Phillips, 2003; Davis & Tucker-Brown, 2013). Moreover, current sexual stereotypes of Black women have perpetuated feelings of racism among others towards Black

women and contributed to discrimination towards Black women in sexual and reproductive healthcare.

The effects of perceived racial discrimination on sexual health. The historical mistreatment of the Black body from slavery to the present day has shaped Blacks' views of and feelings towards the healthcare system. Well-known mistreatments, such as the Tuskegee syphilis experiment, have left the community suspicious of the intentions of researchers, public health officials, and medical providers (Washington, 2006). Additionally, present-day negative encounters with medical staff leave blacks, especially Black women, feeling stigmatized and judged (Valentine, 2008). These experiences of racial discrimination have been embedded into the cultural memory of the black community and have affected health behaviors, utilization of medical services, and health outcomes.

Racial discrimination influences sexual risk behaviors among Black emerging adults. It has been associated with multiple sex partners, noncondom use, and substance abuse (Stock, Gibbons, Peterson, Gerrard, 2013). Grollman (2016) found that perceived discrimination among black men and women aged 15 to 25 was related to early sexual debut and multiple sexual partners. In another study, perceived discrimination among black emerging adults was linked to an increase in substance use as well as risky sexual behaviors over a three-year period (Stock, Gibbons, Peterson, Gerrard, 2013).

Black women face discrimination in STI and family planning clinics and have a history of negative experiences of discriminatory practices with respect to fertility. They have been labeled as irresponsible, lazy, hypersexual beings who use their bodies as a means to an end. Misperceptions about their sexual behavior contribute to perceived discrimination and negative attitudes towards contraception and HIV prevention (Thorburn & Bogart, 2005; Bird & Bogart,

2003). For example, a few studies suggest that Black women experience pressure from providers to commit to permanent sterilization or to begin a regimen of birth control (Lichtenstein, 2003; Valentine, 2008; Borrero, Schwartz, Creinin, Ibrahim, 2009). In one study, one woman commented, “they teach you more about not having children than they do about diseases. Birth control here. Birth control there. They’re always talking about not having children in our schools (Lichtenstein, 2003, p.440).” Unwanted discussions of contraception and sterility, such as these, expose the biases of providers. These reasons contribute to why Black women avoid or delay treatment or prevention services due to perceived discrimination (Institute of Medicine, 2003; Valentine, 2008).

The effects of perceived racial discrimination on mental health. Not only does perceived discrimination affect the utilization of healthcare services, but it also affects mental health behaviors and health outcomes (Pascoe & Richman, 2009). As Black emerging adults transition into new careers, living spaces, and relationships, they may encounter discrimination for the first time or on more occasions than expected (Arnett & Brody, 2008; Syed & Mitchell, 2013). These experiences can influence various aspects of their mental health. Among Black emerging adults, increased perceptions of discrimination have been associated with an increased risk for suicide, violent behavior, substance use disorders, dissociative symptoms, and psychological distress (Hurd, Varner, Caldwell, & Zimmerman, 2014; Lee, Heinze, Neblet, Caldwell, & Zimmerman, 2017; Polanco-Roman & Miranda, 2013; Polanco-Roman, Danies, & Anglin, 2016).

Experiences of discrimination within social institutions, such as colleges and universities, can also affect mental health. In a study of 228 Black emerging college students, students with higher than average drinking behaviors (e.g., binge drinking) reported more experiences with

discrimination than those with below average drinking behaviors (Boynton, O'Hara, Covault, Scott, & Tennen, 2014). In addition to alcohol abuse, higher levels of perceived racial discrimination among Black emerging adults in college has been linked to social adjustment, imposter syndrome, and self-esteem (Feagin, 1992; Cokley, McClain, Encisco, & Martinez, 2013; Nadal, Wong, Griffen, Davidoff, & Sriken, 2014; Bernard, Lige, Willis, Sosoo & Neblett, 2017).

Perceived racial discrimination and provider bias contribute to poor health outcomes among Black emerging adults. Negative feelings characterized by mistrust and perceptions of racial discrimination prevent Blacks from utilizing healthcare services. In addition to affecting health outcomes, racial discrimination also influences discriminatory practices in education, employment, and housing, all of which have an impact on how Blacks access healthcare.

Residential segregation

Legal segregation by race ended with the Civil Rights Act of 1964. This act prohibited the discrimination of individuals based on race or ethnicity in public places, schools, and the workplace. Schools were integrated, and theoretically, Blacks and other ethnic minority groups were eligible to work and be hired in the same places as White persons. The legal end to segregation, however, did not end the social themes associated with it such as racism and classism. An alternative form of segregation was constructed to prevent Blacks and other minorities from socially mixing with Whites. This type of segregation, residential segregation, has had direct effects on the sexual health of Black women.

Residential segregation is the separation of Whites from other minority communities. It is a construct of racism and classism. While residential segregation affects many minority groups, Blacks experience residential segregation at higher rates than other minorities. Poor Blacks tend

to stay in racially and socioeconomically homogenous neighborhoods (Hogben & Leichter, 2008). They are also most likely to reside in hyper segregated neighborhoods (segregated neighborhoods surrounded by similar neighborhoods) (Landrine & Corral, 2009). The lack of resources in these neighborhoods further separates the “haves” from the “have nots,” which greatly contributes to the disparities in health and education.

The effects of residential segregation on health. Aspects of a person's social context greatly influence health behavior and health outcomes. Where a person lives has a lot to do with their access to quality of education, healthcare, and housing. Residential segregation creates a social environment that fosters negative health outcomes and health behaviors. People living in residentially segregated neighborhoods experience high rates of crime, poverty, and lack of access to employment and transportation, all of which contribute to a person's health. These neighborhoods usually lack the resources for healthy behaviors. There are more fast food chains and liquor stores than there are grocery stores (Kwate, 2008). As such, healthy eating habits are restricted due to limited access to healthy food. Moreover, exercise is limited due to the lack of green space, recreational centers, and safe spaces for exercise (Casey, James, Cushing, Jesdale, & Morello-Frosch, 2017). As a result, residents of segregated neighborhoods are at higher risk for obesity and coronary heart disease (Roux, Merkin, Arnett, Chambless, Massing, Nieto, ... & Watson, 2001; Powell, Slater, Mirtcheva, Bao, & Chaloupka, 2007; Bodor, Rice, Farley, Swalm, & Rose, 2010). In one study with 4096 Black men and women, increased neighborhood violence and disorder was associated with an increased risk of cardiovascular disease (CVD) among Black women (Barber, Hickson, Wang, Sims, Nelson, & Diez-Roux, 2016). In another study, living in the most disadvantaged neighborhoods was associated with a 70 to 90 percent higher

risk of coronary heart disease among Whites and a 30 to 50 percent risk among Blacks (Roux et al., 2001).

Studies suggest that residential segregation also affects sexual health outcomes (Biello, Kershaw, Nelson, Hogben, Ickovics, & Niccolai, 2012; Kerr, Valois, Siddiqi, Venable, & Carey, 2015; Lutfi, Trepka, Fennie, Ibanez, & Gladwin, 2015). Residential segregation clusters, condenses, and segregates a large amount of one race/ethnicity (in this case, Blacks) into area. This limits Blacks' exposure to people of other races and socioeconomic statuses. Because of this, the sexual network among Blacks is decreased and the risk of transmission of HIV and STIs increases. Residential segregation contributes to a sex ratio imbalance among Black men and women.

High rates of crime in residentially segregated neighborhoods contribute to higher rates of mortality and incarceration among Black men, ultimately reducing the number of available Black men within the sexual network. This imbalance influences the power dynamic in romantic relationships between Black men and women. Black women have a smaller pool of prospective partners from which to choose than Black men do, which reduces their power within the relationship (Aral, 1999; Aral, Adaora, & Fenton, 2008; Pouget, Kershaw, Niccolai, Ickovics, & Blankenship, 2010; Newsome & Airhihenbuwa, 2013). The knowledge of their scarcity gives Black men an increased sense of power, reinforcing the authority to maintain concurrent relationships and refusal to use condoms. For Black women, this limits the availability of sexual partners and increases the risk of having a partner with a STI (Hogben & Leichter, 2008).

Gender and power

Patricia Hill Collins (2002) describes the complex relationship between Black men and women as the “love and trouble tradition (Collins, 2002, p. 151).” For women, there is a desire to

love and be loved by Black men (Collins, 2002). The “love and trouble tradition” as Collins (2002) describes it, is characterized with great love and desire for Black men juxtaposed with power struggles within relationships, which can ultimately endanger a woman’s sexual health. These power dynamics are further informed by numerous cultural and structural factors.

The desire to love and be loved by Black men is the basis of relationship for many Black women. Women participate in romantic relationships to obtain intimacy, acceptance, and social support (Kerrigan et al., 2007). The feelings women obtain from romantic relationships are different from those they receive in other relationships in their lives. A male partner provides the woman with someone whom she can “lean on” and someone who can care for her (Kerrigan et al., 2007). One female described it as “...the notion that you always know that it’s somebody there for you, that’s going to be there for you to stand by your side (Andrinopoulos, Kerrigan, & Ellen, 2006).” Furthermore, romantic relationships fulfill unmet emotional needs in other areas of a woman’s life. Problems with close family relationships can intensify the desire for a romantic relationship. For some women, male partners provide love, intimacy, and emotional and social support to women who lack such support due to tumultuous home environments (Andrinopoulos, Kerrigan, & Ellen, 2006). As a result, sexual health decisions can be influenced by the desire for these needs. The desire for such needs can take precedence over making healthy decisions, such as using condoms (Kyomugisha, 2006).

Sociodemographic factors affecting relationships. A number of structural and sociodemographic factors also influence the risk behaviors/health decisions of Black women in heterosexual relationships. One of those factors is the gender ratio imbalance among Black men and women. Gender ratios influence sexual networks and partner availability. It also contributes to the power dynamic/negotiation within relationships (Newsome & Airhihenbuwa, 2013).

The imbalance between Black men and Black women has been associated with various social and economic factors. For example, high mortality rates and incarceration have decreased the amount of available men for relationships (Sharpe, Voute, Rose, Cleveland, Dean, and Fenton, 2012). The knowledge of their scarcity has given men an increased sense of power, reinforcing the authority to maintain concurrent relationships and refuse to use condoms (Adimora & Schoenbach, 2002; Adimora, Schoenbach, & Doherty, 2006). Some studies have shown that women are less likely to use a condom if her partner resists the condom, even if the woman desires to use the condom (Bowleg, Lucas, & Tschann, 2004; Wingood & DiClemente, 1998). As such, the desire for a relationship associated with limited partner availability may leave women feeling as if they are unable to negotiate condom use for fear of losing an important emotional relationship.

In addition to condom use, power dynamics also shape attitudes towards certain behaviors, such as concurrency. Concurrency, or concurrent relationships, is defined as multiple sexual relationships that overlap in time (Halperin & Epstein, 2004; Mah & Halperin, 2010). Concurrency is one risky sexual behavior that is more common in Blacks than in other races/ethnicities (Adimora, Schoenbach, Taylor, Khan, Schwartz, & Miller, 2013). The power dynamics created by the gender imbalance gives Black men the ability to engage in multiple sexual relationships without commitment. Black women who desire Black men may be more likely to accept concurrency and/or relinquish their power in relationships due to the limited availability of heterosexual men. For this reason, concurrency can become normative (Bowleg, Lucas, & Tschann, 2004). As a result of this, men are expected to be very sexually active, which normalizes concurrency. Women, however, are expected to remain monogamous. Furthermore, they are expected to still have unprotected sex with their non-monogamous partners, which

compromises their sexual health (Andrinopoulos, Kerrigan, & Ellen, 2006; Bowleg, Lucas, & Tschann, 2004; Kerrigan et al., 2007).

Mental Health Outcomes of Social Stress

The social stress theory suggests that there are social factors (e.g., race/ethnicity, gender, socioeconomic status) that place certain groups (e.g., Blacks, women) in a disadvantaged social status. Exposure to stressors related to race, gender, or class make individuals more likely to experience poor mental health outcomes (Meyer, Schwartz, & Frost, 2008; Schwartz & Meyer, 2010). Consequently, poor mental health/psychological well-being has been linked to poor health outcomes.

Depression

Depression is a mood disorder that is defined by persistent feelings of sadness and loss of interest in activities (Mentalhealth.gov, 2017). It is one of the most common mood disorders in the U.S. According to the Substance Abuse and Mental Health Services Administration (SAMHSA), approximately 17.3 million adults have had at least one major depressive episode (SAMHSA, 2018). Among adults, the prevalence of depression is highest among individuals aged 18 to 25. In 2017, an estimated 4.4 million young adults aged 18 to 25 had a past year major depressive episode (MDE). The percentage of 18 to 25 year old reporting a MDE within the past year was greater in 2017 than it was from 2005 to 2016 (SAMHSA, 2018).

General risk factors for depression include a combination of genetic, biological, and social/environmental factors. For emerging or young adults, transition and instability within multiple facets of life can have a major impact on mental well-being. In one study, adolescents and young adults with a history of a MDE within the past 12 months were more likely to be nonstudents, unemployed or part-time employed, widowed, separated/divorced or single than

those without a history of a MDE within the past 12 months (Mojtabai, Olfson, & Han, 2016). Data analyzed from the 2010 Behavioral Risk Factor Surveillance System (BRFSS) indicated that the odds of depression were 3 times higher among unemployed than employed emerging adults (McGee & Thompson, 2015). Additionally, Blacks/African Americans were significantly more likely to be unemployed than Latinos, Whites, and other races/ethnicities. Other research suggests that contextual factors play a significant role in risk for depression among Black emerging adults. Increased neighborhood fear was associated with increased depressive symptomology among Black emerging adults. Change in maternal support also increased depressive symptoms among Black emerging adult men, but not Black emerging adult women. (Assari, Smith, Caldwell, & Zimmerman, 2015).

Mental illness can have a significant impact on a person's daily life. Depression can make emerging adults more susceptible to risky behaviors such as substance use, condom nonuse, and multiple sexual partners (Audrain-McGovern, Rodriquez, Rodgers, & Cuevas, 2010; Brawner, Gomes, Jemmott, Deatrck, & Coleman, 2012; Lee, Salman, & Fitzpatrick, 2009). For example, both depression and stress have been linked to incorrect contraceptive use, multiple sex partners, and inconsistent condom use among young adults and adolescents (Hall, Moreau, Trussell, & Barber, 2013; Mazzaferro et al, 2006). In one study, researchers found that Black women ages 14 to 20 who reported depressive symptoms were more likely to engage in risky sexual behaviors and acquire and STI (Jackson, Seth, DiClemente, & Lin, 2015). In a study using data from ADD Health, recent depression was associated with six or more partnerships within the past year. Among Black men, STI was associated with recent and chronic depression (Khan, Kaufman, Pence, Gaynes, Adimora, Weir, & Miller, 2009).

In sum, depression and other mental health symptoms should be considered when examining sexual risk behaviors, especially among emerging adults. The stress of this developmental period can have a significant effect on a person's mental health and subsequently on health behaviors and health outcomes. For that reason, including mental well-being as a part of behavioral interventions or family planning services, could potentially reduce risk for HIV and other STIs (Lennon, Huedo-Medina, Gerwien, & Johnson, 2012; Whitton & Kuryluk (2012).

Spirituality, Religiosity and Hope

Spirituality and religiosity. Research suggests that factors such as spirituality and religiosity positively influence physical and mental health outcomes (Corbin, Voisin, & Snell, 2009; Walker, Salami, Carter, & Flowers, 2014). Spirituality is the personal and private relationship one has with a higher being, while religiosity is the public participation in organized worship and any acts associated with it (e.g., bible study, Sunday service) (Fuller, 2001). For some, spirituality is independent from religiosity. For others religiosity is an expression of spirituality (Berkel, Armstrong, Cokley, 2004; Mattis, 2000). Religiosity and spirituality have been found to be particularly important for Blacks. According to Pew Research Center, Blacks are more religious than Whites and Latinos (NW et al., 2018). Indeed, data indicate that approximately 83% of Blacks say they believe in God and 73% say they pray every day. Further, in previous studies with Blacks, spirituality and religiosity have been correlated with higher academic performance, lower alcohol use disorder, lower opioid use disorder, and lower glycemic control (Meyers et al., 2016; Newlin et al., 2008; Ransome et al., 2019; Walker & Dixon, 2002).

Not only have spirituality and religiosity been associated with physical health, but both concepts also have been associated with positive mental health outcomes related to depression.

Among Black women specifically, religiosity and spirituality have been associated with lower depression and anxiety (Cokely et al, 2013; Holden et al., 2012). Although the mechanisms of how religiosity and spirituality might buffer depressive symptoms are not well understood, researchers have posited that hope might be a contributing factor.

Importantly, even though spirituality is identified as an important aspect in the lives of Blacks, religiosity does not appear to hold the same value for emerging adults specifically. In fact, data indicate that a majority of Millennials and emerging adults describe themselves as “spiritual but not religious (NW et al., 2018).” As such, it would be beneficial to determine if there are other strength-based concepts closely related to spirituality that are related to depressive symptoms and health outcomes. As noted above, one construct that has been suggested, but somewhat understudied, is hope.

Hope. Like spirituality and religiosity, hope is considered a strength-based construct (Snyder, Lopez, Shorey, Rand, & Feldman, 2003). Hope can be defined as “the process of thinking about one’s goals, along with the motivation to move towards those goals (agency) and the ways to achieve those goals (pathways) (Synder, 1995, p. 355).” According to Synder (1995), hope reflects an individual's perception of their ability to accomplish a goal. Goals associated with hope do not have to be tangible physical items or places. A goal is anything a person desires to do, create, become, or achieve (Snyder, Lopez, Shorey, Rand, & Feldman, 2003). Synder suggests that spirituality and hope are closely related as both concepts are goal oriented. In spirituality, the ultimate goal is to achieve and nourish a relationship with a higher being, whereas with hope, there is a desire or belief to achieve some goal or aspiration. According to Synder, one way to generate hope is through spirituality.

Similar to religiosity and spirituality, hope has been associated with a number of positive health outcomes. Evidence suggests that it reduces risk and positively influences health behaviors and outcomes (Curry, Snyder, Cook, Ruby, Rehm, 1997; Irving, Snyder, & Crowson, 1998; Snyder, Shorey, Cheavens, Pulvers, Adams, & Wiklund, 2002). For instance, higher levels of hope were associated with lower BMIs and higher scores of self-rated health among low-income women. (Kelsey, De Vellis, Gizlice, Ries, Barnes, & Campbell, 2011).

Previous research exploring the relationship between spirituality, religiosity, hope and depression suggest that hope could be an important construct in mental health outcomes among Black women in emerging adulthood. For example, in one study Chang et. al (2013) found that hope mediated the relationship between religiosity, spirituality, and depressive symptoms, such that religiosity and spirituality had a negative indirect effect on depressive symptoms through hope. Banks, Singleton, Kohn-Wood (2008) found that higher levels of hope were related to lower levels of depressive symptoms among Black college students. In addition, a higher level of hope was associated with less perceived discrimination in the same sample (Banks et. al, 2008). Of note, in another study, Wingate and Davidson (2011) found that Black emerging adults had higher levels of suicide protective factors, such as hope, goals, pathways, and agency, compared with their White counterparts.

Previous research has explored how hope influences the health behaviors and outcomes of Black emerging adults and taken together, extant literature suggests that hope positively affects health behaviors and depression. However, few studies, if any, explore how hope influences sexual health outcomes specifically. As such, additional work is needed in this area.

Significance of Study

The purpose of this study is to explore how social stress and mental health factors are associated with Black women's sexual health during emerging adulthood, and to examine whether a strength-based construct – hope – might buffer the effects of exposure to these social stressors. There is a plethora of research focused on health outcomes among young Black women, and in recent years there has been some research linking social stress, depressive and sexual risk behaviors in disadvantaged groups. However, important gaps remain – there is a dearth of literature focused on how social stressors such as racial discrimination and financial strain relate to sexual risk behaviors among Black emerging adult women, and on the potential mediating role of depression in linking these stressors with sexual risk behaviors in this vulnerable population. Moreover, very few studies have examined protective factors such as hope – rather, the emphasis has been on the opposite – hopelessness; and to our knowledge, no previous studies have examined the role that hope might play in sexual risk behaviors or sexual health outcomes among Black women during emerging adulthood. Data indicate that individual-level factors do not fully address the differences in HIV and STIs between Black emerging adult women and their White counterparts. Thus, it is critical to better understand contextual factors such as social stress and mental-wellbeing which might better account for these disparities, and to identify potential strength-based factors that could inform future interventions. The current study will provide critical evidence to this end and can help inform the development of interventions to increase resilience and reduce sexual risk among this vulnerable population.

Methods

This study used a cross-sectional survey to examine the association between social stressors, mental health factors, and sexual risk behaviors among Black women during emerging adulthood. The data that was used to meet the study aims was collected as part of a larger substance abuse and HIV prevention intervention for emerging adults. In the parent study, emerging adults were recruited to participate in a culturally appropriate, single session HIV/STD prevention program called VOICES (Video Opportunities for Innovative Condom Education). The effectiveness of culturally specific interventions such as VOICES has been demonstrated in rigorous evaluation and deemed best practice (CDC, 2020). After the session, participants were asked to complete a survey packet. The survey included questions about sexual risk behaviors, mental health, discrimination, and socioeconomic status. Analyses were guided by the Social Stress Theory with the goal of elucidating how social stress, depression and hope are related to sexual risk among Black emerging adult women (Pearlin et al.; Schwartz & Meyer, 2010).

Participants

Eligibility criteria for the parent study included self-identified African-American/Black men and women between the ages of 18 and 24. For the purposes of this ancillary study, only Black women enrolled in the parent trial were included, and participants who denied ever having sex were excluded since the outcomes of interest for this study were related to sexual risk behaviors, resulting in an analytic sample of 236 participants.

Recruitment

Recruitment materials and procedures were approved by the Institutional Review Board (IRB) at Virginia Commonwealth University prior to recruitment onset. Participants were recruited from two local universities as well as community organizations and health clinics.

Recruitment strategies included face-to-face invitations, posting flyers, and word of mouth. Participants were also recruited from those attending HIV and substance use education and awareness events, and HIV testing events. The present study obtained data from the survey that was administered and collected as part of the larger parent project.

Procedure

Once a participant expressed interest in the larger parent study, she was placed in a group of 4 to 8 other women for the single-session evidence-based intervention. The intervention took place in a private room at VCU or within a community setting to allow for private discussion and questions. Prior to the intervention, participants were given an informed consent form, which included information about the study, eligibility requirements, and contact information of the PI and the VCU Office of Sponsored Research. Details of the study were explained to each participant. Participants were given time to read the consent form and ask questions. After all questions were answered, all those who agreed to participate were asked to sign the consent form. Once the consent forms were completed, signed, and collected, the facilitator began the session.

VOICES is a video-based prevention program designed to encourage condom use and improve condom negotiation skills among Black and Latino men and women visiting STD clinics. The group sessions are gender- and ethnic-matched and are led by a gender-matched facilitator. Groups watch a 20-minute culturally appropriate video, “Let’s Do Something Different,” which provides risk information and encourages condom use.

After the intervention, participants were asked to complete a survey packet, which was administered as a hard copy (i.e., no electronic administration). Survey packets were 23 pages long. Completion times ranged from 50 to 65 minutes. Participants were compensated \$20 cash

for completing the survey. Trained research assistants entered the survey data. All data was stripped of identifying information. Signed consent forms and contact information were separated from assessment data and stored in a separate file.

Measures

The study survey included measures related to ethnic pride, condom negotiation, sexual refusal efficacy, condom attitude, intentions, HIV conspiracy beliefs, and testing attitudes, discrimination, hope, stress, neighborhood perception, depression, financial strain and behaviors. The majority of these measures are specific to the parent study (e.g., HIV testing attitudes, condom negotiation). Measures to address the specific aims of the proposed study are detailed below and were included in the larger survey packet.

Primary outcome variables

HIV and other STIs are mainly transmitted by engaging in unprotected vaginal or anal sex with another individual. In a systematic review of studies using self-report measures of condom use, Noar, Cole, & Carlyle (2006) found that dichotomous and frequency measures were the most commonly used measures. Frequency of condom use provides an idea of condom use over time. Assuming that sexual intercourse occurs more than one time, frequency of condom use provides a more comprehensive view of an individual's normal, everyday behaviors. In contrast, dichotomous questions limit the responses of the participant. Since these questions do not provide as much information as frequency measures, the data collected may not be a true reflection of an individual's behavior. Therefore, the present study used frequency of condom use to measure condom use.

In addition to engaging in unprotected sex, having unprotected sex with multiple partners also increases a person's HIV risk. However, it is important to note that number of partners is not

always the best indicator of sexual risk. A person can have multiple partners, but use condoms consistently with each partner. Thus, having multiple partners does not always substantially increase the risk of HIV. As such, in this study, both measures of sexual risk will be used, but frequency of condom use was considered the main dependent variable. Details on how each of these variables will be assessed are provided below.

Frequency of condom use. Frequency of condom use was assessed using the question: How frequently do you use male condoms? Participants answer the question using a 6-point Likert scale with following anchors: 1. Never 2. Rarely 3. Some of the time 4. Most of the time 5. Always 6. I am not currently sexually active (Nichols, Javdani, Rodriquez, Emerson & Donenberg, 2015; Udell, Donenberg, & Emerson, 2011).

Number of sexual partners. Number of sexual partners was measured using the following question from the Center for Substance Abuse Prevention's National Minority SA/HIV Prevention Initiative's Questionnaire: "During the past 3 months, how many sexual partners have you had?" Participants select the appropriate categorical response option from the following options: "None, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 or more."

Independent Variables

Discrimination. Racial discrimination refers to the unfair treatment of an individual due to their race or ethnicity. Perceived racial discrimination was measured using the short version of the Everyday Discrimination Scale (EDS) (Sternthal, Slopen, & Williams, 2011). The EDS is one of the most frequently used perceived discrimination measures. It has been used with various populations including Blacks, Latinos, adolescents, and women. This study used the 5-item EDS to assess the frequency of exposure to racial discrimination in study participants' day-to-day life such as experiencing harassment and receiving poor service in restaurants and stores.

Respondents were asked to indicate the frequency of unfair treatment/maltreatment related to race on a 6-point Likert scale ranging from never to almost every day. Lower scores indicate higher exposure to discrimination while higher scores indicate a lower exposure to discrimination. The short version of the EDS has shown to have an internal consistency of 0.77 in previous research (Sternthal et al, 2011).

Financial strain. Financial strain is an indicator of an individual's socioeconomic status, and reflects one's perceived income inadequacy. Financial strain/stress was assessed using the question "How difficult is it for you to live on your total household income right now?" Respondents chose from the following responses "not at all," "somewhat difficult," "very difficult," "extremely difficult." This question has been used as a global indicator of financial strain/stress in several studies. Meyer, Wall, Larson, Laska, & Neumark-Sztainer (2012) used the question in a study exploring the relationship between sleep duration and body mass index in young adults. The question was also used in a study examining the relationship between intimate partner violence, mental and physical health, and access to resources (VanKim & Laska, 2012). The test-retest reliability of the measure was high in the original study with $r=0.83$ (Larson, Neumark-Sztainer, Story, van den Berg, & Hannan, 2011).

Perceived neighborhood disorder. Perceived neighborhood disorder refers to an individual's perception of the "lack of order and social control" in her neighborhood (Skogan, 1990). The 10-item Perceived Neighborhood Disorder (PND) scale measures this construct. Neighborhood perception was chosen as an independent variable due to its link to residential segregation and poor health outcomes.

The PND scale measures two aspects of neighborhood disorder, social disorder and physical disorder (Ross & Mirowsky, 1999). Signs of social disorder include fighting and people

hanging out on the street drinking, doing or selling drugs. Physical disorder includes abandoned buildings, graffiti, and vandalism. Examples of scale items include “there is a lot of crime in my neighborhood,” “there are too many people hanging around on the streets near my home,” and “there is a lot of graffiti in my neighborhood.” Respondents answered based on a 4-point Likert scale ranging from “strongly disagree” to “strongly agree.” Scores range from 15 to 60 with higher scores indicating more neighborhood disorder. The internal consistency of the PND in the study for which it was originally developed was 0.92 (Ross & Mirowsky, 1999)

Proposed mediator

Depressive symptoms. Depressive symptoms were examined as a mediator between social stress and frequency of condom use. In this study, depressive symptoms were measured using the Center for Epidemiological Studies Depression Scale (CES-D 8). The CES-D is a short, self-report measure that was developed to identify depressive symptoms; it has been used in both adolescent and adult populations (Dishman, Hales, Pfeiffer, Felton, Saunders, Ward,... & Pate, 2006; Eisner, Katz, Lactao, & Iribarren, 2005; Franko, Striegel-Moore, Thompson, Schreiber, & Daniels, 2005; Raveis, Karus, & Siegel, 1998). The scale measures the following symptoms: sadness, loss of interest, appetite, sleep, thinking/concentration, guilt, fatigue, and feelings of helplessness and hopelessness. Respondents were asked to indicate the frequency of each symptom within the past week based on a 4-point Likert scale from (1=Rarely or none of the time [less than 1 day]) to (4=Most or all of the time [5-7 days]). Higher scores indicate more depressive symptoms. A score of 14 or more suggests clinically significant level of depressive symptoms. There are several revised versions of the CES-D (Andresen, Malmgren, Carter, & Patrick, 1994; Poulin, Hand, & Boudreau, 2005; Turvey, Wallace, & Herzog, 1999). This study

uses the 8-item screening version Melchior, Huba, Brown, & Reback, 1993). The coefficient alpha for the 8-item CES-D is 0.86 (Melchior, Huba, Brown, & Reback, 1993).

Proposed moderator

Hope. Hope was examined as a potential moderator of the association between social stress and depressive symptoms. The variable hope was chosen over hopelessness because hopelessness focuses on a deficit. Hope, however, is from a positive psychology framework, so it captures an individual's assets or strengths (Snyder & Lopez, 2001). Snyder et al.'s (1991) Trait Hope Scale was used to measure hope, which is a 12-item scale that consists of two subscales: 1) Agency and 2) Pathways. The agency subscale measures the respondent's motivation to pursue their goals while the pathways subscale measures the respondent's ability to identify a pathway or plan to attain his or her goals (Snyder et al., 1991). Respondents answered questions using an 8-point Likert-type scale ranging from Definitely False to Definitely True. Scores can range from 8 to 64, with higher scores indicating higher levels of hope. The alpha coefficient for the Trait Hope Scale ranges from 0.74 to 0.84 (Snyder, Lopez, Shorey, Rand, & Feldman, 2003).

Sample size and power

An adequate sample size in path analysis or structural equation modeling (SEM) is determined by model complexity and the method of estimation. Kline (2005) recommends using a case/parameters ratio to determine sample size estimates for studies using path analysis or SEM. The goal should be to have a minimum of 10 cases or participants per parameter. In the model for this study, the following are specified:

7 path coefficients

2 equation error variances

3 correlations among independent variables/exogenous variables

3 independent variable/exogenous variable variances

A total of 15 parameters are associated with the proposed model. Using the case/parameters ratio, the sample size for this study should be at least 150 cases or participants. There were a total of 236 participants in this study, which meets Kline's (2005) recommended guidelines.

Data Analysis Plan

The purpose of this study was to test the mediating and moderating effects of mental health factors on the relationship between social stress and sexual risk behaviors. Specifically, this study had two overarching research questions: 1) What is the relationship between social stress and sexual risk behaviors among Black women during emerging adulthood? 2) Among Black women in emerging adulthood, how does depression affect the relationship between social stress and sexual risk behaviors? Does hope influence that relationship? The analyses were guided by the following research questions:

1. What is the direct effect of each of the social stress variables (discrimination, financial strain, and perceived neighborhood disorder) on condom use (Model 1) and number of partners (Model 2)?
2. Do depressive symptoms mediate the association between any of the social stress variables and condom use (Model 1) or number of partners (Model 2)?
3. Does hope moderate the associated of any of the social stress variables and depressive symptoms?

The models (Figures 1 and 2) for the study were developed informed by extant literature, as well as professional experiences as a women's health nurse practitioner. Path analysis was used to explore the relationship between social stress, depressive symptoms, and condom use

among Black women during emerging adulthood. Path analysis is an extension of multiple regression. This method allows the researcher to simultaneously estimate the relationship between multiple predictor and outcome variables. It also allows for the examination of pathways and indirect effects.

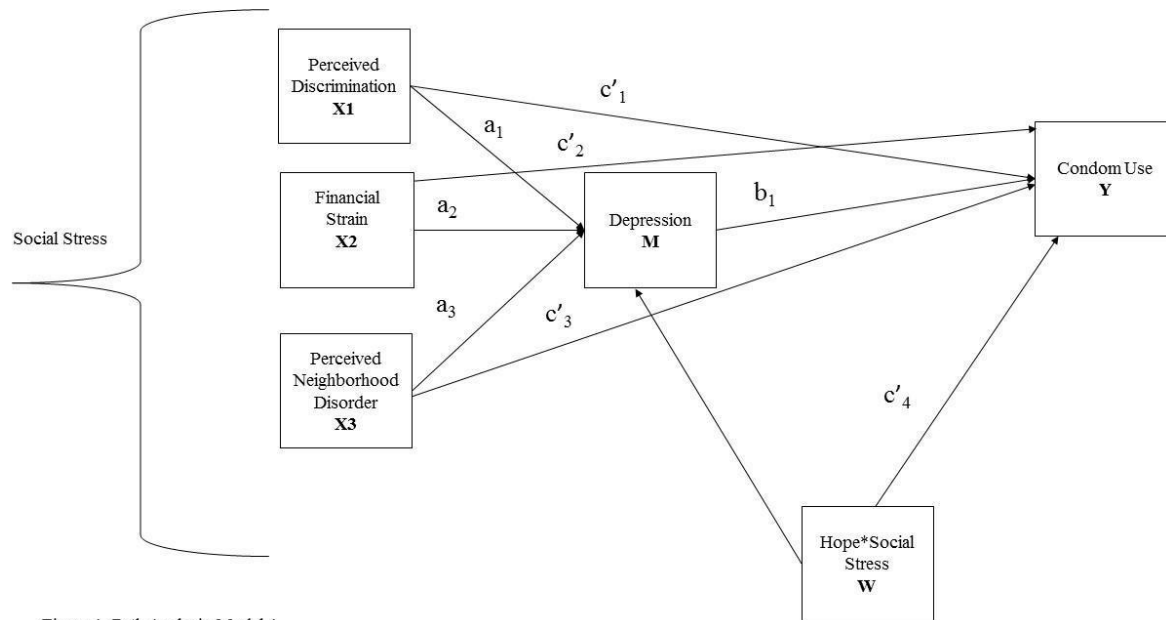


Figure 1: Path Analysis Model 1

While path analysis is commonly known as causal modeling, it cannot be used to determine or establish causality. Three things are required for causation: 1) association, 2) temporal precedence, and 3) no alternative explanations. Path analysis is able to provide evidence of association but not the other two (Striener, 2005). As such, the terms independent and dependent variables are often replaced with the terms endogenous and exogenous variables. The terms *endogenous* and *exogenous* are used to describe how variables are influenced within the model. In path analysis, endogenous variables are influenced by variables within the model, while variables or forces outside of the model influence exogenous variables. The endogenous

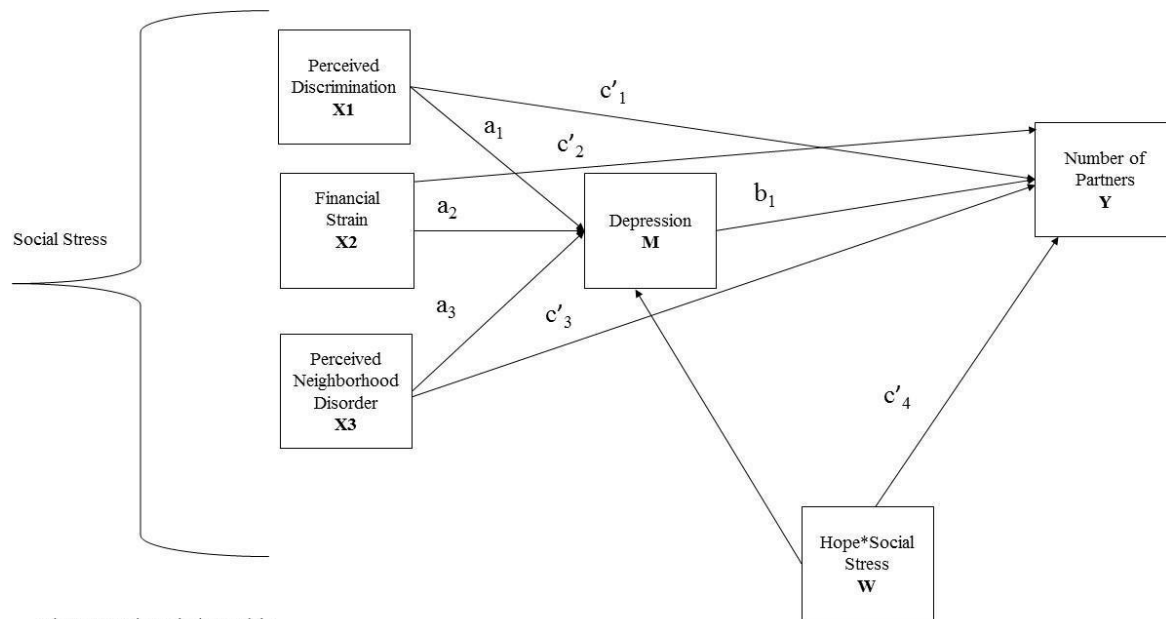


Figure 2: Path Analysis Model 2

variables in this model are depression, hope, condom use, and number of partners. The exogenous variables are discrimination, financial strain, and neighborhood perception.

Prior to conducting analyses, the data was inspected for missingness, normality, and multicollinearity. Missing values for any survey responses were recoded into “999.” Skewness and kurtosis were used to assess normality. Skewness values below 2 and kurtosis values below 7 suggest normality (West, Finch, & Curran, 1995). Multicollinearity occurs when there is high correlation between two or more independent variables. Multicollinearity increases standard errors and makes it difficult to determine which independent variables are significant. Tolerance and variance inflation factor (VIF) were used to evaluate multicollinearity. A tolerance value less than .10 or a VIF value greater than 10 may indicate multicollinearity (Kline, 2005). Descriptive statistics were calculated for all variables as well as bivariate correlations to assess relationships among path variables.

Two separate models were analyzed for this study, one for each outcome (Figures 1 and 2). Both models included depressive symptoms as an endogenous predictor of condom use (Model 1) and number of partners (Model 2), and discrimination, financial strain, and perceived neighborhood disorder as exogenous predictors of depressive symptoms.

The models were tested in R using the LAVAAN package with maximum likelihood (ML) as the estimation method. ML estimation is a full-information model, which means all available information is used to estimate the model. This method was chosen because of how missing data can be handled within the model. Unlike listwise deletion and pairwise deletion, ML is able to yield unbiased parameter estimates in cases of MCAR and MAR. This method is considered consistent and efficient (Kline, 2005). Bootstrap resampling was used to obtain confidence interval percentiles for indirect effects (bootstrapping replication: 5000). Bootstrapping is considered a more powerful method for estimating indirect effects. Path estimates that did not contain zero within the confidence interval were considered significant (Beaujean, 2013).

Model fit was assessed using the following fit indices: chi-square statistic, root mean square error of approximation (RMSEA), and the standardized root mean square residual (SRMR). Kline (2005) suggests reporting the results from more than one fit index since a single index evaluates one particular aspect of a model. Chi-square, RMSEA, and SRMR were chosen because they seem to be the most insensitive to sample size, model misspecification, and parameter estimates (Hooper, Coughlan, & Mullen, 2008).

Chi-square is an absolute or global fit index that tests the difference between the observed data and the proposed or hypothesized model. The chi-square is often considered a "badness-of-fit" statistic in that a nonsignificant p-value suggests good model fit. The RMSEA evaluates how

well the model fits the data. A RMSEA of less than .05 is indicative of a model with acceptable fit; RMSEA between 0.08 and .10 indicate mediocre fit, and values greater than .10 suggest a poor-fitting model. The SRMR measures the difference between the observed correlation matrix and the predicted correlation matrix (Kline, 2005). A value of 0 is equal to perfect fit (i.e., residuals of 0). Values less than .08 are indicative of acceptable fit.

Results

Descriptives

Means, standard deviations, tolerance, and multicollinearity values are provided in Table 1. Skewness and kurtosis values for each path variable are presented in Table 1. All variables for the path model had skewness values below 2 and kurtosis values below 7. All path model variables had tolerance values greater than .10 and VIF values less than 10. Thirty-seven participants had missing scores for the financial strain variable. Five participants had missing data for the variable “number of partners.”

Demographic data of participants are summarized in Table 2. The majority of participants were currently enrolled in college (95%) and their mean age was 20.3 (SD=1.91) years. Approximately half of all participants were unemployed (full-time students), while 43% were employed part-time (enrollment status unknown).

In terms of relationships and sexual risk behaviors, 93% of respondents described their relationship status as never married and never permanently partnered. Participants reported a range of 0 to 8 sexual partners within the last 3 months. The average number of sexual partners within the past 3 months among the sample was 1.33 (SD=1.13). The average score for frequency of condom use was 2.64 (SD=1.55). This score translates into a reported condom use frequency between “rarely” and “sometimes.”

In general, participants reported low levels of social stress. Perceived neighborhood disorder scores ranged from 10 to 40 with lower values suggesting less disorder. The average score among study participants was 19.05 (SD=7.59). It should be noted that the majority of participants were students living on a college campus (73%). Discrimination scores ranged from 5 to 30. Higher scores suggest lower levels of discrimination. The average score among

participants was 22.17 (SD=6.21). Thirty-seven participants did not answer the financial strain question. The majority of those that did respond reported low financial strain (69.5%).

Table 1. Descriptive statistics for continuous variables

	N	Min	Max	M	SD	Skew	Kurtosis	VIF	Tolerance
Perceived Discrimination	236	5	30	22.17	6.21	-0.78	0.02	1.090	.918
Perceived Neighborhood Disorder	236	10	40	19.05	7.59	0.58	-0.48	1.018	.982
Depression	236	7	32	13.71	5.79	1.29	1.32	1.172	.853
Hope	236	8	64	54.29	8.86	-1.65	4.41	1.125	.889
Agency	236	4	32	27.67	4.68	-1.87	4.96		
Pathways	236	4	32	26.63	5.04	-1.36	2.44		
Number of sexual partners	231	0	8	1.33	1.13	1.84	5.89		
Condom use	236	1	6	2.64	1.55	0.71	-0.58		

Scores for the CES-D ranged from 8 to 32. A score of 14 or more on this version of the CES-D (i.e., CES-D 8) suggests clinically significant symptoms of depression over the previous week. The average or mean score of depression for the sample was just below the threshold (M=13.7, SD=5.79). Further, 43.6% of the participants reported symptoms that exceeded this threshold for clinical significance. Despite those findings, participants expressed high levels of hope. Hope scores ranged from 8 to 64 with higher scores indicating greater hope. The mean score of hope within the sample was 54.29 (SD=8.86). Participants expressed comparable levels of agency and pathways thinking suggesting that they have the ability to develop goals and believe they can find a way to accomplish those goals.

Table 2. Demographic Data for Study Participants

Age	Mean= 20.34 (SD=1.91)
Highest level of education	
Middle school	2 (0.8%)
High school	114 (48%)
Community college or technical or trade school	16 (6.8%)
Four-year college	97 (41%)
Beyond four-year college	3 (1%)
Chose not to respond	4 (2%)
Currently attending college	
No	13 (6%)
Yes, I live on campus	169 (72%)
Yes, I live off campus	53 (23%)
Chose not to respond	1 (<1%)
Employment status	
Employed full time (35+ hours per week)	8 (3%)
Employed part-time	102 (43%)
Unemployed (full-time student)	117 (50%)
Unemployed (other reason)	7 (3%)
Chose not to respond	1 (<1%)
Relationship status	
Never married and never permanently partnered	220 (93%)
Legally married or living with a partner	5 (2%)
Separated, divorced (or broken up with a permanent partner, or widowed)	6 (3%)
Chose not to respond	5 (2%)
With whom do you live	
Alone	25 (11%)
With partner or spouse	8 (3%)
With parents	42 (18%)
With relatives other than spouse or parents	4 (2%)
With friends or roommates	140 (60%)
Chose not to respond	1 (<1%)
How important are religious or spiritual beliefs in your day-to-day life	
Not at all important	15 (6%)
Not too important	36 (15%)
Fairly important	74 (31%)
Very important	104 (44%)

Bivariate Correlations

Bivariate correlations among all continuous model variables are presented in Table 3. Depressive symptoms were correlated with a number of variables: discrimination, hope, condom use, and number of partners. Depression was negatively correlated with discrimination; lower scores indicate higher levels of exposure to discrimination, so this relationship suggests depressive symptoms increase as discrimination increases. Depression was positively correlated with both outcome variables condom use and number of partners. There was a moderate negative association between depression and hope such that as hope increases, depression decreases. Lastly, hope was negatively correlated with number of partners.

Table 3. Bivariate correlations for path analysis variables

	1	2	3	4	5	6	7
1. Perceived Discrimination	1						
2. Financial Strain	-.096	1					
3. Perceived Neighborhood Disorder	-.045	.031	1				
4. Depression	-.166*	.089	.080	1			
5. Hope	.078	-.134	-.054	-.318**	1		
6. Condom use	.053	-.005	.020	.132*	.008	1	
7. Number of sexual partners	-.011	.039	.071	.198**	-.130*	-.111	1

*indicates $p < .05$; **indicates $p < .01$

Results of path analysis

Model Fit

Both models had chi-square values of 0 with 0 degrees of freedom suggesting saturated models. The values of the fit indices are presented in Table 4.

Table 4: Fit Index

Fit Index	Model	
	Model 1: Condom Use	Model 2: Number of Partners
Chi-Square (X^2)	0.000	0.000
Degrees of freedom (df)	0	0
p-value		
RMSEA (90% CI)	0.000 (0.000, 0.000)	0.000 (0.000, 0.000)
SRMR	0.000	0.000

Social stress as a predictor of depressive symptoms

Two separate models were analyzed for this study, one for each outcome (condom use and number of partners). Path estimates obtained from the path analysis for Model 1 are shown in Table 5 and the path estimates for Model 2 are shown in Table 6. The proposed model suggested that three social stress variables (perceived discrimination, financial strain, perceived neighborhood disorder) would be significant predictors of depressive symptoms. This hypothesis was partially supported. In both models, only one of the social stressor variables was significantly associated with depressive symptoms. Discrimination emerged as a significant predictor of depressive symptoms such that higher levels of perceived discrimination predicted greater depressive symptoms. There were no significant direct relationships between the other social stress variables and depressive symptoms for either model.

Social stress as a predictor of sexual risk behaviors

The proposed models predicted that social stress would directly influence sexual risk behaviors. There were not any significant direct associations between any of the social stress variables and number of partners or condom use.

Depressive symptoms as a predictor of sexual risk behaviors

The proposed models suggested that depression would directly influence sexual risk behaviors. This hypothesis was supported. There was a positive relationship between depressive symptoms and both outcome variables. As depressive symptoms increased, so did the number of partners ($p=.003$) and the frequency of condom use ($p=.027$).

Table 5: Unstandardized parameter estimates for Model 1: Condom use

	Estimate	SE	z-value	p-value
Condom use				
Depression	.039	.018	2.208	.027*
Perceived discrimination	.019	.016	1.166	.244
Financial strain	-.053	.285	-.185	.854
Perceived neighborhood disorder	.002	.013	.181	.856
Depression				
Perceived discrimination	-.146	.060	-2.434	.015*
Financial strain	1.007	1.074	.937	.349
Perceived neighborhood disorder	.055	.049	1.120	.263

*indicates $p<.05$; **indicates $p<.01$

Table 6: Unstandardized parameter estimates for Model 2: Number of partners

	Estimate	SE	z-value	p-value
Number of partners				
Depression	.039	.013	2.978	.003**
Perceived discrimination	.004	.012	.364	.716
Financial strain	.064	.226	.282	.778
Perceived neighborhood disorder	.008	.010	.807	.420
Depression				
Perceived discrimination	-.146	.060	-2.435	.015*
Financial strain	1.002	1.074	.933	.351
Perceived neighborhood disorder	.055	.049	1.121	.262

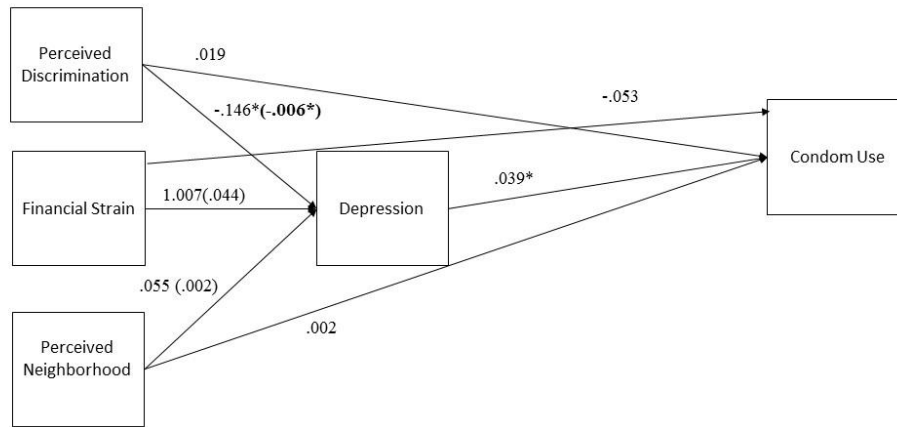
*indicates $p < .05$; **indicates $p < .01$

Depressive symptoms as a mediator

The complete model predicted that depressive symptoms would mediate the relationship between social stress and sexual risk behaviors. This hypothesis was partially supported in the analysis of the complete condom use model and the complete partners model. Depressive symptoms mediated the relationship between perceived discrimination and condom use as well as perceived discrimination and number of partners (Tables 7 and 8).

Table 7: Condom use model: Unstandardized estimates for mediation analyses

	Estimate	95% CI of Estimate
Perceived Discrimination—Depression	-.006	-.0143, -.0002
Financial Strain—Depression	.044	-.0615, .1594
Perceived Neighborhood Disorder—Depression	.002	-.0021, .0071

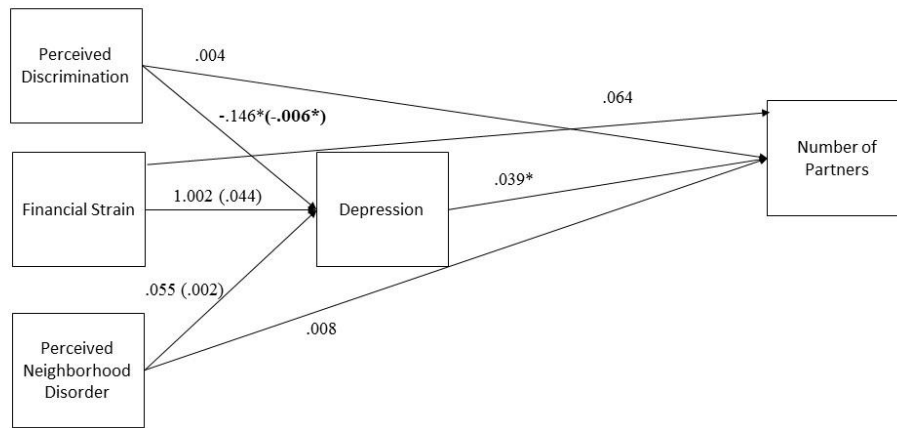


*indicates p<.05; **indicates p<.01; Indirect effects in parentheses.

Figure 3: Mediation model of relationship between social stress, depressive symptoms, and condom use

Table 8: Partners model: Unstandardized estimates for mediation analyses

	Estimate	95% CI of Estimate
Perceived Discrimination—Depression	-.006	-.0140, -.0005
Financial Strain—Depression	.044	-.0614, .1651
Perceived Neighborhood Disorder—Depression	.002	-.0017, .0081



*indicates $p < .05$; **indicates $p < .01$; Indirect effects in parentheses.

Figure 4: Mediation model of relationship between social stress, depressive symptoms, and number of partners

Hope as a moderator of the mediated relationship

The full model with hope suggested that hope would moderate the relationship between social stress and depressive symptoms as well as social stress and both outcome variables. Specifically, it was hypothesized that hope would weaken the relationships between social stress and depression as well as social stress and sexual risk behaviors. This hypothesis was not supported. Having greater hope did not buffer the relationships between social stress and depression or social stress and sexual risk behaviors.

Table 9: Conditional indirect effects of social stress on condom use through depressive symptoms moderated by hope

	Estimate	95% CI
Perceived Neighborhood Disorder x Hope	.001	.1434, -.0002
Financial Strain x Hope	-.001	.8522, -.0178
Perceived Discrimination x Hope	-.000	.5737, -.0010

Table 10: Conditional indirect effects of social stress on number of partners through depressive symptoms moderated by hope

	Estimate	95% CI
Perceived Neighborhood Disorder x Hope	.001	-.0002, .0015
Financial Strain x Hope	-.001	-.0157, .0088
Perceived Discrimination x Hope	-.000	-.0009, .0003

Discussion

The purpose of this study was to explore the relationship between social stress, depressive symptoms, and sexual risk among young Black women. Specifically, this study had three overarching research questions: 1) What is the relationship between social stress and sexual risk behaviors of Black women during emerging adulthood? 2) Among Black women in emerging adulthood, how does depression affect the relationship between social stress and sexual risk behaviors? 3) Does hope influence that relationship? Discussion of all findings follow.

Social stress, depressive symptoms, and sexual risk behaviors

In the proposed path model, it was hypothesized that social stress (as measured by perceived racial discrimination, financial strain, and perceived neighborhood strain) would have a direct effect on sexual risk behaviors (as measured by condom use and number of sexual partners) and depressive symptoms. This hypothesis was partially supported. Only one of the social stress variables, perceived racial discrimination, had a significant direct effect on depressive symptoms, whereas none of the remaining social stress variables had a significant direct effect on sexual risk behaviors.

Perceived racial discrimination

Perceived racial discrimination was the only social stress variable that emerged as a significant predictor of depressive symptoms. This finding is consistent with previous research that links racial discrimination to negative mental health outcomes. Racial discrimination has been associated with depression, suicide, loneliness, and hopelessness (Cheref et al., 2015; Estrada-Martínez et al., 2012; Polanco-Roman & Miranda, 2013; Williams & Lewis, 2019). Additionally, in a recent study exploring the effects of interpersonal discrimination and vicarious

racism on mental health outcomes, racial discrimination was associated with anger, loneliness, anxiety, and depressive symptoms in ethnic minority women (Jochman et al. (2019).

Of note, despite socioeconomic status or social class, racial discrimination can have detrimental effects to the mental and physical well-being of Black women. Seventy-two percent of the sample described themselves as full-time students living on campus, and 50% of the students described their employment status as unemployed. The ability to attend a 4-year university suggests a certain level of social advantage; however, education and social class have not always been found to be protective factors against the deleterious effects of racial discrimination. For example, in previous research linking Black maternal/child health to racial discrimination, the association between racial discrimination and very low birthweight (VLBW) infants persisted across socioeconomic/demographic, behavioral (e.g., tobacco use during pregnancy), and biomedical risk categories (Collins et.al, 2004).

Findings from this study are also consistent with the literature linking racial discrimination to negative mental health outcomes among Black emerging adults attending predominantly White institutions (PWIs). Environmental and interpersonal stressors related to attending a PWI can contribute to poor mental and physical health. Black students have reported feeling alienated and lonely while attending PWIs (Mills, 2019; Mwangi, 2018; Robinson-Wood, 2015). Being the only Black student in class and/or seeing little to no Black faculty can exacerbate these feelings. Experiences with racial discrimination, implicit bias, stereotypes, and blatant racism contribute to race-related stress (Harrell, 2000). As with this study, racial discrimination and other race-related stressors have been associated with negative mental health outcomes wherein students have reported feelings of depression, anger, and loneliness. (Bernard et al., 2017; Chao et al., 2012; Cokley et al., 2013; Neville et al., 2004; Swim et al., 2003). Race-

related experiences at PWIs have also been linked to problems related to academic success; Black women in particular have reported procrastination, problems with concentration, and feelings of academic inferiority (Chao, 2012). Furthermore, Keels et al (2017) found that women reporting high levels of racial discrimination were more likely to experience feelings of intellectual incompetence and subsequent higher levels of depressive symptoms.

This study measured past personal experiences with discrimination. One important consideration related to discrimination is how vicarious (i.e., hearing about or observing acts of discrimination) or second-hand discrimination affects mental health. Continuous media exposure to police brutality, the killings of Black men and women, and other forms of injustices can increase psychological stress and have deleterious effects on physical health (Kittleman, 2020; Tynes et al., 2013). Social media often contains clips or visual recordings of the actual death or acts of brutality experienced by Black men and women. This is particularly concerning for emerging adults given data indicate most emerging adults spend approximately 12 hours a day on some form of social media, which is higher than any other age group (Coyne et al., 2013). For emerging adults, social media is a place for both socialization and information gathering. It gives them immediate access to real-life experiences including discriminatory acts. Indeed, studies show that the injustice and violent nature of these encounters have adverse implications for the mental health of emerging adults (Tynes et al., 2008; Tynes et al., 2013; Tynes et al., 2014). Vicarious discrimination has been associated with anxiety, stress, depression, and greater cortisol output among Black and Latino emerging adults (Huynh, Huynh, and Stein, 2017; Smart Richman & Jonassaint, 2008; Tynes et al., 2008; Tynes et al., 2013).

Considering the increased consumption of acts of injustice and violence via media, it is possible that vicarious discrimination has a greater impact on emerging adults than interpersonal

discrimination. The measure used in this study probed specifically for personal-level racial discrimination, and findings might vary if group-level or vicarious discrimination was assessed. Evaluating both types of discrimination might provide a greater understanding of the specific impact of each one as well as how they interact with each other.

Financial strain

Financial strain did not emerge as a significant predictor of sexual risk or depressive symptoms. In fact, only 15% of participants in this study reported high financial strain. Considering the makeup of the sample, this is not surprising. As previously mentioned, seventy-two percent of the sample described themselves as full-time students living on campus, and 50% of the students described their employment status as unemployed. The ability to attend a 4-year university suggests a certain level of social advantage. In previous studies, students who did not work or students who worked less hours, reported less financial strain or stress (Miller et al., 2008; Peltz et al., 2020). Students not having to work full-time or over 20 hours a week had additional support, which reduced their worry or financial stress (Miller et al., 2008).

In this study, financial strain was used as a proxy for socioeconomic status. The measure has been used in obesity studies with emerging adults, although not specific to Blacks (Larson et al., 2018). Meyer, Wall, Larson, Laska, & Neumark-Sztainer (2012) used the measure in a study exploring the relationship between sleep duration and body mass index in young adults. The measure was also used in a study examining the relationship between intimate partner violence, mental and physical health, and access to resources (VanKim & Laska, 2012). While it has performed well in other studies, it may not be the best indicator for this population.

Assessing socioeconomic status is difficult as it is in any population, especially since socioeconomic status is defined differently across studies. Income, education, and occupation are often used as indicators of socioeconomic status. For college students, their parents'

demographic information is usually used (Merhout & Doyle, 2019; O'Donnell & Blankenship, 2017; Wells & Lynch, 2012). There is research that suggests, however, that the typical sociodemographic information does not adequately measure or define socioeconomic status for Black students (Hardaway & McLoyd, 2008). For example, even if a student's parents are considered "middle class" that does not mean that they will be able to afford to send them to college/pay tuition. The parents could be first or second generation Black middle class, which means that they might not have the savings or wealth their White counterparts have. Moreover, Braveman et. al, (2005) suggests that Black middle class is not comparable to White middle class but is actually lower middle class. Consequently, a different approach should be taken when assessing socioeconomic status in order to appropriately capture this construct in a way that is both developmentally and culturally appropriate.

Kreiger et. al. (1997) suggests obtaining data at multiple levels in order to gain a better concept of socioeconomic status. In secondary education, the ability to qualify for free lunch, along with parental income and education, has been used as an indicator (Domina et al., 2018; Gorard, 2012; Nicholson et al., 2014; Ransdell, 2011). It is possible that the qualification for Pell grants and other income-based grants and scholarships could provide additional socioeconomic status information. Along with objective indicators/resources, subjective resources are critical to obtaining a complete understanding of socioeconomic status in emerging adults. Social subjective status, one's perception of location in society, has been used in studies exploring mental well-being, substance abuse, and health behaviors among young adults (Bradshaw et al., 2017; Finch et al., 2013; Zorotovich et al., 2019). Family support, both financial and social, is another important indicator of socioeconomic status among emerging adults. Parent-child communication about finances, parental financial behaviors, and family wealth have been

associated with financial well-being among emerging adults (Conley, 2001; Pahlevan Sharif et al., 2020; LeBaron et al., 2020; Serido et al., 2010). Conversely, students responsible for their own tuition and housing, and possibly other family members, are more likely to drop out of college (Terriquez & Gurantz, 2012). In order to address the individual and systemic factors that may contribute to financial stress, researchers should strive to obtain data from a variety of sources. Indeed, subjective data can give context to objective measures and vice versa.

Neighborhood disorder

Like perceived racial discrimination and financial strain, neighborhood disorder did not emerge as a significant predictor of depression or sexual risk behaviors. A contributing factor to this finding could have been the large percentage (72%) of participants who lived on campus, which was an unexpected finding. While the goal of the parent study was to recruit a diverse sample with respect to college students and community residents, community-based recruitment proved quite challenging and enrollment was much higher among college students than originally planned. This has important implications for the findings of this work because very few studies have attempted to measure neighborhood distress or disorder among emerging adults in college. There have been a few longitudinal studies examining the effects of neighborhood context on health during the transition from adolescence into young adulthood/emerging adulthood (Assari & Caldwell, 2017; Motley et al., 2017). Findings from these studies indicate that neighborhood stress and perceived neighborhood disorder are linked to negative mental health outcomes such as depression (Bishop et al., 2020; Elliott et al., 2014). Of note, the majority of these studies have been among low-income emerging adults, whereas few participants in this study described themselves as low-income or financially stressed. Thus, it is

possible that this measure would have performed differently in a more diverse sample and this should be explored in future work.

As with financial strain, it would be beneficial to collect a number of indicators related to neighborhood stress. Even though the participants did not high levels of neighborhood disorder, it is difficult to determine whether the participants were using their hometown neighborhood or the college campus as a point of reference when answering the survey questions. Previous studies have used objective information such as zip code data, census tract data, and crime statistics to measure neighborhood disorder and neighborhood stress (Bishop et al., 2020). Future studies with this population should consider using a combination of objective and subjective neighborhood stress indicators, and for college students specifically, it might also be helpful to consider the role of one's current environment or neighborhood, as well as one's hometown neighborhood.

Depressive symptoms and sexual risk behaviors

The proposed model suggested that depressive symptoms would directly influence sexual risk behaviors. This hypothesis was partially supported. There was a direct relationship between depressive symptoms and sexual risk behaviors (condom use and number of partners). Higher levels of depressive symptoms were related to a higher number of partners/multiple partners. Results from this study are consistent with the small amount of literature linking negative mental health outcomes to sexual risk behaviors among emerging adults (Bersamin et al., 2013; Coyle et al., 2019; Fielder et al., 2013; Grello et al., 2006). There is a relative dearth of literature on this topic among Black emerging adult women, but these results are consistent with the research linking negative mental health outcomes to sexual risk behaviors among Black adolescents (Brawner et. al, 2017; Foley et. al, 2019; Lehrer, 2006). For example, among Black adolescent

females, depressive symptoms have been linked to multiple partners, unprotected sex, and STI diagnoses (Brawner et al., 2017; Foley et al., 2019; Jackson et al., 2015). In a longitudinal study (36 months) with Black adolescents ages 14 to 20, depressive symptoms were related to unprotected sex, STI acquisition, and other high-risk behaviors (Curran et al., 2016).

The results of this study are of particular importance for Black women in emerging adulthood who have not been represented well in this literature (Alleyne & Gatson, 2010; Jenkins Hall & Tanner, 2016). The observed relationship between depressive symptoms and sexual risk should be further explored to determine if participation in sexual risk behaviors is a form of maladaptive coping. Previous research on maladaptive coping behaviors among emerging adults and Black adolescents have included emotional eating, substance use, and poor financial management (Cundiff, 2017; Jackson et al., 2015; Serido et al., 2010). Further exploration into what role coping plays in the relationship between depression and sexual risk behaviors could help develop and inform clinical (mental health) plans of care, health education programs, and interventions.

A rather surprising or unexpected finding was the direction of the association between depressive symptoms and condom use. Depressive symptoms were positively related to condom use suggesting that as women experienced more depressive symptoms, condom use frequency increased. In other studies, depressive symptoms have been associated with less frequent condom use, or the relationship between depressive symptoms and condom use was insignificant (Cooke, 2016; Dolphin et al., 2017; Wesche et al., 2018). This finding could be a result of the study design. The survey was administered to participants after the intervention. After hearing the information from the intervention, participants could have felt a desire to please the facilitator by answering certain questions “correctly.” This survey bias could have skewed results in a certain

way to create a false relationship between depression and condom use. In the future, it would be beneficial to administer a pre- and post-survey if these data are collected within the context of an intervention study in order to minimize demand characteristics.

Depression, discrimination, sexual risk behaviors

Exposure to racial discrimination was not directly linked with sexual risk behaviors in this sample—rather, depression emerged as a mediator in the relationship between discrimination and sexual risk, suggesting that racial discrimination has an effect on sexual risk behaviors through depressive symptoms. Specifically, higher levels of perceived discrimination among young Black women is associated with increased depressive symptoms, which ultimately leads to a greater number of sexual partners. This is an important contribution to the literature and speaks to the potential pathways by which racial discrimination might influence sexual health among young Black women. Based on these findings, it is plausible that exposure to personal racial discrimination is internalized, leading to negative emotions and depressive symptoms which some women cope with through sexual intercourse with an increased number of partners. Shared intimacy or sexual relations with someone could foster a sense of security, help cope, forget, or help to alleviate stress related to race-related stressors. It is also possible that the pleasurable and positive feelings associated with sexual intercourse helps to alleviate the negative emotions related to discrimination (Salonia et al., 2010). Oxytocin, dopamine, and other hormones are released during sexual intercourse. These hormones boost emotions such as love, happiness, and euphoria, which can create a momentary rush of happiness (Ng, 2015; Salonia et al., 2010).

There have been a few studies linking racial discrimination and sexual risk behaviors such as multiple partners and early sexual debut, however the literature connecting racial

discrimination and sexual risk is still a growing body of work (Grollman, 2016; Robertson-James & Jeanty, 2016; Stock et al., 2013). Moreover, few studies have explored this relationship among Black women, particularly those in emerging adulthood (Alleyne & Gatson, 2010; Jenkins Hall & Tanner, 2016). Most research in this area has been in populations such as heterosexual men, sexual minorities, and people with HIV (Fields et al., 2013; Frye et al., 2016). Among heterosexual men and sexual minorities, racial discrimination has been linked to unprotected sex, sex trade involvement, and multiple partners (Bowleg et al., 2012; Reed et al., 2013).

This study adds to the body of literature that acknowledges the environmental, structural, and political factors that contribute to sexual health disparities. STI rates are rising among emerging adults and disparities between Black women and other races/ethnicities persist (CDC, 2020). Exploring factors that could possibly contribute to the sexual health of Black women in emerging adulthood is important in reducing disparities and increasing the uptake of preventative measures/behaviors such as condom use and pre-exposure prophylaxis (PrEP). The current findings, coupled with the small extant literature base in this area, underscore the need for additional research to explicate the complex relationship between exposure to discrimination and sexual risk behaviors among young Black women during emerging adulthood.

Hope, social stress, and depressive symptoms

The final hypothesis was that hope would moderate the mediated relationship between social stress and sexual risk; this was not supported. These findings are somewhat in contrast to existing literature which supports the relationship between hope, social stress, and sexual risk. For example, in a study examining the relationship between hope and emotional well-being among college students 18 to 24, hope was directly related to sexual risk taking and emotional well-being. In that study, however, only 4% of participants were Black and the sample included

both men and women (Griggs, 2017). Further, in two studies specifically targeting Black emerging adults, hope moderated the relationship between racial discrimination and depression (Hope & Singleton, 2012; Khara et. al, 2020). There are some distinctions between these studies and the current study that are worth noting and may have contributed to the disparate findings. The 20-item CES-D was used in both studies to assess depressive symptoms (compared with the 8-item in this study) and each study used a different measure to assess racial discrimination. Racial discrimination was also the only social stressor measured in these studies, whereas our model examined racial discrimination as one of three social stress variables.

Considering the literature on hope as well as the positive initial correlations between hope, sexual risk behaviors, and depression from this study, it would be worth exploring this further in future work. The differences in measures could have made a difference in the findings for the current study; the full version of the CES-D 20 might be a better fit instead of the CES-D 8. Also, as previously mentioned, future studies would benefit from using a more comprehensive measure of discrimination.

Implications

There are a number of important implications from the current study—both for clinical practice, researchers, and college campuses. Taken together, findings underscore the importance of research, programming and clinical care that is socially, culturally, and developmentally appropriate for Black women during emerging adulthood. Specific implications are discussed below.

Clinical implications

Mental health clinicians caring for Black women should consider the various social, cultural, and developmental risk factors that contribute to the clinical presentation and symptoms of depression. Multiple factors contribute to the misdiagnosis and under-diagnosis of Black women. Studies suggest that depressive symptoms exhibited by Blacks (both men and women) are often attributed to schizophrenia instead of depression (Carrington, 2006; Noal & Whaley, 2012). It is important for clinicians to lay aside biases related to the typical presentation of depression. Clinicians should be knowledgeable of the signs and symptoms of depression for minority populations. Blacks are much more likely to exhibit or report somatic symptoms than typical affective symptoms (e.g., indecisiveness and worthlessness) of depression. Common symptoms among Blacks include changes in sleeping patterns and eating habits, restlessness, and irritability. Based on findings from the current study, high-risk sexual behaviors could also be an indicator of depression. As such, providers in mental health, family planning, and primary care clinics should take the time to screen for depression when patients report high-risk behaviors.

Clinicians caring for Black women in emerging adulthood should be aware of the many social stressors that could possibly affect their mental health. It is important that clinicians are aware of the systemic, interpersonal, and cultural factors that contribute to the mental health of clients. Clinicians should be open and willing to talk about topics such as racial discrimination, however, this should not be done without proper education and training. Providers need comprehensive training on the deleterious effects of racial discrimination on this population, how it can influence mental health and sexual risk behaviors, and guidance for how to discuss these experiences. Clinicians should seek to understand how experiences with racial discrimination have shaped Black women's views of the medical system, especially related to mental health

services. Data indicate that among Blacks there is a certain level of cultural mistrust of Whites and White mental health professionals in particular (Nicolaidis et. al, 2010; Whaley, 2001).

Clinicians need to understand that mistrust or hostility during the initial phase of treatment or in the first couple of counseling sessions may not be related to the person's problems but to cultural mistrust.

Clinicians treating Black women in emerging adulthood should do their best to ensure that treatment plans are culturally and developmentally tailored to fit the needs of their clients. In a systemic review of mental health interventions for young adults, Moore (2018) found that interventions that were developmentally appropriate as well as race-ethnic appropriate were more effective than other interventions. Furthermore, it is critical to understand the type of treatment that is preferred by young Black women during emerging adulthood, particularly those that would reduce stigma around depression and treatment. In previous studies, Black women exhibited more favorable help-seeking attitudes when mental health issues seemed easily treatable with counseling (DeFreitas et al., 2018; Nicolaidis, 2010). For many Black women, talk-therapy or counseling is considered less stigmatizing and intimidating than pharmacologic therapy (Carrington, 2006; Nicolaidis, 2010). Among young Black women specifically, studies suggest that group counseling is more beneficial than individual counseling (Bradley & Sanders, 2003; Jones et al., 2014; Mitchell, 2000). Group therapy or counseling reduces stigma related to mental illness, fosters connectedness, empowers women, and cultivates a sense of belonging (M. K. Jones & Pritchett-Johnson, 2018; Short & Williams, 2013). Clinicians should consider hosting or offering group counseling sessions that focus on mental well-being, reducing stress, and recognizing signs and symptoms of depression.

Finally, providers should seek to understand what is meaningful to clients, and how certain factors influence health and life. In this study, 31% of the participants indicated that their religious or spiritual beliefs were fairly important in their day-to-day life, and 44% of participants indicated that their beliefs were very important. Moreover, the mean score of hope ($M=54.29$, $SD=8.86$) for this study was above average (Snyder, 1991; Snyder et. al, 2003). Results from this study suggest that spirituality, religiosity, and hope are important concepts to young Black women in emerging adulthood. This is consistent with other studies where Black emerging adults have indicated that spirituality and attending church are important aspects of their lives (Avent Harris & Wong, 2018; Kohn-Wood et al., 2012). Moreover, Black emerging adults have indicated that they felt as if church was a safe place to receive mental health counseling. Keeping this in mind, clinicians should consider collaborating with campus or local pastors to provide group sessions, workshops, or other mental health programs. Working together with the faith community could help clinicians gain the trust of young Black women, which could lead to more favorable help-seeking attitudes.

Implications for Universities / College Campuses

For mental health clinicians on college campuses, it will be important to take into consideration other stressors clients may be facing. For example, Black emerging adults are already trying to cope with the transition from home to college. Stressors related to racial discrimination coupled with the challenges of college life can increase psychological stress and may exacerbate symptoms of depression (Hudson Banks, 2010). Campus clinicians or student health centers should provide students with a variety of resources. Students would benefit from programs and sessions on school-life balance as well as how to manage stress. Students should also be provided with safe spaces to discuss race-related stressors and healthy ways to cope with

negative emotions associated with those stressors. As previously mentioned, conversations and programs on race-related issues should be facilitated by individuals equipped to have those conversations.

Campus-wide initiatives. Black students (and other minorities) should feel safe and supported on college campuses. They should also feel a sense of belonging. Studies have shown that Black college students want to be seen and heard (Jones & Reddick, 2017; Leath & Chavous, 2017; Ndemanu, 2017). Administrators should frequently “check the pulse” of the campus by hosting round-tables or town halls. These programs should not only be scheduled in reaction to a traumatic event. Universities should host programs regularly to address topics related to race as well as gender, sexual orientation, disability, and other topics. Cultural competence education and training should be required for all individuals. Consider training students to help with teaching some of the sessions. Finally, universities would benefit from making clear, public statements acknowledging instances of injustices and/or police brutality. Messages that publicly support Black students and address injustice will help promote mental well-being and a sense of belonging.

Future Research Directions

One reason misdiagnosis and under-diagnosis of depression is common among Black women is because of the lack of diversity in mental health studies. There are not enough studies focusing on the risk factors and presentation of depression among various subpopulations of Black women. This includes research related to psychotherapy interventions as well as pharmacological interventions. Researchers should work to include Black women of diverse backgrounds in mental health research, particularly women in emerging adulthood. Researchers

should work with trusted community leaders to educate possible participants on the importance of mental health research in Black women.

Future research in this area should explore this relationship using additional measures that speak specifically to the intersectionality of Black women in emerging adulthood (e.g., experiences with vicarious and collective discrimination). Hope as well as other positive mental health factors (e.g. resilience) should be explored in relation to mental health and risk behaviors. Black women in this study scored above average on the hope scale suggesting that hope is another important aspect of mental well-being for them. Consider developing or using a composite measure of strength-based concepts (e.g., hope, spirituality, resilience) to help fully address the importance of spirituality among Black women in emerging adulthood.

Finally, exploring the same research question using a mixed-methods approach would give context to quantitative findings and provide Black women with an opportunity to express themselves in ways that cannot be captured using surveys. Focus groups and interviews help Black women verbalize what depression (and other mental health factors) means to them. Findings from qualitative studies could help with understanding signs and symptoms of depression for Black women as well as how Black women experience depression.

Strengths and Limitations

The current findings should be interpreted in light of study limitations. First, this study utilized cross-sectional data, which precludes causal inference given the lack of temporal precedence. Longitudinal data would be a strength in future studies, but it is important to note that even with longitudinal data it is still difficult to imply causality in observational studies since confounding variables cannot be removed. Of note however, mediation analyses using longitudinal data can provide more information about change over time (Salhouse, 2011). A

second limitation worth noting is the rather homogeneous sample. The majority of the sample were full time students who were not working, and all were drawn from two universities. Consideration should be given to the fact that some of the data/answers are specific to the culture of the students within that population, and as such, findings may not generalize to other Black women during emerging adulthood. Additionally, the main outcome variable (condom use) relies on the accuracy of each participant's memory, which is subject to recall bias. Since recall is not always accurate, a secondary outcome variable (number of partners) was included in the model. Finally, an important limitation in this study is that participants were surveyed following exposure to an intervention which may have influenced their responses. Future studies should consider addressing similar research questions in a non-treatment seeking sample and / or at baseline prior to intervention exposure to minimize threats to validity.

There are also some notable strengths of this study. The first centers on the research question itself. Few studies have specifically explored the relationship between social stressors, depression, hope, and sexual risk factors among Black heterosexual women during emerging adulthood. While there have been some studies among MSMs and black lesbian women, few have focused on this high-risk population. In addition, the sample size was appropriate to test the aims and hypotheses and missing data was minimal. Also of note, the conceptual model was grounded in theory, extant evidence, as well as clinical experience, and the analytical approach was rigorous. Finally, the clinical significance of the research is a strength—data gained from this study has the potential to be used across many settings including churches, community organizations, and schools.

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Appendix
Study Measures

Frequency of Condom Use

Please indicate your response by circling your choice.

How frequently do you use male condoms?

- a) Never
- b) Rarely
- c) Some of the time
- d) Most of the time
- e) Always
- f) I am not currently sexually active

Number of Sexual Partners

During the past 3 months, how many sexual partners have you had?

- None
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 or more

Everyday Discrimination Scale (5-item)

Below is a list of items relating to experiences you may have had in your day-to-day life because of your race or ethnicity. Please indicate if you have had this experience, and if so how often.

1. = Almost Everyday, 2. = At least once a week, 3. = A few times a month, 4. = A few times a year, 5. = Less than once a year, 6. = Never

In your day-to-day life how often have any of the following things happened to you?

- You are treated with less courtesy or respect than other people because of your
1. race or ethnicity
2. You receive poorer service than other people at restaurants or stores because of your race or ethnicity.
3. People act as if they think you are not smart because of your race or ethnicity.
4. People act as if they are afraid of you because of your race or ethnicity.
5. You are threatened or harassed because of your race or ethnicity.

Financial Strain

How difficult is it for you to live on your total household income right now?

- Not at all
- Somewhat difficult
- Very difficult
- Extremely difficult

Perceived Neighborhood Disorder

Below is a list of items about your neighborhood environment. Please indicate how strongly you agree or disagree with each statement.

1	2	3	4
Strongly Disagree	Disagree	Agree	Strongly Agree

1. There is a lot of graffiti in my neighborhood.
2. My neighborhood is noisy.
3. Vandalism is common in my neighborhood.
4. There are a lot of abandoned buildings in my neighborhood.
5. My neighborhood is clean.
6. People in my neighborhood take good care of their houses and apartments.
7. There are too many people hanging around on the streets near my home.
8. There is a lot of crime in my neighborhood.
9. There is too much drug use in my neighborhood.
10. There is too much alcohol use in my neighborhood.

Reliability .915

All items are scored so that a high score indicates disorder. Disorder items scored strongly disagree (1), disagree (2), agree (3), or strongly agree (4). Order items scored strongly agree (1), agree (2), disagree (3), or strongly disagree (4).

8-item Center for Epidemiologic Studies Depression (CES-D)

Below is a list of some ways you may have felt or behaved. Please indicate how often you have felt this way during the last week by checking the appropriate space. Please only provide one answer to each question.

	During the past week:	<i>Rarely</i> or none of the time (less than 1 day)	<i>Some</i> or a little of the time (1-2 days)	<i>Occasionally</i> or a moderate amount of time (3-4 days)	<i>Most</i> or all of the time (5-7 days)
1	I felt that I could not shake off the blues even with help from my family or friends.				
2	I felt depressed.				
3	I thought my life had been a failure.				
4	I felt fearful.				
5	My sleep was restless.				
6	I felt lonely.				
7	I had crying spells.				
8	I felt sad.				

The Trait Hope Scale (Future Scale)

Directions: Read each item carefully. Using the scale shown below, please select the number that best describes YOU and put that number in the blank provided.

1. = Definitely False, 2. = Mostly False, 3. = Somewhat False, 4. = Slightly False, 5. = Slightly True, 6. = Somewhat True, 7. = Mostly True, 8. = Definitely True

- ___ 1. I can think of many ways to get out of a jam.
- ___ 2. I energetically pursue my goals.
- ___ 3. I feel tired most of the time.
- ___ 4. There are lots of ways around any problem.
- ___ 5. I am easily downed in an argument.
- ___ 6. I can think of many ways to get the things in life that are important to me.
- ___ 7. I worry about my health.
- ___ 8. Even when others get discouraged, I know I can find a way to solve the problem.
- ___ 9. My past experiences have prepared me well for my future.
- ___ 10. I've been pretty successful in life.
- ___ 11. I usually find myself worrying about something.
- ___ 12. I meet the goals that I set for myself.

Note. When administering the scale, it is called The Future Scale. The agency subscale score is derived by summing items 2, 9, 10, and 12; the pathway subscale score is derived by adding items 1, 4, 6, and 8. The total Hope Scale score is derived by summing the four agency and the four pathway items.