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I, Caravella McCuistian, hereby submit this original work as part of the requirements for the degree of Master of Arts in Psychology.

It is entitled:

Condom Use Barriers Among African American Substance Users: Age and Gender Differences

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Condom Use Barriers Among African American Substance Users: Age and Gender Differences

A thesis study submitted to the
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by

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Abstract

Specific attitudes act as barriers to condom use, preventing their consistent use. Certain demographic variables, such as gender and age, may influence the types of attitudes endorsed. This study explored barriers to condom use among African American substance users, a group at high risk for HIV. The first aim was to explore if gender influences barriers. It was hypothesized that African American male substance users would endorse more sexual experience barriers and that female substance users would endorse more partner barriers. The second aim was to explore whether age moderates gender differences in barriers. It was hypothesized that African American men would endorse more sexual experience barriers than women among younger but not older substance users. It was also hypothesized that women would endorse more partner barriers than men among younger but not older substance abusers. This study was a secondary analysis of the baseline data from two Clinical Trial Network data sets assessing the efficacy of gender specific HIV prevention interventions (CTN 0018 and CTN 0019). Only African Americans are included in the current study (n = 273).

Results suggested that men endorsed significantly more sexual experience barriers ($t(270) = 3.87$, $p = .000$) and motivational barriers ($t(271) = 3.45$, $p = .001$) than women. Age did not moderate the relationship between gender and any barriers. However, additional findings suggest that age significantly influenced certain barriers. The regression analysis suggested that as age increased, access/availability became more of a barrier ($b = .26$, $t\ (6) = 4.07$, $p = .000$), and more motivational barriers were reported ($b = -.145$, $t\ (6) = -2.32$, $p = .000$).

These findings suggest prevention strategies should include techniques to make condoms feel better to men, make them more accessible to older adults, and address motivations for use for both men and older adults.

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Condom Use Barriers Among African American Substance Users: Age and Gender Differences

The Center for Disease Control (CDC, 2010) estimated that over 1.1 million individuals were living in the United States with Human Immunodeficiency Virus (HIV), including over 200,000 individuals living with the disease who remained undiagnosed. By the end of 2010, it was estimated that over 400,000 people had full blown AIDS (Acquired Immune Deficiency Syndrome). With over 600,000 AIDS-related deaths estimated in the United States since 2010, HIV represents a significant health epidemic for this country. While the prevalence rates of HIV are staggering, some disparities within the epidemic exist (i.e., certain groups are at a higher risk for infection). African Americans are the racial group most impacted by the HIV epidemic, experiencing HIV rates that are eight times that of the White population (CDC, 2014a). Furthermore, substance use has been closely associated with the spread of HIV since the beginning of the disease (CDC, 2014b), with injection drug use accounting for approximately 10% of HIV cases in the United States (Aids.gov, 2014). In order to effectively inform prevention strategies for high-risk groups such as African American substance users, characteristics that impact infection risk should be considered.

Unprotected sex (e.g., sex without condoms) is identified as a risk behavior for acquiring HIV (CDC, 2014c). While consistent condom use has been shown to reduce risk of HIV, certain attitudes towards condoms can greatly influence decisions for use. For example, Sheeran, Abraham, & Orbell (1999) found that specific attitudes that people hold towards condoms can influence consistent condom use. Certain demographic variables, such as age and gender, have been closely associated with attitudes to condom use in the literature, such as concern regarding the effect on sexual experience and consideration of a partner's attitudes towards condoms.

However, these relationships have yet to be explored among the high-risk population of African American substance users. Furthermore, gender differences in attitudes towards condoms for varying age groups (e.g., younger vs. older populations) lacks attention. This information is imperative for effective intervention development, as it will not only suggest gender specific intervention strategies but will also explore possible areas of focus for varying age groups as well. Information gathered from this research study has potential to suggest intervention strategies that are both age and gender specific which could result in African American substance using men and women of various ages receiving the most effective HIV preventative strategies.

HIV among African Americans

African Americans represent 12% of the nation's overall population; however, they accounted for over 40% of the incidences of HIV estimated in 2010. This suggests that African Americans are disproportionately impacted by HIV (CDC, 2014a). In 2011 alone, it was estimated that 15,000 African Americans were diagnosed with HIV in the United States (CDC, 2011). Research suggests that reported sexual risk-taking does not solely account for the unique differences in HIV prevalence rates for African Americans (Aral, Adimora, & Fenton, 2008). Other key factors such as stigma, discrimination, poverty, and access to healthcare may also play a role in the HIV disparity faced by African Americans (AVERT, 2014). A focus on preventative strategies for this group is imperative. Examining sexual risk taking behaviors, including attitudes towards condom use, can inform such efforts and decrease this disparity. Furthermore, knowing possible age-appropriate HIV prevention strategies for male and female African American substance users would be advantageous.

HIV among Substance Users

In 2010, intravenous drugs users (IDUs) represented 8% of the total HIV incidences. This number nearly doubled to 15% in 2011 (CDC, 2014d). Since the emergence of HIV, over 180,000 drug users have died from AIDS related complications (CDC, 2014d). Sharing of needles or other paraphernalia (e.g., cookers and cotton) used in drug injection can expose individuals to risk for HIV. However, using other types of drugs can also increase risk by lowering inhibitions and increasing the likelihood of sexual risk-taking. For example, a relationship between alcohol and risky sexual behavior has been evidenced in the literature, as both seem to have a common underlying pursuit for excitement (Justus, Finn, & Steinmetz, 2000). Crack cocaine has also been closely associated with decreased condom use, a substance more commonly used by African Americans (CDC, 2014b). Furthermore, individuals who engage in non-medical use of prescription drugs may also report more sexual risk taking (Benotsch, Koester, Luckman, Martin, & Cejka, 2011).

In addition to increased infection rates, substance use can also further exasperate the detrimental effects of this disease. For example, substance use can worsen HIV symptoms or other opportunistic infections that often lead to AIDS related deaths (National Institute on Drug Abuse, 2012). Current substance use is also associated with decreased HIV medication adherence (Hicks et al., 2007). HIV prevention efforts have focused on this at-risk population for many years. However, with a clear disparity still present, more information must be considered regarding the high HIV prevalence rates among substance users; a focus on prevention must be maintained. Furthermore, a focus on African American substance users should be prioritized, as they represent a group experiencing unique HIV risk.

African American Substance Users: Unique Risk

While African Americans as well as substance users experience increased risk for HIV, research suggests that African American substance users may be at a particularly high risk. HIV already disproportionately impacts African Americans, and substance use seems to be a leading cause of HIV among both Black women and men (Laurecin, Christensen, & Taylor, 2008). African American substance users can be considered as experiencing a "double whammy" regarding the HIV epidemic. It can also be hypothesized that African American substance users likely experience especially poor health outcomes for HIV, both for intervention and prevention. In fact, research has shown that generic HIV prevention intervention programs may not be as helpful for African Americans, suggesting a benefit from more tailored strategies (Calsyn, Burlew, Hatch-Maillette, Beadnell, Wright, & Wilson, 2013). Given that African American substance users represent a group severely impacted by the HIV disparity, potential information gathered from this study could be crucial for helping to develop age and gender specific intervention techniques. As few studies have considered both age and gender into context when examining sexual risk taking, the new information gained from this study about attitudes towards condom use among this population could be an important "missing link" needed in order to decrease this disparity.

Condom Use and the HIV Epidemic

In 2000, The National Institute of Health (NIH) reviewed scientific evidence examining the efficacy of latex condom use at reducing transmission of sexually transmitted infections or STI's (Holmes, Levine, & Weaver, 2004). This review suggests that consistent condom use reduces the transmission of HIV during heterosexual sex, with individuals seeing up to 87% risk reduction if the condom is used correctly. The CDC also suggests that consistent condom use can reduce HIV risk by about 80% (CDC, 2014c). Conversely, decreased condom use can put

individuals at risk for contracting many STI's, including HIV. Despite the efficacy of condoms greatly decreasning HIV risk, research suggests that attitudes towards condoms can impact some people's decisions to engage in unprotected sex, thus putting themselves at risk (Sheeran, Abraham, & Orbell, 1999).

Barriers to Condom Use

Certain attitudes have been evidenced in research to be predictive of consistent condom use. In a large meta-analysis of 121 studies, Sheeran and colleagues (1999) found that holding a positive attitude towards condoms (e.g., "Next time I have sex with a new partner, using a condom would be good") was related to increased condom use. Additionally, negative attitudes towards condom use (e.g., consequences to the relationship, negative influence on sexual experience, or embarrassment during purchase) acted as a barrier to their use. St Lawrence and colleagues (Lawrence, et. al., 1999) grouped these barriers into the following four categories: partner barriers (e.g., "My partner doesn't want to use condoms"), effects on sexual experience barriers (e.g., "condoms don't feel good"), access/availability barriers (e.g., "condoms cost too much"), and motivational barriers (e.g., "I usually forget about using a condom").

Research suggests that African Americans hold specific attitudes towards condoms that can impact their tendency to engage unsafe sex. In a qualitative study of African Americans aged 18-44, unique perceptions regarding condom use that were found that were not previously outlined in the literature. Specifically, African American women reported concerns with condoms causing allergic reactions or infections. Conversely, African American men in this sample reported decreased sexual pleasure and loss of an erection due to condom use (Noar, et. al., 2012). A study done in 2013 explored racial differences in attitudes towards condom use and found that African American women were more likely to report partner barriers than participants

of other races (Crosby, et. al., 2013). In a study among African American college students, Bazargan and colleagues found that those who held more positive attitudes towards condom use, such as denying that condoms impact sexual pleasure or decrease the sexual experience, reported more condom use in the last six months (Bazargan, Kelly, Stein, Husaini, & Bazargan, 2000).

While literature evidences that attitudes towards condoms can be predictive of condom use, little is known about how demographic variables such as gender and age influence condom attitudes. By gaining a better understanding of how age and gender may impact these attitudes, the most effective intervention strategies can be developed. Engaging in age and gender appropriate prevention strategies using the correct messages could result in decreased HIV transmission among African American substance users. Furthermore, gaining information about specific attitudes towards condom use among this population could also inform HIV treatment strategies, potentially increasing safe sex practices among those already infected.

Relationship of Gender and Barriers to Condom Use

Gender differences in condom use exist. Among college-aged people, women reported more unprotected sex when asked about their sexual history (Bontempi, Mugno, Bulmer, Danvers, & Vancour, 2009). Evidence suggests that condom barriers may also differ based on gender. Research indicates that men may be more likely than women to report that condoms interfere with sexual pleasure (Conley & Collins, 2005; Randolph, Pinkerton, Bogart, Cecil, & Abramson, 2005). For women, perceived control in their relationship with a partner seems to be an important variable that impacts attitudes towards condoms. Women with high relationship power are more likely to report consistent condom use (Pulerwitz, Amaro, Jong, Gortmaker, & Rudd, 2002).

Gender differences in condom barriers have also been explored among substance using populations. Research has shown that gender specific HIV prevention interventions for substance users have shown efficacy (Calsyn, et. al., 2009; Tross, et. al., 2008). This suggests that attitudes towards sex (including attitudes towards condoms) may differ for male substance users and female substance users.

When exploring condom barriers among substance users, Calsyn and colleagues (2013) found that overall, substance-using men endorsed more barriers to condom use than women. Specifically, men in the sample endorsed more sexual experience barriers than women. They were more likely to agree with statements such as "condoms interrupt the mood" or "condoms don't feel good." Men were also more likely to endorse motivational barriers to condom use, including statements such as "I don't want to use a condom, I never catch anything." No significant gender differences in partner barriers were present in this study.

Furthermore, these patterns have also been evidenced among African American substance users. African American male substance users expressed concern that condoms would diminish sexual pleasure and negatively impact their relationships (Charnigo, Crosby, & Troutman, 2010; Wilson, Burlew, Montgomery, Peteet, Johnson, & Hatch-Mailette, 2014). Women in general may be more apt to engage in risky sexual behaviors to maintain a current relationship with a partner (Adimora, et. al., 2009), and this might be heightened in the African American substance using community due to the skewed population sex ratio (number of men to women). Substance using women may also experience unique barriers regarding partner's perception of condom use if they are engaging in behaviors such as trading sex for money or drugs. While gender has been evidenced to impact the types of attitudes held regarding condom use, these attitudes have been yet to be the area of focus in research among African American

substance users. Potential information gained from this study aims to fill this gap and develop an understanding of how gender impacts attitudes towards condoms among this high-risk population.

Relationship of Age and Barriers to Condom Use

Age has also been evidenced to influence condom use. According to the CDC, youth under the age of 24 represent 17% of the population. However, in 2010, they comprised 26% of all new HIV infections. Young adults often exhibit decreased condom use and often report a lack of concern regarding transmission of HIV (CDC, 2015). Older adults also are at risk for decreased condom use. The National Survey of Sexual Health and Behavior (NSSHB) included over 5,000 adolescents and adults in the United States from ages 14-94. Though age differences among adults were not directly considered (adults versus adolescents were compared only), the study revealed that among adults reporting on condom use for the past ten vaginal sex encounters, participants aged 40-49 reported using condoms in only 13.6-20% of the time, with rates decreasing with age. By age 70 and above, people were only using condoms between 1.9-5.4% of the time (Reece, Herbenick, Schick, Sanders, Dodge, & Fortenberry, 2010).

While prevalence rates suggest a lack of condom use across the lifespan, condom barriers often change with age. For example, the reasons that younger and older adults prefer not to use a condom may vary. Past research suggests that young adults may feel that condoms are unnecessary in a committed relationship when they are aware of their partner's sexual history. Young adults also expressed an overall lack of motivation to use condoms, suggesting, "I just don't like them" (Civic, 2000). Newton and colleagues (2012) found similar barriers to condom use among a young (ages 18-26) Australian population. Participants in their sample expressed concern regarding their partner's perception of suggested condom use (e.g., condoms suggest

infidelity, partner may not want to use a condom). Both individual barriers as well as concern regarding your partner's attitudes towards condoms have important implications for condom use among young adults (Hood & Shook, 2014).

For older adults, barriers to condom use surround the theme of sexual pleasure. Crosby and colleagues (2008) found in a sample of older adults (mean age of 35), the most common condom barrier was the reported decrease in sexual pleasure. Older adults may also experience concerns regarding sexual performance (e.g., erectile dysfunction, vaginal dryness; CDC, 2014e) that could be related to concerns regarding sexual pleasure and condom use.

While age has been evidenced to impact the types of attitudes held regarding condom use, these attitudes have been yet to be the area of focus in research among African American substance users. Potential information gained from this study aims to fill this gap and develop an understanding of how age impacts attitudes towards condoms among this high-risk population. Additionally, both gender and age differences in attitudes towards condoms have rarely been the focus of one study. Furthermore, few studies explore if gender differences in attitudes towards condoms vary for different age groups.

Condom Barriers: Gender Differences Within Age Groups

While age and gender-specific attitudes towards condom use exist, the nature of these relationships seems complex. A few research studies have examined these relationships among various populations and have found that certain barriers (e.g., sexual experience, partner barriers) have been shown to impact women and men of different age groups in various ways.

Among a sample of 883 adults, Crosby and colleagues (2008) examined gender differences in common condom 'turn offs' reported over the last three months of sex. Results indicated that men were more likely to suggest that condoms decrease sexual pleasure, that

condoms spoil the mood, and that putting on a condom was a turn off. Women in the sample suggested that condom use implied a lack of trust, caused discomfort, and decreased partner pleasure. Some gender specific barriers reported in this study were also moderated by age. For example, putting on a condom was only a significant turn off for young men, but not for older men. For older women only, condom use suggesting a disease as well as condoms causing discomfort were reported as significant turn offs. While this study shows a clear pattern of gender-specific condom attitudes changing with age, some limitations are present. First, age was only divided into younger (under 33), and older (over 33) groups. This method may result in some important differences being washed out, as it assumes similarity among many different ages. For example, considering everyone ages 18-33 as one group is assuming that all people in this group hold similar attitudes towards condoms, which may not be the case. Perhaps some unique differences occur between 18 year olds that are not present for 25 or 30 year olds. Secondly, this study lacked a focus on populations most impacted by HIV, including African American substance users who may hold very different attitudes towards condom use.

Crosby and colleagues (2013) further considered negative perceptions about condom use using a clinic population. The study examined age, gender, and racial differences in negative perceptions about condoms. Over 900 individuals reported their agreement to 13 common negative perceptions regarding condom use. Results suggested similar gender differences as the previous study; men seemed to agree that condoms negatively influence sexual experience and women agreed closely with partner barriers. Negative perceptions were also explored for age and racial differences within each gender. Overall, African American women were found to agree with more partner barriers than their non-African American counterparts. Interestingly, older Black women held more negative perceptions (both partner and sexual experience barriers) than

younger Black women. Among African American men, older men were more likely to report both partner barriers and sexual experience barriers (Crosby, et. al, 2013). While this study explores age differences in condom barriers for both African American women and men, it fails to explore if gender differences in barriers to condom use are consistent or change with age. For example, Crosby and colleagues provided evidence that older African Americans (both women and men) may hold both partner and sexual experience barriers, however they failed to consider if the attitudes held by these men and women are significantly different from one another. Examining if gender differences in barriers to condom use vary by age would be important, because older African American men and women may significantly differ in the strength of their reported barriers. For example, maybe both older men and women report partner barriers, but maybe older African American women are impacted by these barriers more than men are. Furthermore, it could be important to understand if the difference in reported barriers for African American men and women are consistent across age or if they change. Younger populations may experience gender differences in barriers to condom use, but as people age, these differences may weaken. Gaining the additional information regarding the relationship of gender differences in attitudes towards condom use across age groups could provide the missing information needed for gender specific HIV preventative strategies. As with the previous study, a focus on substance users in the African American population is also gravely needed.

While the literature suggests that age and gender influence attitudes towards condom use, these influences have rarely been explored together as the focus of a study among African American substance users. Considering gender differences in condom use within specific age groups will give a more complete picture of the types of attitudes towards condoms that individuals hold across the lifespan. Furthermore, a clearer picture of how these attitudes are

displayed among African American substance users is crucial for HIV prevention. In order to better conceptualize the influence that age and gender may have on attitudes towards condoms, theoretical models such as the Theory of Reasoned Action and the Theory of Gender and Power can be applied.

Theory of Reasoned Action

The Theory of Reasoned Action (Ajzen & Fishbein, 1980) suggests that people's behavior is the result of of behavioral intention, or an individual's intent to engage in a specific behavior. Behavioral intention, in turn, is a function of either a person's attitude towards the behavior and/or the social norms of the behavior. It matters what a person's attitude is regarding a behavior as well their perception about what others expect (Fisher, Fisher, & Rye, 1995).

Evidence suggests that the Theory of Reasoned Action provides insight into HIV prevention. Fisher and colleagues (1995) found that reasoned action explained an individual's propensity to engage in an HIV preventative behavior (such as wearing a condom). If an individual has a positive attitude towards the behavior ("Always using a condom would be good") and if the preventative behavior is normative ("Most people who are important to me think I should use condoms") they are more likely to engage in the behavior. Similar results suggest that the theory also predicts HIV prevention behavior among adolescents. Among a younger population, the social normative nature of behaviors may be particularly important (Greene, Hale, & Rubin, 1997).

While the Theory of Reasoned Action can be used to explain engagement in HIV prevention behaviors (e.g., wearing a condom), it may also be useful in examining why some people may choose to not engage in these behaviors. As evidenced above, attitudes towards condoms can impact decisions to forego condoms during sexual encounters. Social norms

regarding how people should act sexually may also influence these attitudes about condoms use. For example, norms about how men or women should act sexually, or how sexuality should be expressed for different age groups, could influence behavioral intentions around sex.

Theory of Gender and Power

One theory that sheds light into possible social norms that may influence the types of attitudes men and women have about condoms is the Theory of Gender and Power. According to the theory, gender-specific roles in relationships between men and women are constrained by three independent structures: the sexual division of labor, the sexual division of power, and the structure of cathexis. All three structures are present not only at the societal but the institutional level (Connell, 1987). Expanded to include a public health and psychological perspective, the theory of gender and power provides an explanation for the systemic gender inequities of HIV risk (Wingood & DiClemente, 2000). Societal inequality on role assignment and wage-earning employment (sexual division of labor), the maintenance of relationship power differentials (sexual division of power), and the expectations society places on women regarding sexual behaviors and emotionality (cathexis) influence HIV risk among women, making them more vulnerable to the disease (Wingood & DiClemente, 2000). Considering the modified Theory of Gender and Power, it can be hypothesized that women may be more motivated to maintain a relationship due to their position of decreased power. Therefore, they may be more impacted by partner barriers to condom use, as they might be more concerned with their partner's opinions. Furthermore, substance-using women may be of particular risk, as they might be in a position of substantially lower power, perhaps using sex as a commodity to obtain drugs. This theory could also be used to hypothesize about barriers to condom use for men. Since men are in a position of higher power, maintaining a relationship may be of less concern. Therefore, their partner's

attitudes towards condoms may not be as important. Gaining a better understanding of the reasons why people hold specific attitudes towards condom use is an important first step in HIV prevention. The theories of Reasoned Action and Gender and Power highlight how certain attitudes as well as social norms regarding sex may influence barriers to condom use. Furthermore, they suggest how certain demographics, such as age or gender, should be considered when examining what attitudes people may hold.

Current Study

The HIV epidemic remains a health inequity that impacts specific populations such as African Americans and substance users. Demographic characteristics such as gender and age can also impact sexual decision making, resulting in individualized risks for specific groups. Gender and age differences in barriers to condom use have been evidenced in the literature. However, gender differences in barriers to condom use have yet to be explored for varying age groups. Furthermore, little research exists examining these relationships among African American substance users. This is a crucial step in HIV prevention, as this information has not yet been explored among this high-risk population.

The first aim of this study is to determine if gender influences the barriers to condom use endorsed by African American substance users. It is hypothesized that African American male substance users will endorse more sexual experience barriers. It is also hypothesized that African American female substance users will endorse more partner barriers to condom use.

The second aim of this study is to explore whether age moderates gender differences in condom barriers. It is hypothesized that African American men will endorse more sexual experience barriers than women among younger but not older substance users. It is also

hypothesized that women will endorse more partner barriers than men among younger but not older substance abusers.

Method

Participants

This study was a secondary analysis of the baseline data from two Clinical Trial Network data sets (CTN 0018 and CTN 0019) both funded by the National Institute of Drug Abuse (NIDA). Participants were included in the original study if they were enrolled in substance use treatment programs, at least 18 years of age, and self-reported unprotected vaginal or anal intercourse in the last six months. Individuals were excluded from the study if they exhibited any significant cognitive impairment (measured by the Mini Mental Status Exam [MMSE]) and if they were actively attempting to have children with a primary sexual partner. Pregnant women were also excluded. The two original studies resulted in 1105 participants total (n = 590 men, n = 515 women). Only 273 participants who self identified as African American were included in the current study.

Measures

Addiction Severity Index-Lite (ASI-L) Both the male and female clinical trials collected demographic information, self-report of current substance use, and drug related problems using the Addiction Severity Index-Lite. Only demographic information (age, race, relationship status, problem drug use, level of education, and employment) collected at baseline by this measure was included in the current study.

The Condom Barriers Scale (CBS). The Condom Barriers Scale (Lawrence, Chapdelaine, Devieux, O'Bannon, Brasfield, & Eldridge, 1999) is a 29 item self-report measure

designed to assess perceptions of barriers to condom use. A lower score on the scale indicates a participant "strongly agrees" with the statement, suggesting more of a barrier. Each item is organized into one of four dimensions: partner barriers, perceived effect of condoms on sexual experience, access/availability, and motivational barriers. The CBS was originally developed to assess condom barriers among African American women (St. Lawrence et al., 1999) but was also modified and re-analyzed to ensure appropriate use for men (Doyle, Calsyn, & Ball, 2008). Both the original and the modified CBS rely on the four-factor model explained above as well as a total score measuring an overall level of condom barriers. In adapting the CBS for men, the wording of some items was changed to reflect the male role in condom use (e.g., "I don't want to put a condom on my partner" was changed to "I don't want my partner to put a condom on me"). Furthermore, Confirmatory Factor Analysis revealed that some items loaded onto different factors for men than for women. Following the process outlined in previous research (Calsyn, et. al., 2013), the current study only included items that loaded similarly for both men and women. This resulted including only 24 total items in the current study; eight on the partner barrier scale, seven on the effect of sexual experience barrier scale, four on the motivational barrier scale, and five on the access/availability scale. Of note, the original CBS developed by St. Lawrence included eight partner barrier items, seven effect on sexual experience barrier items, six motivational items, and eight access/availability items.

Reliability analyses were conducted for all four factors on the CBS and results are presented in Table 1. Reliability analyses were explored for the sample as a whole as well as for men and women separately. Cronbach's alpha for the total sample ranged from .641 (motivational barriers) .693 (access/availability barriers), .853 (effect on sexual experience barriers) and .890 (partner barriers). For the males in the sample, Cronbach's alpha ranged from

.620 (motivational barriers), .709 (access/availability barriers), .847 (effect on sexual experience barriers) and .905 (partner barriers). For women, Cronbach's alpha ranged from .635 (motivational barriers) .662 (access/availability barriers), .847 (effect on sexual experience barriers) to .866 (partner barriers).

Procedures

Data were used from baseline measures of CTN0018 and CTN0019 (Calsyn, et. al., 2009; Tross, et. al., 2008). In the original studies, participants were recruited from drug treatment programs across the United States. CTN0018 recruited from seven methadone clinics and seven psychosocial outpatient clinics. CTN0019 followed a similar recruitment pattern recruiting from seven methadone clinics and five outpatient clinics. Participants who gave informed written consent and met the eligibility criteria completed baseline assessments that were used during this secondary analysis.

Data Analysis

Before the main analysis, preliminary analyses were conducted. First, reliability analyses, including Cronbach's Alpha coefficient, were conducted for all condom barriers. Secondly, all continuous variables were assessed for normality, including skewness and kurtosis. The data were also explored for possible empirically derived covariates that may differ by gender and/or age. Finally, the data were examined to ensure assumptions for multiple regression were met prior to conducting the main analysis.

To explore for gender differences in barriers to condom use endorsed (Aim 1), an independent samples t-test was employed because no covariates were identified. To test if age moderates the relationship between gender and condom barriers (Aim 2), a moderation model of multiple regression (including covariates) was used. Both aims were conducted for the sample as

a whole, and then were conducted separately for individuals with main sexual partners only, casual sexual partners only, and both main and casual sexual partners.

Results

Preliminary Analysis

Tables 2 outlines the characteristics of the sample. The total sample (n = 273) was approximately half men (45.4%) and half women (54.6%). Most of the participants were high school educated (71.4%), working full-time (35.2%), and preferred not to reveal their marital status (44.3%). The majority of the sample (52.7%) reported having only a main sexual partner over the last three months. The most common drug identified as the largest problem for both men and women was cocaine, followed by alcohol and other drugs. There were no statistically significant gender differences on age, years of education, marital status, partner status, or problem drug use. There was a significant difference in employment, with more men reporting working full time (40.3%) and more women being unemployed (41.4%) than any other category.

Table 3 presents the mean, standard deviations, and ranges of each condom barrier. As previously mentioned, a lower score indicates more of a barrier.

All continuous variables, including four condom barrier scales and age, were assessed for normality. Only the access/availability barrier scale showed signs of moderate negative skewness, so the data points were reflected and a square root transformation was performed, which improved the distribution. Due to this transformation, scores on the access/availability barrier scale were reflected; a higher score on the scale now indicates more of a barrier.

Prior to completing the multiple regression analysis, the data were assessed to ensure that no violation of the assumptions of normality, linearity, multicolinearity, and homoscedasticity were present. For partner barriers and motivational barriers, no violations of the assumptions

were present. For effects on sexual experience barriers and access/availability barriers, the normal probability plot and scatterplot of the standardized residuals suggest minor issues with normality and homoscedasticity, however these violations do not invalidate the test, but should be considered when interpreting findings (Tabachnick, & Fidell, 2001). It should also be noted these issues became less apparent when covariates were added in. The data were also explored for possible covariates, which resulted in drug use and marital status being included in the final analysis for Aim 2 only.

Main Analysis

The results of an independent samples t-test (Table 4) partially supported Aim 1. As hypothesized, gender differences were noticed for sexual experience barriers ($t(270) = 3.87$, $p = .000$), with scores for men ($M = 20.81$, $SD = 6.80$) being significantly lower than women ($M = 23.92$, $SD = 6.35$), suggesting that concerns with sexual experience were more of a barrier for men. However, the hypothesis that partner barriers would differ by gender was not supported ($t(271) = .713$, $p = .477$), as women ($M = 27.34$) and men ($M = 26.64$) reported similarly.

Aim 2 was not supported. The results of the moderation models displayed in Table 5, Table 6, Table 7, and Table 8 suggest that age did not moderate the relationship between gender and condom barriers for any of the four barriers (partner barriers, effect on sexual experience barriers, access/availability barriers, motivational barriers).

Additional Findings

While partner barriers did not exhibit gender differences, some unexpected differences were noticed for Aim 1. Gender differences were noticed among motivational barriers ($t(271) = 3.45$, $p = .001$), with men ($M = 11.72$) reporting significantly lower scores on this barrier than women ($M = 13.23$), suggesting that motivation is more of a barrier for men.

Additional findings for Aim 2 also suggest some unique differences. While age did not moderate the relationship between gender and condom barriers, age differences were evident for two barriers: motivational and access/availability barriers. As age increased, motivational barrier scores decreased (b = -.150, t (11) = -2.27, p = .001), suggesting more of a barrier among older participants than among younger participants. Similarly, as age increased, access/availability scores increased (b = .230, t (11) = 3.39, p = .001). Access/availability barrier scores were transformed; therefore a higher score indicates more of a barrier for older participants than for younger participants.

Data were also examined separately for individuals who indicated they have a main sexual partner, a casual sexual partner, or both a main and casual sexual partner over the last three months. When considering partner type for Aim 1, results indicated that among participants reporting main partners only (t(126) = 2.13, p = .04) and for those reporting both main and casual partners (t(91) = 2.26, p = .03), men reported more motivational barriers than women. This significant difference was not found for those with casual partners only (t(20) = .195, p = .704). Men with both casual and main partners also endorsed significantly more ESE barriers than women (t(91) = 2.36, p = .020), but this difference was not seen among those with casual partners (t(20) = .664, p = .541) or main partners (t(125) = .1.52, p = .132).

Similar results were found for Aim 2 when partner status was taken into consideration; age did not moderate the relationship between gender and condom barriers for any of the four barriers. However, the unique influences of age changed when considering different partner statuses. For participants reporting a main partner only, only access/availability barriers were influenced by age (b = .256, t (11) = 2.46, p = .015), suggesting that as age increased, access/availability concerns became more of a barrier. For participants reporting a casual partner

only, no differences for age were present for any of the barriers. However, for participants reporting both a main and a casual partner, age influenced scores for partner barriers (b = -.349, t (11) = -2.49, p = .015), access/availability barriers (b = .342, t (11) = 2.43, p = .018), and motivational barriers (b = -.391, t (11) = -2.83, p = .006). These results suggest that among participants who report having a main and a casual sexual partner in the last three months, older participants reported more partner barriers, access/availability barriers, and motivational barriers than younger participants.

Discussion

The overall goal of the current study was to explore the different barriers to condom use endorsed by African American substance users. African American substance users represent a group uniquely impacted by the HIV epidemic (CDC, 2014a; CDC, 2014d; Laurecin et al., 2008). Results from previous research suggest that demographic variables such as gender (Conley & Collins, 2005; Randolph et al., 2015, Crosby et al., 2008) and age (Civic et al., 2000; Newton et al., 2012) may influence the types of attitudes people have towards condoms. Some studies also suggest that age may moderate the relationship between gender and reported condom barriers (Crosby et al., 2008; Crosby et al., 2013). Gaining a better understanding of the types of attitudes African American substance users have regarding condoms is crucial for developing effective prevention strategies for this at-risk population.

The first aim of this study was to explore if gender influences the types of barriers endorsed by African American substance users. The first hypothesis was partially supported; as expected, African American male substance users reported more sexual experience barriers than female substance users. This is consistent with previous literature that suggests men often express concerns regarding the negative influence condoms may have on sexual experience

(Conley & Collins, 2005; Randolph, et. al., 2005). However, no gender differences were noticed for partner barriers, suggesting that men and women in the sample have similar concerns about their partner's attitude towards condoms. Unexpectedly, gender differences were noticed for motivational barriers, suggesting that men reported more motivational barriers than women. This could suggest that in addition to sexual experience concerns, African American substance using men may also experience less motivation to use condoms than African American female substance users.

The second aim of this study was to consider if age moderates the relationship between gender and barriers to condom use. Results suggested that age did not act as a moderator in the relationship between gender and any of the four condom barriers. Various limitations of the study could explain why this occurred. First, the overall sample was fairly old, with the mean age being 42 years of age. While the age ranged from 18-65, only 8.8% of the sample was under the age of 30. This limited range of younger adults could explain why age did not moderate gender differences in condom barriers in this sample. Another possible reason why age was not a significant moderator could be the way age was measured. In previous studies that found significant results of age as a moderating variable, age was considered categorically (i.e., everyone below the mean age and everyone above the mean age). Perhaps considering age as a categorical variable (i.e., low, medium, high) would have resulted in different findings, as the range of ages could be controlled. However, as mentioned before, considering age as a category sacrifices the possible subtle differences among ages. A final consideration as to why age was not a significant moderator could be that gender differences in barriers to condom use remain fairly consistent across age for African American substance users. For example, African

American male substance users may consistently experience more sexual experience barriers than women, across the duration of their lifespan.

While age did not moderate the relationship between gender and any of the four condom barriers, age seemed to be important for certain barriers. As age increased, participants in the study reported significantly more motivational barriers and access/availability barriers. This finding suggests that as both male and female participants get older, the concerns about access/availability to condoms and motivation to use condoms seem to become more of a barrier. Interestingly, motivational barriers showed both gender differences and age differences. More should be explored regarding the items that comprise this factor, as these attitudes were influenced by both gender and age.

Research suggests that partner type may impact the attitudes people have towards condoms (Wilson et al., 2013), therefore all analyses were conducted separately for participants reporting a main sexual partner, a casual sexual partner, or both a main and a casual sexual partner over the past three months. For Aim 1, results suggested gender differences in effect of sexual experience barriers, but only for people reporting both main and casual partners. Gender differences were also noticed for motivational barriers among participants who described having a main sexual partner and both a main and casual sexual partner only.

Age seemed to be associated with condom barriers differently across the varying partner statuses. For those reporting a main partner only, age differences were noticed for access/availability barriers. For participants with both a main and a casual partner, age differences were noticed for access/availability barriers, partner barriers, and motivational barriers. For individuals reporting a casual partner only, age differences were not noticed.

The differences in findings based on partner status could suggest that African American substance using men and women may hold different attitudes towards condoms when they are in either a main, casual, or both a main and casual sexual relationship. However, limitations of the Condom Barrier Scale exist which may make this difficult to assume. On the Condom Barrier Scale, participants are instructed to think of their main sexual partner when responding to "partner" items. If they do not have a main sexual partner, they are instructed to answer in a way that similar to most of their past sexual relationships. Therefore, it is difficult to know definitely that when participants are reporting on their attitudes towards condoms that they referring to attitudes they hold towards their current partner. Or, if they have both a casual and a main partner, it is impossible to know what partner they were considering when they reported attitudes towards condoms. Despite this limitation, this information could provide invaluable knowledge for prevention strategies, as it seems that partner status is important and could be considered in prevention strategies for this at risk population.

As with all studies, there are several limitations. First, the limited number of items for some factors, including motivational and access/availability barriers, may have made it difficult to ensure construct validity was adequate. Low reliability analyses for these two factors also suggest this limitation. Secondly, while the Condom Barrier Scale was restructured to be applicable for males and females and has been used with African Americans and African American substance using men (Lawrence et al., 1999; Wilson et al., 2013), there may be some barriers to condom use that African American substance users experience that are not included on the scale. For example, attitudes towards condom use when trading sex for money or drugs could be very different for African American substance users and is not assessed using the CBS. Furthermore, previous literature (Noar, et. al., 2012; Crosby, et. al., 2013) suggests some

attitudes towards condoms that are not directly assessed with the CBS, such as condoms causing allergic reactions or infections, resulting in a loss of erection, or condom use suggesting disease might be important for African Americans.

Despite the study limitations, this study exhibits strengths as well. A dearth of knowledge exists regarding the unique attitudes towards condoms held by African American substance users. While St. Lawrence and colleagues developed their scale for African American women, they did not consider the way these items would be perceived by African American male and female substance users (Lawrence, et. al., 1999). The research team developing the CBS first reviewed the literature, and then generated possible condom barrier items. They had HIV experts and independent judges further examine and solidify items on the scale. Results from this study suggest that African American substance users may not experience the same barriers that were self-generated by the researchers. Therefore, in developing a more appropriate measure of attitudes towards condoms for African American substance users, future research could include members of the African American substance using community to further explore the items on the CBS and gather information on their feedback about the current items or addition of any new items.

Clinical implications can also be generated from the results of this study. Attitudes towards condom use are an important factor to be considered when developing HIV prevention strategies. Knowledge gained from this study could inform prevention strategies for the high-risk population of African American substance users in order to decrease the HIV health-inequity. For example, this study suggests that prevention strategies targeting African American substance using men should focus on the perceived negative impact condoms have on sexual experience as well as motivational reasons not to use condoms. Interventions could achieve this by teaching

African American male substance users better ways to enjoy sex with a condom as well increasing their motivation to use a condom. Results from this study shed light onto prevention strategies for older adults as well. Prevention interventions targeting older adults should focus on increasing their access to condoms as well as improving their motivation to use them. Furthermore, this study suggests that attitudes towards condoms can vary for different types of partners, so considering partner status in prevention strategies could be very important for this population.

Gender and age have been evidenced to influence the types of attitudes that African American substance users hold towards condoms. Understanding how gender and age influence these barriers can inform prevention strategies, which may help reduce the HIV epidemic among a high-risk population. Perhaps intervention strategies for African American substance using men could focus on ways to improve the sexual experience when using condoms such as teaching correct ways to use lubrication, informing participants on how to ensure a condom properly fits, or exposing them to condoms with varying textures (i.e., ribbed). Strategies could also be employed to increase the access/availability of condoms for older African American substance users. This could include informing them of where to purchase condoms, obtain free condoms, or providing older African American substance users with condoms in places they frequent often, such as doctor's offices or treatment facilities. For both male and older adults, HIV prevention strategies could also focus on motivations for condom use. Discussing the importance of condom in HIV prevention, exposing them to the high rates of STI and HIV in their unique communities, and presenting condom use as a behavior that has positive health outcomes could achieve this goal.

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Table 1

Internal Consistency Reliabilities of all Condom Use Barriers by Gender

	Number of Items	Total Sample	Men	Women
		α	α	α
Partner Barriers	8	.890	.905	.866
ESE Barriers	7	.853	.847	.847
Motivational Barriers	4	.641	.620	.635
Access/Availability Barriers	5	.693	.709	.662

Table 2

Characteristics of the Sample

	Men		Women		df	t
Characteristic	M	SD	M	SD		
Age	43.22	10.03	41.54	7.89	270	1.55
Education Level	12.28	1.68	11.92	1.78	271	1.72

	Men		Women		X^2	df
	n	%	*n*	%		
Employment					8.872*	3
Full Time	60	40.3	36	29.0		
Part Time	32	21.5	25	20.2		
Unemployed	37	24.8	51	41.1		
Other	20	13.4	12	9.7		
Marital Status						
Divorced/Never Married	28	18.8	19	15.3	5.93	3
Married/Remarried	37	24.8	20	16.1		
Not Answered	62	41.6	59	47.6		
Other	22	14.8	26	21.0		
Problem Drug					4.033	5
Alcohol	14	9.4	7	5.6		
Alcohol + other drugs	33	22.1	25	20.2		
Cocaine	41	27.5	45	36.3		
Heroin	22	14.8	18	14.5		
More than one drug (not alcohol)	20	13.4	12	9.7		
Other	16	10.7	11	8.9		
Partner Status					3.78	2
Casual Partner Only	10	7.4	12	11.2		
Main Partner Only	67	49.3	61	57.0		
Both Main and Casual	59	43.4	34	31.8		

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

Table 3

Mean and Standard Deviation of Condom Barriers

	M	*SD*	Range
Partner Barriers	26.96	8.0	32
Effect on Sexual Experience Barriers	22.21	6.8	28
Access/Availability Barriers	21.42	3.0	19
Motivational Barriers	12.41	3.7	16

Table 4

Average scores and t-test results of Gender Differences for Condom Barriers

	Men		Women		df	t
Characteristic	M	SD	M	SD		
Partner Barriers	26.64	8.42	27.34	7.50	271	.713
ESE Barriers	20.81	6.80	23.92	6.35	270	3.87**
Access/Availability Barriers	2.06	.761	1.96	.687	271	-1.13
Motivational Barriers	11.72	3.70	13.23	3.52	271	3.45**

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

Table 5

Regression Coefficients for Moderation between Gender, Age, and Partner Barriers

Variable	B	SE B	β
Constant	26.49	1.279	
Gender	-.32	.50	-.04
Age	-.08	.06	-.09
Gender x Age	-.01	.06	-.01
Covariates			
Divorced or Never Married	-.16	1.63	-.01
Not Answered Marital Status	-.28	1.34	-.02
Other	-.21	1.63	-.01
Alcohol	-.41	1.95	-.01
Alcohol and Other drugs	-.74	1.36	-.04
Heroin	4.05	1.53	.18*
More than one drug	.92	1.66	.04
Other drugs	1.89	1.83	.07

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

Table 6

Regression Coefficients for Moderation between Gender, Age, and ESE Barriers

Variable	B	SE B	β
Constant	21.36	1.07	
Gender	-1.55	.42	-.23**
Age	.022	.05	.03
Gender x Age	.064	.05	.09
Covariates			
Divorced or Never Married	-.64	1.36	-.04
Not Answered Marital Status	.48	1.12	.04
Other	1.14	1.37	.06
Alcohol	.62	1.63	.03
Alcohol and Other drugs	.60	1.13	.04
Heroin	1.48	1.28	.08
More than one drug	.43	1.39	.02
Other drugs	1.98	1.53	.09

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

Table 7

Regression Coefficients for Moderation between Gender, Age, and Access/Availability Barriers

Variable	B	SE B	β
Constant	1.88	.11	
Gender	.04	.04	.06
Age	.02	.01	.23**
Gender x Age	.01	.01	.07
Covariates			
Divorced or Never Married	.19	.15	.01
Not Answered Marital Status	.23	.12	.16
Other	.04	.15	.02
Alcohol	-.02	.17	-.01
Alcohol and Other drugs	-.09	.12	-.05
Heroin	.07	.14	.03
More than one drug	.00	.15	.00
Other drugs	-.07	.16	-.03

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

Table 8

Regression Coefficients for Moderation between Gender, Age, and Motivational Barriers

Variable	B	SE B	β
Constant	11.78	.57	
Gender	-.77	.22	-.20**
Age	-.06	.03	-.15*
Gender x Age	.00	.03	.00
Covariates			
Divorced or Never Married	-.04	.73	-.00
Not Answered Marital Status	-.30	.59	-.04
Other	-.01	.73	-.01
Alcohol	.08	.87	.00
Alcohol and Other drugs	1.50	.60	.17*
Heroin	1.66	.68	.16*
More than one drug	.92	.74	.08
Other drugs	1.80	.81	.15

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