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Associations between Depressive Symptomatology, Religiosity, and Sexual Risk
Behaviors Among African American Church Going Women Ages 35-60

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2015

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An abstract of
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2017

Abstract

Associations between Depressive Symptomatology, Religiosity, and Sexual Risk Behaviors Among African American Church Going Women Ages 35-60

By Danielle E. Reece

Introduction: Rates for sexually transmitted infections among older individuals have been increasing over recent years, with incidence rates for chlamydia and syphilis almost tripling among adults between the ages of 45 and 65 since 2000. Several personal and social level factors are likely related to engagement in sexual risk behaviors.

Objective: The purpose of this study was to assess whether a relationship exists among depressive symptomatology, individual religiosity, religious social support, and sexual risk behaviors in order to better understand the predictors of engagement in risky behavior.

Methods: This study utilized baseline cross-sectional data from a larger longitudinal faith-based HIV-prevention intervention. Single African American women ages 35-60 who were members of four churches in the Atlanta Metro area were surveyed.

Results: Multivariable analysis suggests depressive symptomatology is marginally associated with condom use and number of sex partners, with those being classified as having high depressive symptomatology being twice as likely to report inconsistent condom use (AOR= 2.1; 95% CI=1.0, 4.4; $p=.05$), and 1.6 times more likely to have multiple sex partners (AOR=1.6; 95% CI=1.0, 2.7; $p=.05$). Religious social support is significantly associated with number of sex partners, with individuals classified as having low religious social support being 1.7 times as likely to have multiple sex partners than those with high religious social support (AOR=1.7; 95% CI=1.0-2.9; $p=.03$). Religious social support was not significantly associated with condom use ($p=.35$). Strength of individual religious faith was not significantly associated with condom use ($p=.51$) or number of sex partners ($p=.77$).

Conclusions: Results support previous literature with respect to depressive symptomatology and social support being associated with likelihood of engaging in risky sexual behaviors. More research is needed to examine the relationship between religiosity and sexual risk behaviors. Additionally, future work could benefit from investigating any interaction effects between religiosity and depressive symptomatology relative to sexual risk taking. Findings have implications for faith-based sexual health education programming among older African American women.

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Background and Significance

Sexually transmitted infections (STIs) are currently among the most common communicable diseases in the United States, with recent reports from the Centers for Disease Control and Prevention (CDC) estimating approximately 18.9 million new diagnoses every year (CDC, 2014; Workowski & Berman, 2011). This statistic is likely an underestimate of true STI rates due to undetected symptoms and underreporting. The current STI epidemic has disproportionately affected African American individuals. According to 2014 surveillance data, African American individuals only account for approximately 14% of the total US population, but represent almost two-thirds of new gonorrhea cases, one-third of new chlamydia cases, and over half of new syphilis cases (CDC, 2014). The disparity between STI prevalence rates for African Americans and Whites is striking with African American women being 5.7, 10.7, and 9.2 times more likely to be infected with chlamydia, gonorrhea, and syphilis respectively (CDC, 2014).

In recent years, HIV/AIDS has hit the Southern US particularly hard. Georgia specifically is currently in the midst of an HIV/AIDS epidemic, with the Metro Atlanta area being a hotspot for new cases. According to 2014 surveillance data, Georgia ranked 5th among the 50 states with 2,253 new cases of HIV diagnosed by the end of that year (CDC, 2014). Of these cases, 1,095 were diagnosed in individuals residing in the Metro Atlanta area. The discrepancy between White and African American infection rates is especially apparent when looking at HIV prevalence among women in Georgia. The number of African American females living with HIV in Georgia is 12.6 times the number of White females (AIDSVu, 2016). For males, this disparity is still present, but to a lesser degree, as African American males are only 5.8 times more likely to be living with an HIV diagnosis

compared to their White counterparts. Comparison rates for HIV prevalence rates among White and African American women in Georgia can be seen in Figure 1.



Figure 1. The rate of black females living with an HIV diagnosis in Georgia is 12.6 times that of white females (AIDSVu, 2016).

Traditionally STIs have been considered an issue primarily isolated to adolescents and young adults, especially those age 15-24 (Copen, Chandra, & Martinez, 2012). However, recent research suggests that increasing trends in STI transmission are evident among older individuals (Minichiello, Hawkes, & Pitts, 2011). Increasing divorce rates and the advent of performance enhancing medications have resulted in a rise of sexual activity among middle aged and older adults (Lindau et al., 2007). It is estimated that approximately 65% of women over the age of 40 are sexually active, and most report engaging in sexual activity monthly (Addis et al., 2006; Nicolosi et al., 2004). As women age and the risk for unintended pregnancy decreases, so does the perceived need to use protection during sexual activity (Binson, Pollack, & Catania, 1997). It has been shown that individuals over the age of 31 are significantly less likely to use condoms during sexual activity compared to younger individuals (Murphree & DeHaven, 1995). Low condom use among the midlife and older adult populations could be partially attributed to a lack of knowledge regarding safe sex practices, as women over the age of 50 have been shown to have limited knowledge regarding condom efficacy and sexual risk factors relative to the

younger women (Henderson et al., 2004). Failing to use adequate protection strategies puts midlife and older adults at risk of contracting STIs. Individuals age 50 and older accounted for approximately 17% of new HIV diagnoses in 2013, and the incidence rates for chlamydia and syphilis have almost tripled among adults between the ages of 45 and 65 since 2000 (CDC, 2017). The severity of the STI issue is escalated among older individuals as they are at risk for increased ensuing morbidity and mortality (Harawa, Leng, Kim, & Cunningham, 2011). For HIV specifically, quality of life decreases significantly for individuals diagnosed after age 35 (CDC, 2014).

STIs are associated with a myriad of adverse health effects such as pain, issues with urination, predisposition to testicular and cervical cancer, increased susceptibility to HIV, and infertility (CDC, 2014). In addition to the negative health outcomes that result from contracting a STI, there are also significant financial consequences associated with the high prevalence of infections. It is estimated that the total annual direct cost for treatment of STIs in the United States is approximately 15.6 billion dollars (Owusu-Edusei Jr et al., 2013). A recent increase in reported cases of STIs for individuals over the age of 35 will likely result in increased direct costs and a greater financial burden on the US economy (CDC, 2014). Thus, understanding the factors related to increased STI prevalence is imperative for mitigating both adverse health outcomes and the financial burden associated with STIs.

Research suggests that mental health problems such as depression may contribute to both the development and maintenance of sexual risk behaviors (Lyon, D'angelo, Schuman, Tipnis, & Mrazek, 2000; Stiffman, Doré, Earls, & Cunningham, 1992). Specifically, depression has been shown to be associated with condom nonuse and STI history (Shrier,

Harris, Sternberg, & Beardslee, 2001). Mental health issues are also known to be related to having multiple partners and engaging in sexual activity after consuming substances such as alcohol and marijuana. Evidence suggests that the syndemic between psychosocial factors such as depression and STIs may be perpetuated by racial disparities, with African Americans suffering from depression being more likely to endorse STI history than Whites with depression (Singer et al., 2006). Additionally, recent research suggests that compounding racism and discrimination may lead to mental health issues disproportionately affecting African American individuals with increased frequency and severity. It has been shown that adult Black/African Americans are 20% more likely to report serious psychological distress than adult Whites (Mental Health America, 2017). Furthermore, approximately 20% of midlife to older adults experience depressive symptoms that could be considered highly morbid - such as suicidal ideation, hopelessness, and anhedonia - and the burden of depression is disproportionately higher among middle aged and older women compared to men (Barry, Allore, Guo, Bruce, & Gill, 2008; Beekman et al., 1995).

While mental illness may be a potential risk factor for engaging in risky sexual behaviors and consequently contracting a STI, studies suggest that religiosity, both in the form of individual religious strength and religious social support, may be protective against STI transmission and infection. In a previous study examining sexual risk behaviors among females, research found that high religiosity was associated with having fewer sexual partners and being less likely to have an unplanned pregnancy or a STI (Gold et al., 2010). However, while this study found religiosity to be protective against sexual risk behaviors, other studies have found it to be associated with less frequent condom use, or have found little association at all (Brewster, Cooksey, Guilkey, & Rindfuss, 1998; Donnelly,

Goldfarb, Duncan, & Eadie, 1999). Furthermore, religious social support has been found to be more protective against engaging in risk taking behaviors than general social support among religious individuals (Debnam, Holt, Clark, Roth, & Southward, 2012). Religiosity in the United States is common, with up to 95% of Americans believing in God to some extent, and approximately 80% reporting that religion is important to them (Cotton, Zebracki, Rosenthal, Tsevat, & Drotar, 2006). Additionally, older African Americans are significantly more likely to report being religious than older Whites (Taylor, Chatters, & Levin, 2003). With religion being such an integral part of many people's lives, it is important to determine its potential impact on sexual risk behaviors and STI infection.

Purpose and Research Questions

Due to the increasing prevalence of STIs among midlife and older African American women, it is imperative to evaluate factors that may influence sexual risk behaviors, such as condom nonuse and having multiple sexual partners, resulting in increased risk of STIs. There is a significant amount of previous literature that investigates depression and religiosity as determinants of sexual risk behaviors among adolescents (Bersamin et al., 2014; L. K. Brown et al., 2010; Khan, Murray, & Barnes, 2002; Shrier et al., 2001; Tolman & McClelland, 2011), but no research on this topic specific to older African American women has been conducted to date. Therefore, to address this gap in the literature, this study will focus on African American women age 35-60 who attend church regularly. The purpose of this thesis is to analyze the extent to which depressive symptomatology and religiosity among this population predict sexual risk behaviors. Findings can be used to inform future sexual risk prevention education and interventions. This thesis will seek to answer the following questions:

- 1) Is there an association between depressive symptomatology and sexual risk behaviors?
 - a. Hypothesis 1: High depressive symptomatology will be associated with a greater likelihood of engaging in risky sexual behaviors.
- 2) Is there an association between religious social support and sexual risk behaviors?
 - a. Hypothesis 2: Low religious social support will be associated with a greater likelihood of engaging in risky sexual behaviors.
- 3) Is there an association between individual religiosity and sexual risk behaviors?
 - a. Hypothesis 3: Low religiosity scores will be associated with a greater likelihood of engaging in risky sexual behaviors.
- 4) What is the relationship between depressive symptomatology, religious social support, and individual religiosity with sexual risk behaviors?
 - a. Hypothesis 4: Multiple logistic regression models that include depressive symptomatology, religious social support, and individual religiosity will account for a significant amount of the variance in risky sexual behavior engagement.

Theoretical Framework

This thesis was informed by Social Cognitive Theory (SCT) (Bandura, 1986). SCT is a learning based theory grounded in the idea that individuals learn by observing the behavior of others. This theory aims to explain how people acquire certain behavior patterns, and provides the basis for intervention strategies (Bandura, 1997). SCT framework is based on the idea that a triadic reciprocal relationship exists between cognition/attitude, environment, and behavior. Based on this theory, behavior change is the

product of the dynamic interplay between personal, environmental, and behavioral influences. According to this idea of triadic reciprocity, how people interpret the results of their own behavior informs and alters their environments as well as their personal characteristics, such as personality, cognition, and attitudes. In turn, these changes may inform and alter subsequent behaviors (Baranowski, Perry, & Parcel, 2002).

Selection of SCT for use in this thesis was based on previous work that utilized this theory to investigate factors influencing engagement in sexual risk behaviors. SCT has been used to develop a better understanding of consistent condom use, engagement in sexual intercourse while under the influence of alcohol or other substances, disclosure of STI history to new partners, and refusal of unwanted sex (Diiorio et al., 2001; Hutchinson, Jemmott, Jemmott, Braverman, & Fong, 2003; O'leary, Jemmott, & Jemmott III, 2008). Factors that influence engagement in sexual risk behaviors are multifaceted, thus the theory used to inform this thesis had to consider multiple levels of influence and how they interact with one another to guide behavior. The incorporation of both personal and environmental level constructs allowed for a more complete investigation of the determinants that impact the likelihood of engaging in sexual risk behaviors.

Operating under the idea that both personal and environmental characteristics must be considered to effectively evaluate a behavior and potential behavior change, determinants that encompassed these two constructs were selected for investigation. With respect to SCT, personal factors include knowledge, personality traits, cognition, and attitudes, whereas environmental factors encompass ideas such as social norms and community (Chiu, Hsu, & Wang, 2006). For the purposes of this study, mental health status and individual religiosity were investigated as potential personal factors that may influence

sexual risk taking behavior. Individuals who suffer from mental health issues or feel as though they have minimal power over their sex life, may be less inclined to negotiate condom use or refuse unsafe sex. With respect to environment, the social aspect of religious community was assessed as a potential influence on sexual risk behavior.

Individuals who are actively engaged in their church are likely develop strong social connections with their fellow church members (Ellison & George, 1994). As such, the thoughts, attitudes, and perceived support of their religious community may influence their sexual risk taking behaviors. The map of the theoretical constructs that guided this thesis can be seen in Figure 2.

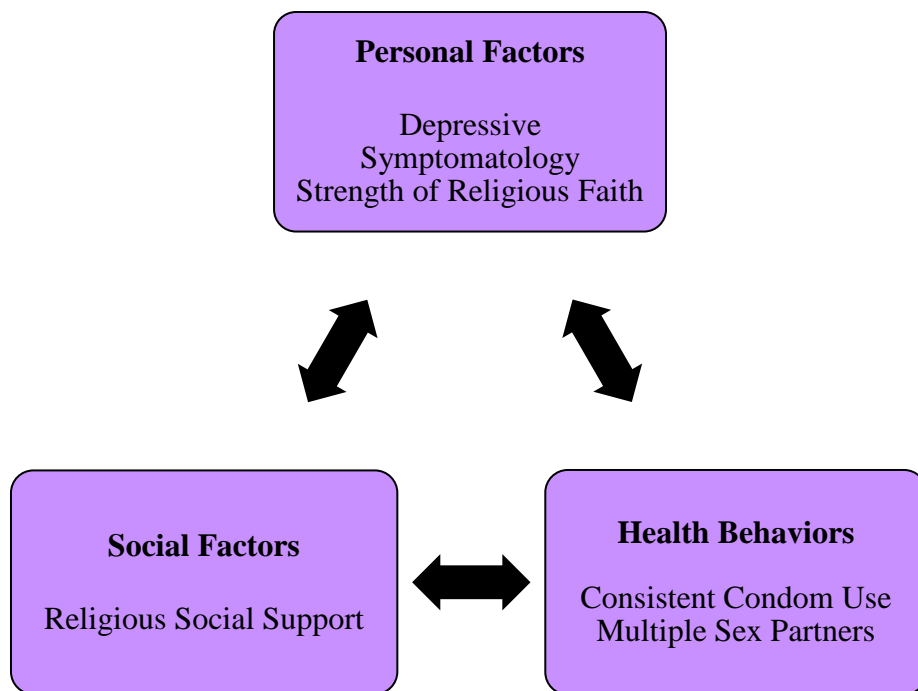


Figure 2. Application of Social Cognitive Theory to Proposed Study.

Literature Review

Factors Influencing Sexual Risk Behaviors

Sexual risk behaviors encompass a variety of different actions that put a person at risk for adverse health outcomes while engaging in sexual activity, or increase the chance of an unwanted pregnancy (CDC, 2014). Engaging in unprotected sex, having multiple sex partners, participating in sexual intercourse while under the influence of substances, and switching sex partners frequently are some of the most common risky sexual behaviors (CDC, 2014). Previous research has established many determinants of engaging in sexual risk behaviors. Sexual risk behaviors are complex and multifaceted, so it stands to reason that multiple factors influence one's engagement in such behaviors. Some of the major predictors of engagement in sexual risk behaviors include education level, condom use self-efficacy, alcohol and substance use, age at sexual debut, socioeconomic status, living with a single parent, social network, and history of rape or sexual assault (Guiella & Madise, 2007; M. Miller & Neaigus, 2002; Stueve & O'donnell, 2005). In most of these studies, the influence of these factors on sexual risk behaviors have been looked at in isolation. However, looking at each of the correlates individually may be too narrow of an approach to adequately capture the complexity of the issue.

It is likely that factors influencing engagement in sexual risk behaviors act on a multi-systematic level (Kotchick, Shaffer, Miller, & Forehand, 2001). Environmental and personal risk factors interact via reciprocal determinism to influence risk taking behaviors. Many of the predictors of sexual risk behaviors listed above are encompassed within an individual's mental health status and social support system. For instance, individuals who suffer from depression are more likely to abuse substances, have an early age of sexual

debut, have a history of rape or sexual assault, and belong to a low-income community (Goodman & Huang, 2001; Spriggs & Halpern, 2008; Vickerman & Margolin, 2009; Whitbeck, Hoyt, & Bao, 2000). According to the life course approach, an individual's overall physical and mental well-being later in life is largely dependent on the social, economic, and physical environments in which they have spent a significant amount of time in (Bengtson & Allen, 2009). Additionally, social support is related to an individual's home environment, upbringing, higher education success, and overall mental and physical well-being (Kessler & McLeod, 1985; Marks & McLanahan, 1993; Piko, 2000; Wilcox, Winn, & Fyvie-Gauld, 2005). Due to the high correlation of many of the predictors of sexual risk taking behaviors to depressive symptomatology and social support, the remainder of this literature review will focus on these two key determinants and their relationship with sexual risk behaviors.

Depression's Influence on Risky Sexual Behavior

Mental health issues have consistently been found to be associated with increased engagement in sexual risk taking behavior and subsequent adverse health outcomes. Specifically, previous research has found psychological distress to be related to higher rates of unintended pregnancy, increased likelihood of having non-monogamous partners, and less frequent use of contraception (DiClemente et al., 2001). In a 2001 study investigating the relationship between psychological factors and unprotected sex among HIV positive individuals, it was found that individuals experiencing anger, sadness, or other forms of emotional distress were more likely to engage in unprotected sex, despite being aware of their HIV status (Bingman, Marks, & Crepaz, 2001). In a second study of HIV positive individuals, it was found that individuals who had less effective cognitive coping strategies,

and thus displayed poor emotional regulation, were more likely to act impulsively and engage in unprotected sex (Clement, 1992). Furthermore, individuals who are suffering from a mental health disorder appear to be less likely to ask their partners about STI history and have more difficulty in refusing unwanted sexual activity (Reisner et al., 2009).

The literature includes a myriad of studies that have looked at the relationship between psychological distress and sexual risk taking behaviors. Based on a review of these studies, it appears that depressive symptoms are most closely related to increased likelihood of participating in sexual activities that heighten risk for adverse health outcomes. In a 2001 study that involved interviewing homeless individuals and collecting biological tests for STI history, researchers found that those individuals who either had a prior DSM IV diagnosis of major depression or endorsed feelings associated with dysthymia, were more likely to test positive for a STI (Rohde, Noell, Ochs, & Seeley, 2001). Similarly, individuals who met criteria for internalizing disorders such as depression were more likely to report having two or more sexual partners at one time and have a urine screen that tested positive for a STI, compared to individuals who did not meet criteria for a mental illness or those who suffered from mental disorders that were less impairing than depression (Brown, Tapert, Granholm, & Delis, 2000). Additionally, suffering from depression may heighten the effects of the other predictors that are associated with increased sexual risk taking behavior. A study investigating the compounding effects of having a tripartite of drug use, exposure to violence, and depression found that individuals who endorsed all three of these risk factors displayed more sexual risk behaviors than those who abused drugs and had been exposed to violence, but did not have depression (Johnson, Cunningham-Williams, & Cottler, 2003).

The relationship between depressive symptomatology and sexual risk behaviors is especially apparent among middle age and older women. Older women are more likely to experience recurrent episodes of major depression than their male counterparts and women between the ages of 45-64 are more likely to report that their sexual experiences are affected by emotional distress than younger women (Kessler et al., 2005; Shifren, Monz, Russo, Segreti, & Johannes, 2008). Additionally, an examination of individuals 45 years of age and older found that 20% percent of the participants reported inconsistent use of condoms and 33% had multiple sexual partners (Illa et al., 2008). In this same study, negative mood was predictive for inconsistent condom use.

No literature to date could be found that directly compared the association between depressive symptomatology and sexual risk taking behavior among older White and African American women. However, research suggests that depression rates differ between African Americans and Whites. African American women are more likely to experience depression but less likely to seek help for mental health issues compared to White women (Alegría et al., 2008; Bromberger, Harlow, Avis, Kravitz, & Cordal, 2004). The high prevalence of depression and increased rates of STI transmission among older African American women suggests there may be a relationship between depressive symptoms and sexual risk taking behaviors in this population that has yet to be investigated.

The Role of Social Support

The literature appears to agree that social support serves as a protective factor against engagement in sexual risk behavior. Individuals with low social support appear to have lower condom use self-efficacy, be less knowledgeable about AIDS and other STIs, and hold more negative attitudes toward condom use (St. Lawrence, Brasfield, Jefferson,

Allyene, & Shirley, 1994). Furthermore, individuals who have social support systems that fail to support prosocial behaviors are more likely to engage in risky sexual behaviors (Biglan et al., 1990). A longitudinal study found that adolescents who have supportive family relationships and strong connections within their school environment were less likely to participate in risky behaviors (McNeely & Falci, 2004). More recently, it was demonstrated that having strong social support systems may act as a buffer against HIV transmission and may decrease the likelihood of participating in risky sexual behaviors (Baral, Logie, Grosso, Wirtz, & Beyrer, 2013; Lelutiu-Weinberger et al., 2013).

Social support can come in a variety of forms. The literature highlights workplace, family, friend or peer, religious community, social media, and intimate relationship connections as key sources of social support (Chou, Hunt, Beckjord, Moser, & Hesse, 2009; Harris, Winskowski, & Engdahl, 2007; Li, Ji, & Chen, 2014; Morris, 2013). Research suggests that different sources of social support can be more effective than others at protecting against engagement in risk behaviors and subsequent adverse health outcomes. For example, one study found that high levels of family social support were important in promoting good mental health, whereas high levels of peer and friend social support were protective against poor academic achievement (Rothon, Head, Klineberg, & Stansfeld, 2011). Furthermore, positive workplace social support has been found to mitigate the effects of job stress on emotional well-being, and strong romantic partner support has been found to be associated with less relationship conflict and more positive mood (Cramer, 2004; Kinman, Wray, & Strange, 2011).

In addition to certain forms of social support being more protective than others, there are also sources of support that are more desirable among certain populations than

others. The literature suggests that preferred source of social support and the effectiveness of the support can vary across age, ethnicity, and sex (Vaux, 1985). With respect to age, studies have found that the preferred source of social support changes as an individual gets older. Young children appear to get their primary source of social support from their parents, older children appear to get it from same sex peers, and adults appear to receive most of their social support from romantic partners (Furman & Buhrmester, 1992; Wrzus, Hänel, Wagner, & Neyer, 2013). Men and women appear to differ somewhat significantly in the size and type of social support networks they possess. In fact, women have large and more diverse social support networks, whereas men tend to rely only on their spouses. This was especially true for older women and men (Antonucci & Akiyama, 1987). A second study supported this finding with results from female-male twins that suggested women have higher levels of social support and more diverse social networks than their twin brothers (Kendler, Myers, & Prescott, 2005). The data from this study also show that having strong emotional support networks is much more important for women than for men. Multiple sources also indicate differences in social context and influences among varying ethnicities. The literature suggests that Latino individuals place more emphasis on family support, White individuals rely mainly on friend/peer support, Asians appear to value primarily occupational support, and African American individuals place significant influence on religious community support (DeGarmo & Martinez, 2006; Jung & Jung, 1989; Kim & McKenry, 1998; Taylor et al., 2003). Understanding the source of social support that is preferred and valued in a population is important because it is likely that these sources have more influence on behavior than other sources of social support.

Religious Community as a Source of Social Support

As was previously mentioned, religious community is an important source of social support for African American individuals, and social support is a key predictor for engagement in sexual risk behaviors. As such, it is important to understand how religion serves as a source of social support, especially for African American individuals, and how it may influence participation in risky sexual behaviors. The literature shows that African Americans display high levels of religious involvement compared to individuals of other races. They are specifically more likely to attend church weekly, to belong to a Bible study, and to be an active member in a church community (Ellison & George, 1994; Taylor et al., 2003; Taylor, Ellison, Chatters, Levin, & Lincoln, 2000). In addition, literature from the early 1990's highlights the church's role in influencing domains outside of the religious community. In an attempt to examine how the church interacts with other social institutions, it was found that for African American individuals, the church provided a source of community and support that assisted them in their family, school and work endeavors (Billingsley & Caldwell, 1991). The church provided values and social support that could then be applied and capitalized on in other aspects of life.

With respect to sexual risk behaviors, the literature supports the hypothesis that having a strong religious community is protective against engagement in sexual risk behaviors. Findings indicate that church membership, participation in group worship and activities, and involvement in a church community group is associated with reduced risk behaviors in several areas, including sexual activity for both adolescent and adult populations (Billieux, Sherman, & Latkin, 2014; Sinha, Cnaan, & Gelles, 2007). Religious community support appears to influence sexual risk taking behaviors through enhancing

self-efficacy and confidence in communicating with partners. In fact, increased religious social support was related to heightened confidence and self-efficacy with respect to communicating with new, as well as steady male partners about sex; about STDs, HIV, and pregnancy prevention; and in refusing an unsafe sexual encounter for African American females (McCree, Wingood, DiClemente, Davies, & Harrington, 2003). Based on the substantial literature advocating for the protective nature of religious community support against risky sexual behavior involvement, especially among an African American population that values religious support, it is reasonable to assume that low religious community support will be related to increased likelihood of participating in risky sexual behaviors.

Religiosity and Risky Sexual Behaviors

Apart from religion being a key component of social support for African American individuals, religiosity as a personal characteristic has been found to be a predictor for engagement in sexual risk behaviors. However, the literature produces mixed finding with respect to this relationship. One study found that having high religiosity may be associated with delayed age of sexual debut, but decreased condom use when engaging in sexual activity (Zaleski & Schiaffino, 2000). Several other studies have supported the idea that high religiosity is associated with later age at first sex (Bearman & Brückner, 2001; Beck, Cole, & Hammond, 1991; Crockett, Raffaelli, & Moilanen, 2003; Jessor, Costa, Jessor, & Donovan, 1983; L. Miller et al., 2012; Mott, Fondell, Hu, Kowaleski-Jones, & Menaghan, 1996; Pleck, Sonenstein, & Swain, 1988). This relationship may be especially true for African American females (Rostosky, Wilcox, Wright, & Randall, 2004). Another study found that in a sample of men who have sex with men, religiosity was associated with

decreased likelihood of engaging in unprotected sex, but another study of heterosexual college students reported that religiosity level had no relationship with condom use (Garofalo et al., 2015; Sprecher, 2013). No relevant literature could be found that focused on religiosity and risky sexual behaviors for older African American women, suggesting a gap in the literature with respect to this population.

Religious Involvement, Depressive Symptomatology, and Risky Sexual Behaviors

Religiosity and depressive symptomatology are considered potential predictors of sexual risk behaviors, so it is important to also understand if these determinates are correlated with one another. Similar to the relationship between religiosity and sexual risk behaviors, the association of religion with depressive symptomatology is also relatively unclear. Based on a review of the literature, it appears that individual religiosity, such as prayer, meditation, and scripture reading, has mixed associations with depressive symptomatology, with some studies finding no relationship (Strawbridge, Shema, Cohen, Roberts, & Kaplan, 1998) and others finding individual religiosity to be protective against depressive symptomatology (Cooley Fruehwirth, Iyer, & Zhang, 2016; Miller et al., 2012). There is slightly more consensus amongst the literature with respect to the relationship between religious community support and depressive symptomatology, with most studies finding higher religious community support being related to lower depression scores and fewer depressive symptoms (Parker et al., 2003; Wilson et al., 2007). Many these studies were conducted with college students or individuals experiencing a serious physical illness. It is likely that both individual religiosity and religious community support would be more highly correlated to depressive symptomatology among a sample of individuals who attend church regularly and place significant importance on religious social support. To date, there

does not appear to be any literature investigating the association between having high depressive symptoms and low religiosity with sexual risk behaviors.

Summary

After a thorough review of the existing literature on depressive symptomatology, religious community support, and sexual risk behaviors, there appears to be a variety of inconclusive findings. Moreover, most of the research done in these topic areas has focused on adolescents, and has neglected older individuals. The above-mentioned research questions for this thesis, therefore, aim to address some of the ambiguity and inconsistency in the current literature, as well as fill the gap for research involving older women. In addition, this thesis aims to address the potential combined contribution of depressive symptomatology, religious community support and individual religiosity on sexual risk behaviors. Older African American women are a vulnerable, often overlooked population; therefore, evaluating these determinants of sexual risk behaviors and subsequent adverse health outcomes in this population is necessary.

Methodology

Recruitment and Sampling

Four predominately African American churches in Atlanta, GA served as the recruitment and implementation sites for the parent study, a longitudinal randomized behavioral trial seeking to assess the efficacy of an HIV/STI prevention program for African American women attending large church institutions. These churches each had congregations ranging from 7,000 – 25,000+ members, 98% of which were African American. Purposive sampling was utilized. Recruitment processes included Sunday service on-site recruitment, pulpit announcements, e-newsletters, web postings, and print material distributed at special events and at the churches. Another instrumental piece of the recruitment process was utilizing church liaisons. Each site identified a key liaison that worked with the research team to support all recruitment processes, as well as oversee program logistics at their church site.

From May 2011 through October 2013, 1,119 women were screened for participation in the study. Of these, 629 (56.2%) women met the study eligibility criteria of being an African American woman aged 35-60 years, attending religious services at one of the four sites, being single (not married or engaged), not living with a male sexual partner, and providing written informed consent. Of the 629 eligible women, 502 (79.8%) completed baseline as well as 6- and 12-months follow-up assessments as part of the parent study, and received a \$40 monetary incentive for their time upon completing each of the assessments. For the purpose of this secondary data analysis, only baseline cross-sectional data were considered. All participants completed a baseline survey using audio computer-assisted self-interviewing (ACASI) on study provided laptops. Baseline surveys were

completed immediately after obtaining written consent and prior to randomization to study condition in the parent study. Data collection was conducted on-site at the churches, and lasted approximately 30-45 minutes. The study was approved by Emory University's Institutional Review Board (IRB) prior to implementation. The research team also had to receive approval from the church pastors before intervention implementation and survey administration began.

Measures

Demographics Variables

Background descriptive information was collected from the study sample. Full descriptions of all the measures used can be found in Appendix A. Participants were asked to provide information about their age, education level, current living arrangements, employment status, and receipt of government assistance. Age of the participant was recorded in years. Education was assessed by having participants indicate the highest level of education they had completed, with responses ranging from 6th grade or less to started or completed a Master's/PhD. Current living arrangements were evaluated by the question, "who do you live with?" Possible responses included "I live alone," "I live with my male sex partner/boyfriend," "I live with my father and/or mother," "I live with my child or children," "I live with another relative," "I live with a roommate/friend," or "other." Current employment status was determined with the question "do you have a job for which you are paid (including self-employment)?" Answer options were either "yes" or "no." Receiving government assistance was assessed with the question "in the past 12 months, did you or anyone you live with receive any money or services from any of the following?" Response choices included "welfare," "WIC," "food stamps," "Section 8 housing," or "none

of the above.”, and respondents were instructed to check all that apply. If any of the options other than “none of the above” were selected, the respondent was classified as receiving government assistance.

Hypothesized Outcome Variables

Condom Use. Condom use inconsistency was evaluated for the 30 days prior to survey administration. Participants were asked the following questions: 1) “In the past 30 days, how many time have you had vaginal sex with a man?” and 2) “In the past 30 days, of the number of times that you had vaginal sex with a man, how many times did you use a condom?” Individuals who reported using a condom 100% of the time were classified as consistent condom users. Those who reported using condoms less than 100% of the time were considered inconsistent condom users.

Number of Sexual Partners. To assess number of sexual partners, respondents were asked “How many current male sexual partners do you have that attend your church?” and “How many current male sexual partners do you have that do not attend your church?” Respondents’ total number of sexual partners was calculated by summing the responses to these two questions. The variable was then dichotomized by classifying those who had 0-1 partners as being “monogamous/abstinent” and those with greater than one sexual partner as having “multiple sexual partners” The variable was dichotomized based on the premise that having 0-1 sexual partners is relatively safe compared to having multiple partners.

Hypothesized Predictor Variables

Depressive symptomatology. Depressive symptomatology was measured using an eight item, abbreviated CES-D scale (Santor, Zuroff, & Fielding, 1997). Sample questions include “during the past week, I felt that I could not shake off the blues even with the help

from my family and friends” and “during the past week, I thought my life had been a failure.” Response options included 0 “Less than one day” 1 “1-2 days”, 2 “3-4 days”, and 3 “5-7 days” on a 4-point Likert scale. Total scores were computed by summing responses to all eight items. Scores could range from 0 to 24, with higher scores indicating greater depressive symptoms. The Cronbach’s alpha for this scale was 0.90, suggesting high internal consistency of scale items. Prior to data analysis, the scale was dichotomized based on the results of a median split, with depressive symptomatology scores between 0-2 being classified as “low depressive symptomatology” (0) and scores of 3 and greater classified as “high depressive symptomatology” (1). The literature suggests that scores of 4 or higher should be classified as having high depressive symptomatology (Santor et al., 1997). However, the present sample had low depressive symptomatology scores overall, so a cut off score of 3 was more appropriate.

Religious Social Support. Religious social support was assessed through ministry involvement. Participants’ ministry involvement was assessed using a six-item index. Sample items included “have you sought out (or participated in) the services offered by a WOW (Women of Worship) group?” and “have you sought out (or participated in) the services offered by the Christian singles' ministry?” Response options included (0) “No” and (1) “Yes.” Total ministry involvement scores were computed by summing the responses to all items, and scores could range from 0 to 6. Higher scores indicated more ministry involvement. Based on the total index score, a dichotomous variable was created based on the results of a median split, with scores between 0-1 classified as “low ministry involvement” (1) and scores greater than 1 classified as “high ministry involvement” (0).

Religiosity. Personal religiosity was evaluated with the Santa Clara Strength of Religious Faith Scale (Plante & Boccaccini, 1997). This scale included 10 items and sample items included “my religious faith is extremely important to me” and “I look to my faith as providing meaning and purpose in my life.” Response options ranged from 1 “Strongly Disagree” to 4 “Strongly Agree” on a 4-point Likert Scale. All responses were summed to calculate total scores and scores could range from 10 to 40, with higher scores indicating stronger religious faith. No items were recorded prior to computing totals. The Cronbach’s reliability for this scale was 0.93, suggesting high internal consistency among scale items. This scale was dichotomized based on the results of a median split, by categorizing scores between 1-38 as “low religious involvement” (1) and scores greater than 38 as “high religious involvement” (0). All scale properties for predictor variables are displayed in table 1.

Table 1. Summary of independent variables predicting condom use and number of sex partners

Scale/Index	No. of Items	Score Range	Cronbach’s Alpha
Depressive Symptomatology	8	0-24	0.90
High (≥ 3)			
Low (0-2)			
Ministry Involvement	6	0-6	N/A
High (≥ 2)			
Low (0-1)			
Strength of Religious Faith	10	10-40	0.93
High (≥ 39)			
Low (1-38)			

Data Analysis

All data was initially exported from the ACASI system, de-identified, and cleaned prior to receipt. SPSS Statistics 23 for Windows was used for all analyses associated with this thesis.

Study scales and variables that were needed for analyses were initially computed. Sample descriptive statistics for continuous and categorical variables were then conducted. Bivariate analyses were run between descriptive measures, predictor variables, potential covariates, and outcome variables. Covariates with a significance level of $p \leq .20$ were included in subsequent multivariable analyses (Hosmer Jr, Lemeshow, & Sturdivant, 2013).

Two different multivariable logistic regression models were conducted between the hypothesized predictor variables and each of the behavioral outcomes being measured, while controlling for covariates significant at $p \leq .20$. Within the models, factor association with each outcome was assessed at the $p \leq .05$ level.

Results

Background and Demographics

A total of 344 African American females reported being sexually active at the time they took the baseline survey, and were therefore included in the sample for this study. Ages ranged from 33 to 60 years old, with the average age being 45.2 years ($SD=6.39$). All the participants were single at the time of the study. Most were either divorced/separated ($n=187$; 54.4%) or never married ($n=145$; 42.2%). A small number of respondents were widowers ($n=12$; 3.5%). The average number of children among participants was 1.56 ($SD=1.41$). Most participants either lived alone ($n=136$; 39.5%) or with their children ($n=159$; 46.2%).

About half of the sample graduated from college ($n=176$; 51.2%), and the majority were employed ($n=263$; 76.5%). Several respondents were receiving public assistance at the time of the study ($n=128$; 37.2%), and most had some form of health insurance ($n=265$; 77.3%). Just over 12 percent ($n=35$; 12.1%) had a history of abuse in the past three months.

Dependent Variable Descriptive Statistics

Condom Use

Of the 344 participants included in this sample, 174 responded to questions regarding condom use in the past 30 days. Of these individuals, 48 (33.3%) were classified as consistent condom users, reflecting 100% condom use over the 30 days prior to survey completion. The remaining 126 (66.7%) respondents were classified as inconsistent condom users. Descriptive statistics and differences between consistent and inconsistent condom users are presented in Table 2. The average age of those classified as inconsistent condom users was 44.4 years ($SD=6.4$), and most were either divorced, separated, or

widowed ($n=77$; 61.1%). About half of the inconsistent condom users graduated from college ($n=61$; 48.4%) and the majority were employed ($n=101$; 80.2%), received public assistance ($n=77$; 61.1%), and had some form of health insurance ($n=98$; 77.8%). Of the 126 inconsistent condom users, only 18 (14.3%) had a sexual partner that was five years older or more. Forty-four (34.9%) of the 126 individuals classified as inconsistent condom users reported living alone and 112 (88.9%) had been previously tested for HIV. In bivariate analyses, only living alone was statistically related to inconsistent condom use at the $p \leq .20$ level, and was therefore included as a covariate in the multivariable logistic regression model (Hosmer et al., 2013). Age was also included as a covariate in the model, based on its confounding potential as suggested by the literature (Schable, Chu, & Diaz, 1996).

Number of Sexual Partners

A total of 111 (32.3%) of the 344 respondents were classified as having multiple sexual partners, while the remaining 233 (67.7%) were classified as monogamous/abstinent. Descriptive statistics and differences between those who were monogamous/abstinent and those with multiple sexual partners are presented in Table 3. The average age of those with multiple sexual partners was 43.6 years ($SD=6.2$). Most of those who had multiple sexual partners were either divorced, separated, or widowed ($n=61$; 55.0%). Just under half of those with multiple partners were college graduates ($n=51$; 45.9%) and most were employed ($n=86$; 77.5%) and had health insurance ($n=82$; 73.9%). Several of the women with multiple sexual partners were receiving public assistance at the time of survey completion ($n=44$; 39.6%). Of the 111 respondents who were classified as having multiple sex partners, 14 (12.6%) had a partner that was five or

more years older than them. A total of 42 (37.8%) of the 111 individuals with multiple partners lived alone, and 99 (89.2%) had been previously tested for HIV. In bivariate analyses, graduating college was statistically related to number of sex partners at the $p \leq .20$ level, and was therefore included as a covariate in the multivariable logistic regression model. Age was also included as a covariate in the model, based on its confounding potential as suggested by the literature (Richter, Valois, McKeown, & Vincent, 1993).

Table 2. Sample demographics and bivariate analyses for consistent vs. inconsistent condom users

	Consistent condom user (<i>n</i> =48)		Inconsistent condom user (<i>n</i> =126)		<i>p</i> value
	<i>M</i> (<i>SD</i>)	<i>n</i> (%)	<i>M</i> (<i>SD</i>)	<i>n</i> (%)	
Age	44.1 (5.0)		44.4 (6.4)		.79
Marital status					.41
Single/never married		22 (45.8)		49 (38.9)	
Divorced/separated/widowed		26 (54.2)		77 (61.1)	
College graduate					.85
Yes		24 (50.0)		61 (48.4)	
No		24 (50.0)		65 (51.6)	
Employment status					.30
Employed		35 (72.9)		101 (80.2)	
Unemployed		13 (27.1)		25 (19.8)	
Receive public assistance					.50
Yes		32 (66.7)		77 (61.1)	
No		16 (33.3)		49 (38.9)	
Has health insurance					.50
Yes		35 (72.9)		98 (77.8)	
No		13 (27.1)		28 (22.2)	
Partner is 5+ years older					.76
Yes		6 (12.5)		18 (14.3)	
No		42 (87.5)		108 (85.7)	
Been tested for HIV					.32
Yes		40 (83.3)		112 (88.9)	
No		8 (16.7)		14 (11.1)	
Lives alone					.12*
Yes		23 (47.9)		44 (34.9)	
No		25 (52.1)		82 (65.1)	

*Significant at $p \leq .20$

Table 3. Sample demographics and bivariate analyses for monogamous/abstinent respondents vs. those with multiple partners

	Monogamous/abstinent (n=233)		Multiple sexual partners (n=111)		p value
	M (SD)	n (%)	M (SD)	n (%)	
Age	45.0 (6.3)		43.6 (6.2)		.59
Marital status					.45
Single/never married		95 (40.8)		50 (45.0)	
Divorced/separated/widowed		138 (59.2)		61 (55.0)	
College graduate					.18*
Yes		125 (53.6)		51 (45.9)	
No		108 (46.4)		60 (54.1)	
Employment status					.76
Employed		177 (76.0)		86 (77.5)	
Unemployed		56 (24.0)		25 (22.5)	
Receive public assistance					.52
Yes		84 (36.1)		44 (39.6)	
No		149 (63.9)		67 (60.4)	
Has health insurance					.30
Yes		183 (78.9)		82 (73.9)	
No		49 (21.1)		29 (26.1)	
Partner is 5+ years older					.88
Yes		28 (12.0)		14 (12.6)	
No		205 (88.0)		97 (87.4)	
Been tested for HIV					.45
Yes		201 (86.3)		99 (89.2)	
No		32 (13.7)		12 (10.8)	
Lives alone					.66
Yes		94 (40.3)		42 (37.8)	
No		139 (59.7)		69 (62.2)	

*Significant at $p \leq .20$

Independent Variable Descriptive Statistics

Depressive Symptomatology

Of the 344 respondents, 171 (49.7%) were classified as having high depressive symptomatology, and therefore had a depression score of three or higher. The remaining 173 (50.3%) were classified as having low depressive symptomatology, and had a depression score under three. Most of the consistent condom users were categorized as having low depressive symptomatology ($n=27$; 56.3%), whereas the majority of

inconsistent condom users were classified as having high depressive symptomatology ($n=71$; 56.3%). Similarly, most who were abstinent or monogamous had low depressive symptomatology ($n=128$; 54.9%), and most of those with multiple sex partners had high depressive symptomatology ($n=66$; 59.5%).

Strength of Religious Faith

Over half of the respondents were classified as having low religious faith ($n=197$; 57.3%), and therefore had a religious faith score under 39. The remaining 147 (42.7%) of respondents were classified as having high strength of religious faith, and had a religious faith score of 39 or higher. Low strength of religious faith scores were more common among consistent condom users ($n=26$; 54.2%), inconsistent condom users ($n=83$; 65.9%), those who were monogamous/abstinent ($n=127$; 54.5%), and those with multiple sex partners ($n=70$; 63.1%).

Religious Social Support

One hundred fifty (43.6%) of the 344 respondents were classified as having high religious social support, meaning they had a score higher than one on the ministry involvement index. The remaining 194 (56.4%) respondents were classified as having low social support, and had ministry involvement scores under two. The majority of consistent condom users ($n=25$; 59.5%) and inconsistent condom users ($n=58$; 54.2%) were classified as having low religious social support. Most of those who were abstinent/monogamous had high religious social support scores ($n=111$; 52.4%), whereas most of those with multiple sex partners had low religious support scores ($n=59$; 60.2%).

Bivariate Analysis

Condom Use

Bivariate associations between personal and social level factors and inconsistent condom use are presented in Table 4. Chi square tests were conducted between proposed predictor variables and the outcome variable at the bivariate level. Proposed predictors that were associated with inconsistent condom use at the $p \leq .20$ level, and therefore included in the multivariate logistic regression model include depressive symptomatology and strength of religious faith. Religious social support was not associated with inconsistent condom use at the $p \leq .20$ level, but was still included in the model due to theoretical importance.

Table 4. Bivariate associations between study variables and condom use

	Consistent condom user (N=48)	Inconsistent condom user (N=126)	
	<i>n (%)</i>	<i>n (%)</i>	<i>p value</i>
Personal Factors			
Depressive Symptomatology			.14*
High	21 (43.8)	71 (56.3)	
Low	27 (56.3)	55 (43.7)	
Strength of Religious Faith			.15*
High	22 (45.8)	43 (34.1)	
Low	26 (54.2)	83 (65.9)	
Social Factors			
Ministry Involvement			.56
High	17 (40.5)	49 (45.8)	
Low	25 (59.5)		

*Significant at $p \leq .20$

Number of Sexual Partners

Bivariate associations between personal and social level factors and number of sexual partners are presented in Table 5. Chi square tests were conducted between proposed predictor variables and the outcome variable at the bivariate level. All three

proposed predictors were associated with having multiple sexual partners at the $p \leq .20$ level, therefore depressive symptomatology, religious social support, and strength of religious faith were all included in the multivariate logistic regression model.

Table 5. Bivariate associations between study variables and number of sexual partners.

	Monogamous/ abstinent (n=233)	Multiple sexual Partners (n=111)	
	<i>n (%)</i>	<i>n (%)</i>	<i>p value</i>
Personal Factors			
Depressive Symptomatology			.01*
High	105 (45.1)	66 (59.5)	
Low	128 (54.9)	45 (40.5)	
Strength of Religious Faith			.13*
High	106 (45.5)	41 (36.9)	
Low	127 (54.5)	70 (63.1)	
Social Factors			
Ministry Involvement			.04*
High	111 (52.4)	39 (39.8)	
Low	101 (47.6)	59 (60.2)	

*Significant at $p \leq .20$

Multivariate Analysis

Condom Use

Results of the multivariable logistic regression model for condom use are presented in Table 6. After controlling for age and living alone as covariates, multivariate logistic regression results show a marginally significant effect for depressive symptomatology suggesting that those with high depressive symptomatology were approximately two times more likely to report inconsistent condom use than those with low depressive symptomatology (AOR= 2.1; 95% CI=1.0, 4.4; $p=.05$). However, religious social support did not predict inconsistent condom use ($p=.35$), nor did strength of religious faith ($p=.51$). The model was a good fit with a Hosmer and Lemeshow $X^2=8.03$; $p=.43$.

Table 6. Multivariable regression between personal and social level factors and inconsistent condom use

	AOR	95% CI	p value
Personal Factors			
Depressive Symptomatology	2.08	.99-4.4	.05*
Strength of Religious Faith	1.30	.60-2.8	.51
Social Factors			
Ministry involvement	.70	.33-1.5	.35

*significant at $p \leq .05$

Hosmer and Lemeshow test: $X^2=8.03$; $p=.43$

Number of Sexual Partners

Results of the multivariable logistic regression model for number of sexual partners are presented in Table 7. After controlling for age and graduating college as potential covariates, multivariable logistic regression results suggest that individuals with high depressive symptomatology are 1.6 times more likely to have multiple sex partners than those with low depressive symptomatology (AOR=1.6; 95% CI=1.0, 2.7; $p=.05$).

Additionally, respondents with low religious social support are almost twice as likely to have multiple sex partners as those with low social support (AOR=1.7; 95% CI=1.0-2.9; $p=.03$). However, strength of religious faith did not predict number of sex partners ($p=.77$).

The model was a good fit with a Hosmer and Lemeshow $X^2=6.57$; $p=.58$.

Table 7. Multivariable regression between personal and social level factors and number of sexual partners

	AOR	95% CI	p value
Personal Factors			
Depressive symptomatology	1.66	1.0-2.7	.05*
Strength of religious faith	1.08	.65-1.8	.77
Social Factors			
Ministry involvement	1.74	1.0-2.9	.03*

*significant at $p \leq .05$

Hosmer and Lemeshow test: $X^2=6.57$; $p=.58$

Discussion

The present study is one of the first to utilize Social Cognitive Theory in investigating the association between depressive symptomatology, religiosity, and engagement in sexual risk behaviors in a sample of older African American women. The findings from this thesis can be used to better comprehend the social and personal factors that are related to sexual risk behaviors. Additionally, the results presented offer a basis for understanding how theory can be used to predict and conceptualize health behaviors. The following conclusions were informed by the preceding data analyses, a review of current literature, and established theory based relationships.

Results indicate that among sexually active older African American women, those with relatively high depressive symptomatology were more likely to report both inconsistent condom use and having multiple sex partners. This finding supports previous literature that suggests depressive symptomatology is related to increased likelihood of engaging in sexual risk behaviors among both adolescent and adult populations (Bingman et al., 2001; L. K. Brown et al., 2010; Clement, 1992; DiClemente et al., 2001). Overall the current sample had relatively low depressive symptomatology, suggesting that even mild to moderate levels of depressive symptoms can influence behavior. This is in accordance to prior work with men who have sex with men that found negative affect to be related to heightened risk taking behavior, in the same manner as clinical levels of depression (Alvy et al., 2011). This finding highlights that women attending church and engaging in religious activities may be more similar than dissimilar to women not involved in religious practices as it relates to coping with depressive symptomatology. Previous literature suggests that sexual risk taking in the form of inconsistent condom use and multiple partners may serve

as a mechanism to attenuate feelings of sadness, worthlessness, and isolation that are often associated with a decreased mood (Grello, Welsh, & Harper, 2006; Silk, Steinberg, & Morris, 2003; Tolou-Shams, Brown, Houck, & Lescano, 2008). While examining this particular mechanism was beyond the scope of this study, future investigations should assess the degree to which coping mechanisms are similar or different among African American women in the Southeastern US, where faith-based community is highly integrated into daily living (Taylor et al., 2003).

While high depressive symptomatology predicted both inconsistent condom use and having multiple sex partners, low religious social support was only associated with having more sex partners. It is possible that condom use is more heavily influenced by individual level factors, whereas connecting with multiple sex partners is influenced by social factors to a larger degree. Previous work investigating the relationship between religious social support and sexual risk behaviors has focused primarily on refusal of unwanted sex and self-efficacy in communicating with partners about safe sex (McCree et al., 2003). No work investigating the role of religious social support in predicting condom use or number of sex partners could be found. Therefore, no direct comparisons can be made between current results and previous findings. However, based on results of this study, nearly 60% of participants reported low religious social support. This suggests religious social support is experienced not merely by having an affiliation with a religious institution; rather, it may be important to become an active participant in the faith-based community in order to develop a sense of belonging and relational connections that can foster social support. Religious social support is challenging to measure, and this study was no different. The Ministry Involvement Index used to measure religious social support was not initially

designed to assess social support. For the purposes of this study, involvement in two or more ministries was considered high ministry involvement, and therefore high religious social support. It is possible, however, for an individual to be involved in several ministries and not feel supported by her church members. In such cases, individuals would be misclassified as having high social support, when in fact they are just heavily involved in church groups. A more valid measure of religious social support may be necessary to confirm the findings of this study.

Contrary to the initial hypothesis, strength of individual religious faith did not predict sexual risk behaviors. This finding supports previous work that has stated individual religiosity is not associated with condom use or other sexual risk behaviors (Garofalo et al., 2015; Sprecher, 2013). Of note, the sample surveyed consisted of individuals who attended church regularly. As a result, their strength of religious faith scores averaged well above the standard mean for the scale used. This bias toward the higher end of the scale could have resulted in minimal variability among participants with respect to this measure. A more accurate measure of individual religiosity among this population would likely require a more refined scale that has the ability to detect subtle differences among a group of highly religious individuals.

Models including depressive symptomatology, religious social support, and individual strength of religious faith significantly predicted both inconsistent condom use and having multiple sex partners. However, the present study did not assess potential pathways for this relationship. There are conflicting findings regarding the relationship between depressive symptomatology and religiosity. Some studies suggest that religiosity, both in the form of individual religious faith and religious social support, is protective

against depressive symptoms (L. Miller et al., 2012; Wong, Rew, & Slaikeu, 2006). Other studies suggest that depressed mood and negative affect can prompt increased religious practices, such as church attendance and prayer, in otherwise non-religious individuals (Eliassen, Taylor, & Lloyd, 2005). A longitudinal study design would be needed to examine the directionality of the relationship between religiosity and depressive symptomatology.

A significant amount of literature reports on the ways in which religiosity and depressive symptomatology interact to influence behavior and health outcomes. Previous work has shown that individuals with high religiosity and low depressive symptomatology who are experiencing chronic illnesses such as diabetes or cancer, are more likely to follow treatment protocols, experience remission in symptoms, and report less pain (Aukst-Margetić, Jakovljević, Margetić, Bišćan, & Šamija, 2005; Jang et al., 2013; Yuniarti, Dewi, Ningrum, Widiastuti, & Asril, 2012). Several of the studies that produced these findings utilized longitudinal data, and were able to establish temporality. They argued that high religiosity resulted in lower depressive symptomatology, which in turn led to increased likelihood of engaging in healthy behaviors and more positive health outcomes. A similar pathway could be present in the relationship among depressive symptomatology, religiosity, and sexual risk behaviors. Future studies should investigate this association by assessing the mediating potential of religiosity in the relationship between depressive symptomatology and sexual risk behaviors.

The influence of religiosity on sexual risk behaviors was assessed both in the form of individual religious strength and religious social support. The literature suggests that the relationship between individual religiosity and depressive symptomatology is mediated by

religious social support (Salsman, Brown, Brechting, & Carlson, 2005). Applying this pathway to the current study would suggest that individual religiosity is related to depressive symptomatology and sexual risk behaviors through religious social support. Since individual religiosity was not associated with sexual risk behavior in this study, this mediation pathway could not be tested. However, a longitudinal study design as well as more sensitive measures of individual religiosity and religious social support could be used in future studies to assess this pathway and evaluate religious social support as a potential mediator.

Based on the premise of triadic reciprocity proposed by Social Cognitive Theory it was hypothesized that personal and social level factors influence behavior. Behavior can then in turn influence personal and social factors. For the purposes of this study, the personal factors considered were depressive symptomatology and individual religiosity, the social factor was religious social support, and the behaviors were condom use and number of sex partners. As previous literature suggests, risky sexual behavior is a multi-facet issue, thus a theory that incorporates both personal and social level determinates is necessary to fully understand the health behavior. Based on study findings, it appears that both personal characteristics and social influences are vital for predicting engagement in risky sexual behavior. However, upon further reviewing the literature surrounding the inter-relationship among religiosity, depressive symptomatology, and sexual risk taking, the Social Support Theory might be more applicable to the relationship observed. The Social Support Theory proposes that an individual's social support network influences their physical and mental health, which in turn influences health behaviors (Vaux, 1988). This theory suggests there is a direct effect of social support on health and behavior, whereas SCT argues there is a

reciprocal relationship among personal, social, and behavioral factors. Additional research is needed in order to determine the most applicable theory to explain the relationship among religiosity, depressive symptomatology, and sexual risk behaviors.

Limitations

There were several limitations associated with the methodology utilized in this this thesis. While the overall study design was a longitudinal intervention, only baseline cross-sectional data was used for the present study. The cross-sectional nature of the data prevents any cause and effect conclusions to be drawn because it is impossible to determine with confidence which variable influenced the other. Therefore, only claims of associations and relationships between study variables can be made.

In addition to being limited in the conclusions that can be drawn, using only cross-sectional data from the baseline survey also creates a temporality issue. Inconsistent condom use was assessed over the past 30 days, whereas depressive symptomatology was evaluated based on feelings over the seven days prior to survey completion. This temporality issue makes it difficult to discern if individuals were experiencing depressive symptoms because they did not use a condom, or if they did not use a condom because they were experiencing depressive symptoms. Only evaluating participants at one time point also means that inaccurate information could have been acquired. For example, it is possible that some individuals had just had an especially bad week. In general, they are not experiencing depressive symptoms, but because they were only evaluated at one time point they were misclassified. Such errors could have biased the data and subsequent conclusions.

Some of the measures used in the analysis could have been improved. Condom use was assessed over the past 30 days, but some of the temporality issues could have been mitigated if it had been evaluated at time of last sex. Additionally, a more rigorous depression scale could have been used. The present scale was adequate for measuring depressive symptomatology, but a more clinically based scale, such as the Hamilton Depression Rating Scale, or the full CES-D could be more effective in measuring true depression symptoms among participants (Hamilton, 1996). As was previously mentioned, the ministry involvement index might have not been the most appropriate measure of religious social support. The inclusion of a scale that measured the extent to which an individual feels loved and cared for fellow church members would have likely been a more valid measure of religious social support.

Recall bias is also a limitation of this thesis. All responses were collected in the form of self-report. Self-report data naturally leaves room for memory errors. It is likely that many individuals incorrectly recalled the numbers of times they had sex or used a condom over a month time period. Additionally, the surveys were taken in a church setting with both church leaders and study administrators present. This could have caused some participants to answer inaccurately. The church is considered a righteous environment, and as such, there were likely individuals who did not want to admit to having sex outside of wedlock or having low religiosity in such a setting.

Despite efforts to maintain a large sample size throughout the entirety of the study, the sample size is inconsistent throughout. Of the 502 individuals who took the baseline survey, only 344 were sexual active. The sample size was then further reduced when looking at condom use, as only 174 participants answered questions regarding condom use

of the past month. It would have been preferable to have a larger sample size throughout the entirety of the analysis, as a larger sample size would have increased study power and strengthened claims of significance.

Implications and Future Directions

Both previous literature and the findings of this thesis have illustrated a need to understand factors that influence risky sexual behaviors in older African American women. As was previously stated, even endorsing mild to moderate depressive symptomatology appears to be associated with at least a marginally greater likelihood of engaging in risky sexual behaviors. Thus, early intervention is key. It is vital to target mental health and sexual education programming toward individuals who are just beginning to experience depressive symptoms. It does not appear that individuals must be experiencing clinical depression for their symptoms to influence their behavior. Therefore, if early signs of depressed mood, apathy, and general discontent can be identified, it may be possible to intervene before these factors significantly impact behavior.

For the purposes of this thesis, models looking at the association depressive symptomatology and religiosity have with sexual risk behaviors were run. In the future, it would be useful to investigate the relationship between depressive symptoms and religious social support/strength of religious faith. Furthermore, it may also be beneficial to investigate the relationship of other relevant characteristics such as abuse history, substance use, relationship with children, living situation, and others with sexual risk behavior engagement. Investigating the associations among these variables was outside of the scope of this study, but various literature that was reviewed suggests these could be important

predictors for sexual risk behaviors (Guiella & Madise, 2007; M. Miller & Neaigus, 2002; Stueve & O'donnell, 2005).

Conclusion

The findings of this thesis suggest that older African American women who attend church regularly are sexually active and are in need of sexual health education. The church offers a trusted environment for such education programming to occur. To be most effective, faith-based sexual health interventions should be multi-faceted such that curricula should incorporate not only sexual health education, but also components that address personal and social level factors that may influence behavior. More specifically, individuals could greatly benefit from programming that includes mental health and religious components. Furthermore, it is important to have interventions that encourage the development of strong social support networks among women in the church. Theoretical frameworks should be utilized during intervention planning to ensure important personal and social level factors are being addressed when considering the best way to prevent engagement in risky sexual behavior and other behaviors that result in adverse health outcomes.

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Appendix A

Measures

Demographics:

Enter the participant's age

What is your marital status? Are you . . .

- 0**=Single, Never Married
- 1**=Married
- 2**=Divorced or Separated
- 3**=Widowed
- 8**=Refuse to Answer

What is the last grade that you completed in school? (Choose one)

3

- 1**=6th grade or less
- 2**=7th grade
- 3**=8th grade
- 4**=9th grade (freshman)
- 5**=10th grade (sophomore)
- 6**=11th grade (junior)
- 7**=Graduated high school
- 8**=1st year of college or university
- 9**=2nd year of college or university
- 10**=3rd year of college or university
- 11**=Graduated from college or university
- 12**=Started or Completed a Master's or PhD
- 99**=Other

Who do you live with? (Check all that apply)

- I live alone
- I live with my make sex partner/boyfriend
- I live with my father and/or mother
- I live with my child or children
- I live with another relative
- Roommate/Friend
- Other

In the past 12 months, did you or anyone you live with receive any money or services from any of the following? (Check all items that apply):

- Welfare
- Food stamps
- WIC

- Section 8 housing
- None of the above

Do you have a job for which you are paid (including self-employment)?

- Yes
- No

When you see your doctor or health care provider are you supposed to pay...(choose one)

- Full price (you do not have health insurance or it does not cover doctor's expenses)
- A reduced amount (health insurance covers some expenses)
- Nothing at all (health insurance covers all expenses)

Outcome Variables

Condom use

In the past 30 days, how many times have you had vaginal sex with a man?

In the past 30 days, of the (above stated number) times that you had vaginal sex with a man, how many times did you use a condom?

Number of sex partners

How many current male sexual partners do you have that attend your church?

How many current male sex partners do you have outside of your church?

Predictor Scales

Depressive Symptomatology

During the past week, I felt that I could not shake off the blues even with the help from my family and friends.

- Less than 1 day
- 1-2 days
- 3-4 days
- 5-7 days

During the past week, I thought my life had been a failure.

- Less than 1 day
- 1-2 days
- 3-4 days
- 5-7 days

During the past week, I felt fearful.

- Less than 1 day
- 1-2 days
- 3-4 days
- 5-7 days

During the past week, my sleep was restless.

- Less than 1 day
- 1-2 days
- 3-4 days
- 5-7 days

During the past week, I felt lonely.

- Less than 1 day
- 1-2 days
- 3-4 days
- 5-7 days

During the past week, I had crying spells.

- Less than 1 day
- 1-2 days
- 3-4 days
- 5-7 days

During the past week, I felt sad.

- Less than 1 day
- 1-2 days
- 3-4 days
- 5-7 days

Strength of Religious Faith (Santa Clara)

My religious faith is extremely important to me.

- Strongly disagree
- Disagree
- Agree
- Strongly agree

I pray daily.

- Strongly disagree
- Disagree
- Agree
- Strongly agree

I look to my faith as a source of inspiration.

- Strongly disagree
- Disagree
- Agree
- Strongly agree

I look to my faith as providing meaning and purpose in my life.

- Strongly disagree
- Disagree
- Agree
- Strongly agree

I consider myself active in my faith or church.

- Strongly disagree
- Disagree
- Agree
- Strongly agree

My faith is an important part of who I am as a person.

- Strongly disagree
- Disagree
- Agree
- Strongly agree

My relationship with God is extremely important to me.

- Strongly disagree
- Disagree
- Agree
- Strongly agree

I enjoy being around others who share my faith.

- Strongly disagree
- Disagree
- Agree
- Strongly agree

I look to my faith as a source of comfort.

- Strongly disagree
- Disagree
- Agree
- Strongly agree

My faith impacts many of my decisions.

- Strongly disagree
- Disagree
- Agree
- Strongly agree

Ministry Involvement

Have you sought out (or participated in) the services offered by the women's ministry (heart-to-heart)?

- Yes
- No

Have you sought out (or participated in) the services offered by the health ministry?

- Yes
- No

Have you sought out (or participated in) the services offered by the college ministry?

- Yes
- No

Have you sought out (or participated in) the services offered by the Christian singles' ministry?

- Yes
- No

Have you sought out (or participated in) the services offered by the counseling ministry?

- Yes
- No

Have you sought out (or participated in) the services offered by a WOW (Women of Worship) group?

- Yes
- No