RELIGIOSITY, RACIAL IDENTITY, AND SEXUAL INITIATION AMONG BLACK AMERICAN ADOLESCENTS

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ABSTRACT

Tamara Lyneé Taggart: Religiosity, Racial Identity, and Sexual Initiation among Black American Adolescents
(Under the direction of Eugenia Eng)

There is a large and persistent racial disparity in the incidence of HIV and STD infection among adolescents. Despite advances in prevention and treatment, black adolescents experience the greatest burden of these diseases. Decreasing the number of adolescents who engage in sexual activity is one way to address this disparity. Researchers have identified several determinants associated with black adolescent sociocultural context which delay adolescent sexual initiation; one such determinant is religiosity. Grounded in concepts from social control theory, intersectionality, and models of socialization and religious development, this dissertation explored how black adolescent religiosity and racial identity influence sexual initiation. Data originated from the National Survey of American Life-Adolescent (n=1170), a nationally representative study of black adolescents. Factor analysis, structural equation modeling, latent profile analysis, and logistic regression were used to test study hypotheses.

Aim one assessed the measurement properties of a multidimensional measure of black adolescent religiosity. The final model of black adolescent religiosity consisted of four constructs and was invariant across ethnic-gender subgroups. This measure of religiosity was used in subsequent aims. Aim two determined the nature of associations among religious socialization, religiosity, and sexual initiation. Results indicated that as adolescents received more messages about religious beliefs and practices, their religiosity increased. In turn, they were less likely to report sexual initiation. Tests for moderated-mediation showed that these relationships varied by

gender and ethnicity (Caribbean black and African American). Aim three explored the joint effects of religiosity and racial identity on sexual initiation. Analyses yielded four distinct profiles of religiosity and racial identity. These profiles explained approximately 8% of the variability in sexual initiation. Additional analysis revealed sociodemographic differences for profile membership based on adolescent ethnicity, gender, and parent nativity.

Findings from this dissertation contribute to evidence supporting re-conceptualizing black adolescent religiosity for research and practice. These results also provide insight into how examining intra-group variability among factors associated with black adolescent sociocultural context has implications for designing culturally and developmentally appropriate interventions. Additional research is needed to further clarify how these concepts, in addition to structural factors, contribute to HIV and STD infection among black adolescents.

Dedicated to my parents and maternal grandmother

"Lo, I see four men loose, walking in the midst of the fire, and they have no hurt; and the form of the fourth is like the Son of God." Daniel 3:25

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AIDS	Acquired Immune Deficiency Syndrome
CFA	Confirmatory factor analysis
EFA	Exploratory factor analysis
HIV	Human Immunodeficiency Virus
LPA	Latent profile analysis
NSAL	National Survey of American Life
SEM	Structural equation modeling
STD	Sexually transmitted disease

CHAPTER 1: INTRODUCTION

1.1 Problem Statement

Stark disparities in the incidence of HIV and sexually transmitted diseases (STDs) between black and white Americans persist across the life course (CDC, 2012). Black Americans[1] account for a higher proportion of HIV infections at all stages of disease and face the most severe burden of HIV and AIDS. It is estimated that one in 16 black men and 1 in 32 black women will be diagnosed with HIV infection in their lifetime (CDC, 2013). Although blacks account for about 12% of the United States (U.S.) population, they represent 68.9% of new HIV infections (CDC, 2013). Despite recent reports of the stability of HIV incidence in the U.S., infection rates among blacks continue to increase for both adults and adolescents. Black adolescents, aged 13-19 years, accounted for nearly 67% of HIV/AIDS diagnoses, despite representing only 15% of the U.S. population in that age group (CDC, 2012). Conversely, white adolescents accounted for 13% of HIV diagnoses, while representing 56% of the U.S. population aged 13-19 years (CDC, 2012).

Similar racial disparities persist for other STDs, including chlamydia, gonorrhea, and syphilis. The chlamydia rate among black females, age 15-19 years, was six times the rate for white females age 15-19 years; and for black males in this same age group, that rate was 11.1-times greater than for white males (CDC, 2013). Compared to white females, age 15-19, black

[1]African American: People who self-identify as black but do not identify ancestral ties to the Caribbean. Caribbean Black: People who self-identify as black and indicate that they are from a Caribbean country or specify that at least one of their parents or grandparents was born in a Caribbean area country (Jackson et al., 2004). *The terms **black** and **black Americans** are inclusive of both groups.*

females in the same age group had a 15.9-times greater rate for gonorrhea and 7-times greater rate for primary or secondary syphilis (CDC, 2013). Similarly, black males, age 15-19, had a 30.3-times greater rate for gonorrhea and 16-times greater rate for primary and secondary syphilis, as compared to white males in the same age group (CDC, 2013). Although, in this dissertation, the term black is inclusive of African American and Caribbean black adolescents, little is known of the HIV and STD rates of Caribbean black adolescents, separate from those reported with African American adolescents.

Disproportionate STD rates among black adolescents are particularly alarming given the behavioral and biological pathways which transmit HIV. For behavioral pathways, sexual behaviors which contribute to HIV and STD risk are well documented and include early sexual initiation, inconsistent condom use, and multiple sexual partners (O'Donnell, O'Donnell, & Stueve, 2001; Services, 2015). People who initiate sexual activity during adolescence are more likely to have a greater number of sexual partners, engage in inconsistent condom use, and as a result, acquire HIV and other STDs more than those who initiate sexual activity after adolescence (Kahn, Rosenthal, Succop, Ho, & Burk, 2002; Sandfort, Orr, Hirsch, & Santelli, 2008; Simons, Burt, & Peterson, 2009).

Studies examining racial differences in adolescent HIV and STD rates focus on sexual initiation, number of sexual partners, and condom use. Some studies indicate that, compared to white adolescents, black adolescents have earlier sexual initiation (Kaestle, Halpern, Miller, & Ford, 2005; Niccolai et al., 2004), while others find no difference (Cuffee, Hallfors, & Waller, 2007; Kraut-Becher et al., 2008). Additionally, a greater number of sexual partners among black adults is associated with decreased condom use and other sexual risk behaviors (Adimora, Schoenbach, & Doherty, 2006; Sturdevant et al., 2001). At the same time, findings are

inconsistent as to whether black adolescents have more sexual partners than their white counterparts (Halpern et al., 2004). Lastly, some studies indicate that inconsistent condom use is significantly higher among black adolescents; however, but these studies also affirm that inconsistent condom use does not fully explain the magnitude and persistence of higher rates of HIV and STDs among black adolescents.

Racial disparities in adolescent STD diagnoses are a significant public health concern and are related to HIV disparities. Compared to adolescents without an STD, adolescents with an undiagnosed or untreated STD have an increased risk for a host of deleterious health outcomes including infertility, certain types of cancer, and HIV (Fleming & Wasserheit, 1999; Joyee, Thyagarajan, Reddy, Venkatesan, & Ganapathy, 2005). Biologically, the presence of an STD breaks down the body's natural protective layers, creating micro-tears in the male and female sex organs (Galvin & Cohen, 2004). In sum, for biological reasons, increased rates of STDs among black adolescents increases their risk of HIV infection as compared to white adolescents. Behaviorally, although early sexual initiation, multiple sexual partners, and inconsistent condom use among all adolescents are strong behavioral risk factors for contracting HIV and STDs (Sinha, Cnaan, & Gelles, 2007), more clarity is needed to understand what behaviors and sociocultural factors inflate or buffer sexual risk for black adolescents.

The literature remains unclear as to why racial disparities in adolescent sexual health outcomes persist. I argue that racial differences in adolescent sexual initiation may be due to the different sociocultural contexts that influence adolescent sexual initiation. These contexts may shape how black adolescents identify with their own sexuality, and hence influence their engagement in sexual activity. By unpacking the sociocultural context of religiosity (i.e., the amalgam of what is commonly referred to as religion and spirituality), and other related factors

(i.e., religious socialization and racial identity), this dissertation sought to identify and better understand race-specific mechanisms (i.e., mechanisms that are specific to a particular racial group—black race) that can prevent adolescent sexual initiation in some and enable it in others.

1.2 Determinants of Adolescent Sexual Health Behavior

Researchers have identified several social and environmental determinants of HIV/AIDS that may contribute to race-specific sexual risk behaviors. These determinants include socio-historical factors (e.g., experiences of racial discrimination and racial residential segregation), social network characteristics, and community and neighborhood environments (Biello et al., 2012; Boardman, Finch, Ellison, Williams, & Jackson, 2001; Brewster, 1994; Kraut-Becher et al., 2008; Leventhal & Brooks-Gunn, 2000). This dissertation explored a potentially important psychosocial determinant of sexual health behavior: adolescent religiosity.

Religiosity is defined as the combination of religion, spirituality, and the importance of religion to the individual. Religion refers to an organized system of beliefs, practices, and rituals; spirituality, a broader construct, is concerned with connectedness and reverence to a higher power (Ellison & Sherkat, 1995; Mattis, 2000). Researchers position religiosity as a racially inherent cultural identity, and as such, an important component of black adolescents' sociocultural experiences. In this dissertation, religiosity was considered to be a multidimensional higher-order construct consisting of organizational religious participation, non-organizational religious participation, subjective religiosity, and religious support; adolescents were defined as young people aged 13-17 years.

Findings from several nationally representative studies on adolescent religiosity in the U.S. indicate that the majority of adolescents believe religion to be an important factor and influence in their lives (Smith & Denton, 2005; Wallace, Forman, Caldwell, & Willis, 2003).

Further, black adolescents have greater religiosity (i.e., attend more religious services, greater endorsement of religious beliefs and practices, and are more likely to say that religion is important to them) compared to adolescents of other races/ethnicities (Sinha et al., 2007; Smith & Denton, 2005). The protective impact of religiosity on psychosocial well-being, health behaviors, and health outcomes for adults is widely studied (Koenig, King, & Carson, 2012; Mackenzie, Rajagopal, Meibohm, & Lavizzo-Mourey, 2000; Miller et al., 2014); however, findings on the effects of religiosity on black adolescent sexual health behaviors remain inconclusive (Rostosky, Regnerus, & Wright, 2003; Rostosky, Wilcox, Wright, & Randall, 2004; Smith, 2003). Some studies find that black adolescents with greater religiosity are more likely to delay sexual initiation and refuse unsafe sexual practices (McCree, Wingood, DiClemente, Davies, & Harrington, 2003). Conversely, other studies suggest that religiosity has no or a negative effect on sexual health behaviors (Cooksey, Rindfuss, & Guilkey, 1996; Regnerus & Elder Jr, 2003).

Moreover, most research on adolescent religiosity and health behaviors focuses on the relationship between religiosity, often measured using a two or three item measure of church attendance and denomination, and adolescent problem behavior without much regard for how religiosity is constructed or measured in this population (Wallace et al., 2003). This dissertation considered adolescent religiosity a focal topic of interest in order to fill crucial gaps in our understanding of black adolescent religiosity and sexual health behaviors, and gave special attention to adolescent sexual initiation as a potential leverage point for health interventions.

1.2.1 Sociocultural Determinants of Adolescent Sexual Initiation

Understanding the behavioral factors that drive racial disparities in adolescent HIV and STD diagnoses has important implications for public health research and practice. Adolescence

is a period marked by significant cognitive and biological developments, and the assertion of independence and individual agency (Lerner & Galambos, 1998; Steinberg & Morris, 2001). This developmental period may also be accompanied by risk taking and problem behaviors, such as sexual initiation (Baumrind, 1987; Raffaelli & Crockett, 2003). Despite advances in the study of adolescent sexual health, I argue that we have limited knowledge about how certain psychosocial determinants or belief structures (e.g., religiosity and racial identity) motivate black adolescents to engage in or forgo risky behavior. We know that black adolescents may delay sexual activity more than other adolescents, but the results of this delay is disproportionate to reported rates of HIV and STDs. These findings suggest that other, competing, non-sexual behavioral factors, may contribute to disparate HIV and STD rates. Specifically, I consider factors associated with black adolescent sociocultural context and identity formation.

Adolescent sexual health behaviors are acquired within a sociocultural context (Rew & Wong, 2006). Religiosity is one aspect of this sociocultural context; racial identity and religious socialization are also components of the broader sociocultural context and identity formation processes that influence black adolescent sexual initiation. This sociocultural context is further influenced by demographic factors, like gender and ethnicity, underscoring the importance of accounting for heterogeneity within the black population (Rostosky et al., 2004).

1.3 Public Health Significance

This dissertation addressed five limitations of research on adolescent religiosity and sexual initiation. First, most studies assess only one dimension of religiosity (i.e., frequency of organizational religious participation or religious denomination). The use of organizational religious participation or religious denomination to measure religiosity is a limitation as these dimensions may not be under the control of the adolescent; rather, these measures may in fact be

proxies for parental control and monitoring. Further, only assessing one or two dimensions of religiosity conceptually oversimplifies a complex determinant; religiosity. To address this concern, a multidimensional measure of religiosity focused on religious participation, support, and beliefs was developed. Second, frequency of public religious activity is often used to make inferences about the influence of religiosity on black adolescent sexual health behavior. This dissertation took a more nuanced approach to explore the effects of other intersecting identities, such as racial identity or religious socialization, on the religiosity and sexual health behavior connection. Third, this dissertation moved beyond examining the role of religiosity among abstinent adolescents by using a sample that contained both sexually active and inactive adolescents. Fourth, gender differences in adolescent religiosity (Rew & Wong, 2006; Smith & Faris, 2002; Taylor, Chatters, & Levin, 2003), and sexual health behavior (Landor, Simons, Simons, Brody, & Gibbons, 2011; O'Donnell et al., 2001) are well documented. Compared to adolescent boys, adolescent girls are more religious and also engage in fewer sexual risk behaviors. Using a multidimensional measure of religiosity, I tested if the association between religiosity and sexual initiation varied by gender. Lastly, although frequently aggregated, Caribbean black and African American adolescents differ in culture, identity, religiosity, and familial practices (Waters, 2009). Most research on black adolescents treat this group as ethnically homogenous, missing potential differences in sociocultural contexts, development, and behaviors between Caribbean black and African American adolescents. This dissertation further examined if and how Caribbean black ethnicity impacts the dimensions of religiosity, and the relationship between religious socialization, religiosity, and sexual initiation.

1.4 Study Aims

Racial disparities in adolescent (anyone aged 13-17 years) sexual health behaviors and outcomes are a public health concern. This concern is reflected in the Healthy People 2020 adolescent sexual health objectives which are meant to increase the number of adolescents who have never had sex (sexual initiation), and to achieve reductions in new HIV infections, chlamydia infections, and pregnancies. This dissertation addressed the public health problem of adolescent sexual initiation, which may result in increased rates of HIV and STDs among black adolescents. The specific aims of the study were:

Aim 1: To assess the measurement properties of a multidimensional measure of black adolescent religiosity.

Aim 2: To determine the nature of the associations between religious socialization, religiosity, and sexual initiation.

Aim 3: To determine the relationship between distinct adolescent religiosity-racial identity profiles and sexual initiation.

These study aims were assessed through secondary data analysis of the National Survey of American Life, a nationally representative cross-sectional study of black adolescents in the U.S. The goals of study aims 1 and 2 were to use factor analysis and structural equation modeling to assess a multidimensional measure of black adolescent religiosity, and to determine the relationship between religious socialization, religiosity, and sexual initiation. Study aim 3 used these same data to examine the joint effect of religiosity and racial identity on sexual initiation through latent profile analysis, which accounted for the mutually constitutive nature of these two facets of adolescent identity formation.

1.5 Study Rationale

1.5.1 Rationale for Aims 1 And 2

Developing a comprehensive model of the association between religious socialization, religiosity, and sexual initiation among black adolescents is imperative to understanding how dimensions of religiosity interact with and affect sexual initiation. There is a need for multidimensional measures of adolescent religiosity because it supports the examination of religiosity and sexual health with careful attention to the complexity and depth of the topic. Much of the published adolescent religiosity and health research uses large national data sets (e.g., The National Longitudinal Study of Adolescent to Adult Health) in which only one or two dimensions of religiosity are measured (Cotton, McGrady, & Rosenthal, 2010), and use statistical methods that may not fully account for the complex intersections of religious beliefs, attitudes, and practices (Pearce, Foster, & Hardie, 2013). This dissertation used structural equation modeling (SEM) to account for a complex data structure, and to simultaneously study the multidimensionality of religiosity and its effects on the relationship between religious socialization and sexual initiation.

1.5.2 Rationale for Aim 3

Using a person-centered approach to understand the intersection of racial identity and religiosity means that adolescents are grouped into different types of religiosity-racial identity profiles. These profiles are defined by unique patterns of how dimensions of religiosity and racial identity intersect among black adolescents. Despite being an important factor in adolescent development and self-concept, racial identity is frequently omitted in research on adolescent religiosity and sexual initiation. While much of this research acknowledges that religiosity and the Black Church influence black adolescent health behaviors, few examine if and how black

racial identity influences these relationships. This omission fails to account for the nexus between racial identity and religiosity, and that most often the Black Church is a place where religiosity and race coalesce to influence health behaviors. My consideration of religiosity and racial identity as mutually constitutive accounts for the unique experiences and sociocultural contexts of black adolescents; that adolescence is a critical period in which identity consolidation is occurring just as sexual risk is peaking; and the impact these considerations may have on the relationship between religiosity and sexual initiation. Understanding the complexity of this relationship will provide insight into leverage points for intervention.

Further, social scientists have largely relied on variable-centered approaches to measure the distributions, trends, and influence of adolescent religiosity. These methods may oversimplify the complex relationship between adolescent religiosity and sexual initiation. The person-centered approach employed in this dissertation study supports a larger call to researchers to apply more comprehensive methods and conceptualizations to the study of adolescent religiosity and sexual initiation. These methods also take into account that black adolescents are often more active in religious institutions (organizational religious participation) than other adolescents, which suggests that black adolescents who ascribe to more internal, less participatory based religiosity, are inaccurately categorized as less religious. This oversimplification also fails to account for whether other factors related to adolescent self-concept, such as racial identity, influence behavior.

1.5.3 Rationale for Examining Gender Differences

Gender differences in adolescent religiosity and sexual health behavior are well documented. Adolescent girls, more than boys, find religion to be a mainstay in their lives – frequently attending religious organizations, and regularly praying and reading religious texts

(King & Roeser, 2009; Smith & Denton, 2005). Several studies report that black males are less active in religious organizations, and account for a small percentage of membership in religious organizations (Billingsley & Caldwell, 1991; Walters & Brown, 1979). Perhaps, the role of religiosity in black adolescent males' sexual initiation is underestimated in research that only measures organizational religious participation, and does not account for the non-organizational dimensions of religiosity that adolescent males may embrace. Underestimating religiosity in black adolescent boys may have significant implications for culturally grounded HIV prevention efforts within this group.

Additionally, gender differences in adolescent risk-taking are supported in the literature. Adolescent girls are more risk adverse than their male counterparts, regardless of age or race, and have fewer conflicts with religious teachings and principles that emphasize parental control and conservative norms about sexual behavior (Baier & Wright, 2001; Zuckerman, Ball, & Black, 1990). While gender differences in religiosity and risk taking may be partially attributable to differences in gender role norms and socialization, inconclusiveness in how these differences converge warrants further examination of gender in the proposed relationships.

1.5.4 Rationale for the Study of Ethnic Differences

In the last decade, immigration, primarily from sub-Saharan Africa and the Caribbean, contributed to at least one-fifth of the growth of the U.S. black population. Caribbean blacks are recognized as being the largest subgroup of black immigrants in the U.S (Bureau, 2011; Kent, 2007). In the U.S., non-U.S. born black adults and adolescents comprise a significant proportion of new HIV diagnoses. HIV surveillance data indicates that of an estimated 100,013 black adults and adolescents diagnosed with HIV infection from 2001 to 2007, 11.7% were foreign-born, with the majority being born in the Caribbean (54.1%) (Johnson, Hu, & Dean, 2010). Despite the

marked prevalence of HIV among Caribbean blacks in the U.S., we have limited knowledge on the sexual health behaviors of Caribbean black adults and adolescents (Ojikutu et al., 2013). This limitation is a result of the paucity of data available on the sexual health behaviors and outcomes of black adults and adolescents stratified by ethnicity. Findings from studies that do consider ethnic differences show that non-U.S. born black adults have lower HIV knowledge and condom use compared to U.S. born black adults (Ojikutu et al., 2013; Page & Kent, 2009). Inquiry is needed into whether these and other differences in sexual health behaviors are present during adolescence.

There are religiosity differences between Caribbean black and African American adults in religious denomination, frequency of organizational religious participation, and religious support (Chatters, Taylor, Bullard, & Jackson, 2009; Waters, 2001). Caribbean black adults often attend religious services with other Caribbean blacks, which may contribute to a greater sense of cultural attachment, and an increase in social capital and support (Taylor, Chatters, & Jackson, 2007b; Taylor, Chatters, & Nguyen, 2013; Waters, 2001, 2009). Both groups report similarities in organizational and non-organizational religious participation and subjective religiosity, which suggests that some dimensions of religiosity for Caribbean black adults may closely resemble those of African American adults (Chatters, Taylor, Jackson, & Lincoln, 2008; Taylor et al., 2007b). Additionally, for both Caribbean black and African American adults, religiosity may increase their sense of resolve and serve as a means to cope with life-stressors related to their marginalized status within the U.S. (Chatters et al., 2008; Ellison & Taylor, 1996; Taylor et al., 2003).

Despite what we know about the religiosity of Caribbean black adults, we know very little about the religiosity of Caribbean black adolescents. In general, the relationship between

parent and child religiosity suggests that parents with greater religiosity raise more religious children (Regnerus, Smith, & Smith, 2004); therefore one could argue that patterns of religiosity observed among Caribbean black adults may also be observed among Caribbean black adolescents. On the other hand, Caribbean black adolescents may view their parents' higher religiosity or moral compass as challenging to their ability to assimilate or Americanize. This belief may result in a rejection of religiosity as a whole, or a rejection of religious dimensions endorsed by their parents. The aforementioned patterns may be the same for African American adolescents. However, given the lack of empirical and theoretical evidence on Caribbean black adolescent religiosity, these patterns may or may not hold. Scholarship on nativity and familial status in adolescents may provide insight into potential differences in religiosity between Caribbean black and African American adolescents, and whether these differences influence sexual initiation (Chatters, Taylor, Bullard, & Jackson, 2009; Waters, 2001).

Overall, the goal of this dissertation was to determine if and how adolescent religiosity, and its associated factors, influenced black adolescent sexual initiation. Although prior studies have examined the relationship between religiosity and sexual health behaviors (Chatters, 2000; Fetzer Institute, 1999; Smith, 2003), the absence of black adolescent participants and a multidimensional measure of religiosity are recognized limitations. In order to fully address the disproportionate burden of HIV and STD rates among black adolescents, it is important to understand what factors contribute to and explain black adolescent sexual initiation. Further, documented ethnic differences among adult black populations in culture, socio-historical factors, religiosity, and sexual health behaviors suggest that an investigation of ethnic differences within adolescent black populations is warranted. Findings from this study have the potential to provide insight into sociocultural and developmental factors that can be leveraged in HIV and STD

interventions designed to prevent and control transmission among black adolescents. Additionally, this dissertation explored possible approaches to generate stronger empirical research on the interactions of various dimensions of religiosity, socialization, and identity formation on adolescent sexual initiation.

1.6 Organization

This dissertation consists of seven chapters. Chapter One provides a summary of the public health problem, specific aims, and rationale for the studies presented. Chapter Two provides a brief overview of the social and environmental determinants of adolescent sexual initiation. Chapter Two also summarizes the literature on the Black Church, religiosity, religious socialization as constituting unique sociocultural contexts that shape health behaviors and the developmental processes of black adolescents. Lastly, Chapter Two discusses the literature linking the aforementioned concepts and racial identity to health behaviors broadly, and sexual health behaviors specifically. Chapter Three describes the theoretical foundations of this research. Chapter Four provides an overview of the methods used to examine the study aims as well as describes the data source and sample. Chapter Five presents the first manuscript, "Religiosity and HIV/STD Prevention: Measuring Black Adolescent Religiosity to Build a Model of Religious Socialization, Religiosity, and Sexual Initiation " which presents findings for aims 1 and 2. Chapter Six presents the second manuscript, "A Person-Centered Approach to the Study of Black Adolescent Religiosity, Racial Identity, and Sexual Initiation for HIV/STD Prevention among Black Adolescents" which presents findings for aim 3. Chapter 7 provides a discussion of the results in Chapter Five and Six, synthesizes key findings across the studies, and discusses the contributions this dissertation makes to the field with suggestions for next steps and implications for future research and practice.

CHAPTER 2: REVIEW OF LITERATURE

2.1 Sexual Initiation

Sexual initiation, defined as the age at which an individual has their first sexual experience, is an important component of adolescent sexual health. Definitions of what constitutes "early" sexual initiation vary considerably within the sexual health behavior literature; some define it as engaging in sexual activity at the age of 14 or 15 years, while others say it is any sexual activity between ages 13 and 17 years (Coker, Richter, Valois, & McKeown, 1994; Johnson & Tyler, 2007; Madkour, Farhat, Halpern, Godeau, & Gabhainn, 2010). Despite this variation, an objective of Healthy People 2020 is to decrease the number of adolescents who have had sex by the age of 17. This objective is in response to evidence suggesting that adolescent sexual initiation is associated with a host of deleterious health behaviors and outcomes, including more lifetime sexual partners, increased substance use during sexual activity, and infrequent condom use (Durbin et al., 1993; Madkour et al., 2010; Sandfort et al., 2008). These behaviors are associated with an increased risk of STDs, HIV, and unwanted pregnancy (Kaestle et al., 2005; Kahn, Kaplowitz, Goodman, & Emans, 2002; Kahn et al., 2002; Weinstock, Berman, & Cates, 2004). For example, findings from a nationally representative longitudinal study of adolescent health outcomes indicated that failure to use a condom at the first sexual experience places adolescents on a trajectory for inconsistent condom use throughout adolescence and adulthood (Shafii, Stovel, & Holmes, 2007).

The sexual health behavior literature identifies several social and environmental determinants of adolescent sexual initiation which may place black adolescents at increased risk

of HIV and other STDs. These determinants include neighborhood factors, social network factors, and sexual concurrency. Exposure to certain neighborhood characteristics, such as racial residential segregation, social disorder, and lower neighborhood socioeconomic status, is associated with an increase in risky sexual behaviors among black adults (Biello et al., 2012; Boardman et al., 2001; Leventhal & Brooks-Gunn, 2000). Researchers suggest that these same determinants contribute to racial disparities in adolescent sexual initiation (Boardman et al., 2001; Harling, Subramanian, Bärnighausen, & Kawachi, 2013; Leventhal & Brooks-Gunn, 2000). Social network factors also can influence HIV and STD risk among black adolescents. Social network determinants include sexual concurrency, or the number of sexual partners that overlap in time, and a higher background prevalence of HIV and STDs within black sexual networks (Adimora et al., 2006; Harawa et al., 2004; Millett, Peterson, Wolitski, & Stall, 2006). Additional determinants of adolescent sexual initiation include sexual health education, attitudes and beliefs, and perceptions of peer and parent approval or disapproval of sexual activity (Coker et al., 1994; Guilamo-Ramos et al., 2012; Kirby & Miller, 2002). It is important to note that much of the adolescent sexual initiation literature reviewed asked adults to report on their adolescent sexual activity, or drew on parents' reports of adolescent sexual activity. Those studies with adolescents consisted mainly of white adolescent samples.

Both the retrospectiveness and sample homogeneity of previous studies limit inferences that can be made about factors associated with black adolescents' sexual initiation. Although these determinants are pervasive, not all black adolescents exposed to these social and environmental contexts (i.e. neighborhood characteristics, social and sexual network factors, and community level factors) initiate sexual activity at early ages, nor are they engaging in risky sexual behaviors. Indeed, there are several factors which promote delay of adolescent sexual

initiation for black adolescents, including religiosity, and other developmental factors (e.g., racial identity) which promote positive self-concept and identity formation (Maselko, Hughes, & Cheney, 2011; Todd & Allen, 2011).

Traditional individual level (e.g., sexual health education) and social determinant factors alone do not explain all of the increased HIV and STD incidence experienced by black adolescents. In order to fully understand black adolescent sexual health behaviors in general, and more specifically sexual initiation, we also need to explore other intra-individual factors that influence black adolescent self-concept and identity development, which in turn, may contribute to behaviors associated with differential HIV and STD risks.

2.2 Black Church

Religiosity and the Black Church are essential components of the social, civic, and political experiences (Ellison & Levin, 1998; Lincoln & Mamiya, 1990; Frazier, 1974) and the racial identity of black Americans (Chatters, 2000; Ellison & Sherkat, 1993; McRoberts, 2005; Taylor et al., 2003). Broadly, the Black Church is a term used to describe Christian churches that have a predominately black congregation. These congregations often have ministries and services to address issues of importance to blacks, such as racial discrimination and access to support services (Lincoln & Mamiya, 1990; Taylor et al., 2003). The term is also used to denote several historically African American denominations (i.e., The African Methodist Episcopal Church, The African Methodist Episcopal Zion Church, Church of God in Christ (COGIC), The Christian Methodist Episcopal Church, The National Baptist Convention of America, The National Baptist Convention, USA, Inc. and The Progressive National Baptist Association) (Lincoln & Mamiya, 1990). The Black Church has a long history of involvement in community health and social problems, including financial assistance for the unemployed, offering free

health clinics, recreational activities, and child care assistance programs (Thomas, Quinn, Billingsley, & Caldwell, 1994). Black churches also offer a safe space within a community for emotional, spiritual, and social support, providing vital resources for blacks to cope with stressful life events (Debnam, Holt, Clark, Roth, & Southward, 2012; Hayward & Krause, 2015; Lincoln & Mamiya, 1990).

Several studies demonstrate that the Black Church has a significant role in championing public health initiatives targeting black American communities and promoting the adoption of a variety of health programs and behaviors, including physical activity and weight loss (Kim et al., 2006; Whitt-Glover, Hogan, Lang, & Heil, 2008; Wilcox et al., 2007), cancer screenings (Campbell et al., 2004; Duan, Fox, Derose, & Carson, 2000; Husaini et al., 2002), and mental health (Hankerson & Weissman, 2014). Although HIV has been described as the "civil rights battle of the 1990s" and continues to have a devastating effect on black populations, many black churches do not participate in HIV prevention activities (Billingsley & Caldwell, 1991; Fullilove & Fullilove, 1999). Their reluctance to champion HIV prevention is believed to be driven by homophobia, fear of alienating conservative church members, stigma, and inconsistent messages about sexual abstinence and HIV prevention (Coyne-Beasley & Schoenbach, 2000; Fullilove & Fullilove, 1999; Woods-Jaeger et al., 2014). Recently, a shift in theological interpretation and practice has occurred in many churches as they begin to recognize the importance of discussing HIV and sexual health with their adolescent and adult congregants (Isler, Eng, Maman, Adimora, & Weiner, 2014; Stewart & Thompson, 2015; Woods-Jaeger et al., 2014). However, changes in theological interpretation and practice have not occurred across all denominations, and there are several churches that choose not to participate in HIV prevention programs. Many congregations and faith leaders believe that the moral implications of HIV (i.e., risky sexual behavior,

substance use, and homosexuality) cannot be overlooked, while others argue that the severity of the disease among blacks cannot be ignored (Adedoyin, 2013).

Although much of the literature on the Black Church is focused on traditional African American churches, a growing body of literature describes Caribbean black churches and church activities. Churches with majority Caribbean congregations often provide recent Caribbean immigrants with access to social support, resources, and a larger Caribbean community in the U.S. (McRoberts, 2005; Waters, 2001, 2009). Additionally, these churches facilitate Caribbean immigrants' assimilation into American culture (Waters, 1996, 2009). For example, parental disciplinary norms in the U.S. differ greatly from disciplinary norms in many Caribbean countries (Steely & Rohner, 2006). As such, Caribbean parents often turn to the church to provide structure, moral order, and a connection to traditional Caribbean culture and norms for their youth (Waters, 2009). In this way, Caribbean churches hold a similar position in Caribbean communities as the Black Church does in black communities. Both institutions serve to reinforce an ethnic and racial identity, provide tangible and spiritual support, and facilitate access to community resources (McRoberts, 2005; Taylor, Chatters, & Jackson, 2007a; Taylor et al., 2007b).

2.3 Black Religious Landscape

Despite much of the literature on the Black Church describing it as homogeneous, it is important to recognize the varying theology and strains of the church which often determine its involvement in secular issues. Lincoln and Mamiya (1990) identify two themes of the Black Church that are of importance to this dissertation. These themes include more religiously and theologically conservative groups (the priestly theme); and more social justice and liberation based groups (the prophetic theme). Priestly churches focus on the spiritual life and worship

practices of members. Prophetic churches are involved in activities such as social justice, civic engagement, and maintenance of a cultural and racial identity. Lincoln and Mamiya note that both themes may exist within one church (1990). Differences between the two themes may not be a function of the church organization, but rather an expression of denominational or regional differences. Much of the discussion of black liberation theology has focused on the prophetic without much consideration of the priestly elements of the Black Church, which Lincoln and Mamiya suggest is a limitation of this research. For this dissertation, the priestly and prophetic churches were considered to be themes that operate simultaneously. Participation in health promoting activities is most aligned with the prophetic church, where as concern for psychosocial well-being is most aligned with the priestly church.

Black liberation theology developed in response to the racial oppression blacks experienced as a result of slavery, and has remained an important component of black racial identity (Calhoun-Brown, 1999; Cone, 1984; McRoberts, 2005). In fact, many argue that there is little to no disjunction between the Black Church and the black community—from this nexus emerged black liberation theology (Cone, 1984; Fields, 2001). Black liberation theology is defined as, "An interpretation of the gospel of Jesus Christ against the backdrop of historical and contemporary racism" (Fields, 2001). As such, the lived experiences of blacks in the U.S. are the primary sources for black clergy to reinterpret the meaning and function of Christianity. While black religious movements have occurred for centuries, scholars credit the involvement of black churches in the 1960s civil rights movement as the catalyst for black liberation theology (Cone, 1984; Harris, 1994). In this way, black Christianity, and the church specifically, provides a racial-religious narrative connected to African culture, racial pride, and the civil rights movement (Cone, 1984). The Black Church socializes members into a particular worldview that is morally

and socially conservative, emphasizing how blacks should function in a racially antagonistic society. In this role, the Black Church functions as an agent of both religious and racial socialization. For example, religious communities often rely on sub-communities of members (e.g., youth ministries directed to children and adolescents) who serve to endorse pro-religious beliefs and behaviors, and who subsequently indoctrinate other group members (Cornwall, 1989). Given the ubiquitous nature of the Black Church in black communities, this form of religious socialization extends beyond the confines of the physical borders of the church.

Not all church-going black Americans attend traditional African American or Caribbean black churches. However, approximately 60% of blacks attend historically black churches. Membership in historically black Protestant denominations is 92% black, and the majority of blacks have had some exposure to black churches (Shahgal & Smith, 2009). The Black Church extends beyond the conventional functions of a religious organization (e.g., worship services and religious development) to provide resources and support that function to maintain social control and order within black communities.

I included this background on the importance of the Black Church and black religious theology in black American history and culture to provide a context for which many black adolescents begin to experience religiosity. Further, for black adolescents, early life messages about religion and sexual activity may be quite challenging and contradictory to public health messages about sexual health. That is, public health messages emphasize harm reduction through condom use and partner selection, while the Black Church emphasizes abstinence until marriage and monogamy. It is important to note that there remains much heterogeneity within the Black Church, and certainly not all youth—Caribbean black or African American—are members. Nevertheless, the importance of the Black Church provides a critical context for examining the

relationships between religious socialization, religiosity, racial identity, and sexual initiation among black adolescents.

2.4 Religiosity and Health

Researchers often use the terms religion, religiosity, and spirituality interchangeably. Religion is commonly described as the public or organizational manifestations of faith, such as attending religious services or participating in religious organizations (Ellison & Sherkat, 1995; Mattis, 2000). Spirituality is described as private expressions of faith, including prayer and meditation (Ellison & Sherkat, 1995; Mattis, 2000). Researchers agree that religiosity is a multidimensional construct consisting of public, private, internal, and external domains (Taylor, Chatters, & Brown, 2013; Pearce et al., 2013; Koenig et al., 2012). However, the lack of consensus on a definition of religiosity presents a challenge when reviewing religiosity and health literature. Despite the lack of consensus, the literature overwhelmingly asserts the salience of religiosity and the Black Church in the lived experiences of black Americans throughout history (Ellison & Taylor, 1996; Taylor et al., 2003; Lincoln & Mamiya, 1990). I use the term religiosity to be the amalgam of what is commonly referred to as religion and spirituality.

Religiosity is a determinant of adolescent health behaviors. As such, there is a substantial body of literature examining the association between various dimensions of religiosity, most notably frequency of religious organizational service attendance and importance of religion in one's life, and adolescent health behavior. These studies found that higher adolescent religiosity is associated with lower alcohol use (Amey, Albrecht, & Miller, 1996; Cochran & Akers, 1989; Miller, Davies, & Greenwald, 2000; Resnick et al., 1997; Sinha et al., 2007), lower tobacco use (Amey et al., 1996; Resnick et al., 1997; Sinha et al., 2007; Wallace & Forman, 1998), and lower marijuana use (Cochran & Akers, 1989; Resnick et al., 1997; Sinha et al., 2007; Wallace &

Forman, 1998). The empirical evidence is strong supporting religiosity as protective against adolescent tobacco and substance use; however, findings on the relationship between religiosity and adolescent sexual health behaviors are inconsistent.

Among black and white adolescents, dimensions of religiosity have been shown to be negatively associated with engagement in risky sexual health behaviors (Lammers, Ireland, Resnick, & Blum, 2000; McCree et al., 2003; Miller & Gur, 2002; Nonnemaker, McNeely, & Blum, 2003; Sinha et al., 2007); specifically adolescents with higher religiosity are more likely to delay initiation of sexual intercourse and exhibit greater sexual responsibility than adolescents with lower religiosity (Miller & Gur, 2002). For example, Sinha et al. (2007) examined the association between three measures of religiosity and sexual activity in a nationally representative sample of 2,004 adolescents aged 11-18 years. They found greater religiosity—measured by perception of religion as important in one's daily life, organizational religious participation, and participation in religious programs—to be associated with never having had sex. Another study conducted by Lammers et al. (2000) assessed the relationship between religiosity and adolescent sexual activity among a sample of 26,023 students in grades 7-12. They found greater religiosity, measured by asking adolescents if they were more or less religious than their peers, to be associated with delayed onset of sexual activity. Nonnemaker et al. (2003) measured the relationship between two dimensions of religiosity, personal devotion to one's religion (i.e., frequency of prayer and importance of religion) and religious organizational participation (i.e., frequency of attendance at religious services and youth group activities), with sexual behavior using a sample of 16,306 from the National Longitudinal Study of Adolescent Health (Add Health Study). They found both dimensions of religiosity to be associated with a lower probability of having had sexual intercourse.

Additionally, Miller and Gur (2002) used data from 3,356 adolescent girls enrolled in Wave 1 of the Add Health Study to determine the relationship between religiosity—measured by frequency of religious event attendance, personal conservatism (belief in God and the Bible), personal devotion, and religious denomination—and sexual responsibility, measured by sexual activity, perception of risk in unprotected intercourse, and birth control use. They found sexual responsibility to be positively associated with personal devotion and frequent attendance of religious events and inversely associated with personal conservatism. Finally, McCree et al. (2003) examined the relationship between religiosity, measured by frequency of religious and spiritual activities, and sexual risk attitudes and behaviors in a sample of 522 African American adolescent girls aged 14-18 years. They found that adolescent girls with greater religiosity were more likely to have greater self-efficacy to negotiate safer sex, communicate with partners about safer sex, and refuse an unsafe sexual encounter, than were adolescent girls with less religiosity. Adolescent girls with higher religiosity also were more likely to initiate sex at a later age, use a condom in the past 6 months, and express more positive attitudes toward condom use. Collectively, these findings implicate religiosity as a potential protective factor against engaging in risky sexual health behaviors. These findings also elevate the discussion of religiosity beyond the frequency of religious organizational practice to considerations of additional dimensions, affirming the complexity of this multidimensional construct and its relationship with sexual health behaviors.

Despite the overwhelming evidence supporting religiosity as protective against adolescent risky sexual health behaviors, other studies have shown that adolescents with greater religiosity were more likely to engage in risky sexual health behaviors, such as inconsistent condom use (Miller & Gur, 2002; Zaleski & Schiaffino, 2000). For example, Zaleski and

Schiaffino (2000) examined the relationship between religious orientation, as measured using the Allport and Ross Religious Orientation Scale (which assesses use of religion in everyday life and motivations for religious participation), and sexual risk-taking in late adolescence among 230 first-year college students. They found that sexually active students with greater religious orientation were less likely to use condoms, and concluded that religiosity may represent a risk factor for unsafe sexual practices among sexually active adolescents. Further, in the aforementioned Miller and Gur (2002) study, personal conservatism, an indicator of religiosity, was positively associated with unprotected sex. Finally, a study of young adults age 25 and younger found dimensions of religiosity, including religious organizational participation and orientation, to have a negative or modest positive effect on contraception use, and condom use self-efficacy (Lefkowitz, Gillen, Shearer, & Boone, 2004). Together, the aforementioned findings reflect tensions and inconsistencies in the literature about the effects of religiosity on adolescent sexual health behavior.

There are several possible explanations for why adolescents with greater religiosity may engage in more risky sexual health behaviors. From a research perspective, contradictory findings may be attributable to different operationalization of the construct, which may not fully capture its multidimensionality or take into account other related factors that intersect with religiosity (Goggin, Malcarne, Murray, Metcalf, & Wallston, 2007; Lefkowitz et al., 2004; Sinha et al., 2007). Further, people with greater religiosity believe that their health is predetermined by a higher spiritual power (Holt, Clark, Kreuter, & Rubio, 2003; Holt & McClure, 2006). As such, early sexual initiation could be a result of adolescents with more religiosity assuming a passive role in their sexual health, believing that the outcomes of their behaviors should be left to the Divine (Ellison & Levin, 1998). Religious prohibitions of sexual activity may accompany higher

levels of guilt about sexual practices and desires, and place adolescents in a position of not having adequate information to negotiate sexual situations (Miller & Gur, 2002; Uecker, 2008).

2.4.1 Frameworks for Understanding Religiosity, Identity, and Behavior

Several frameworks are available to conceptualize religiosity with identity and health behavior, and motivate researchers towards a more consistent operationalization of religiosity. These frameworks, rooted in sociology of religion and religious psychology, provide insight to a broader, multidimensional conceptualization of religiosity for public health research. For example, Smith (2003) used theory and empirical evidence from the National Survey of Youth Religion, a longitudinal study of 3,370 adolescents aged 13-17, to develop a nine-factor framework to explain how religion influences the lives of American adolescents. These factors included oral directives, spiritual experiences, role models, community and leadership skills, coping skills, cultural capital, social capital, network closure, and extra community links. This framework grouped the nine factors into three overarching categories to explain religious influences on adolescent behavior: 1) moral order, 2) learned competencies, and 3) social and organizational ties,.

Moral order refers to religion as an agent that endorses self-control and adherence to a moral code that reinforces religious teachings, such as abstinence until marriage and treating one's body like a temple made in the image of God. Moral order is reinforced through religious contexts and culture, which provides youth with an opportunity to gain spiritual experiences, and form positive relationships with religiously committed peers and adults. Learned competencies refers to the way religion increases adolescents' ability to use knowledge and life skills, such as leadership and coping skills, to acquire cultural capital, or social resources that promote social mobility beyond economic means (Bourdieu, 1986). Finally, social and organizational ties refers

to the way religion provides opportunities for adolescents to build social capital through cross-generational relationships and gain access to community and national resources. These ties also provide adolescents with denser social networks in which oversight of adolescent activities is used to discourage risky behaviors. Summarizing across these categories, this framework asserts that religion is health promoting, provides moral directives, and reinforces positive relationships for adolescents to develop social support and social capital.

A framework from Pargament et al. (2001) suggests that a more complete articulation of religiosity is not to examine it in terms of public or private expressions of faith. Rather, in order to advance our understanding of religiosity and health, we should consider religiosity's influence on health in terms of distal and proximal domains (Hill & Pargament, 2008; Pargament, Tarakeshwar, Ellison, & Wulff, 2001). Distal domains are religious behaviors and practices, such as service attendance, frequency of prayer, and duration of meditation. Proximal domains are the functions of religiosity, such as spiritual meaning, religious support, and religious coping. The strength of this framework is that it proposes that distal and proximal domains may operate via different pathways to influence health behaviors and outcomes. For example, several studies examining the association between religiosity and adolescent health behaviors found a negative association between proximal domains and adolescent marijuana use and voluntary sexual activity. These studies also found that distal domains were associated with decreased alcohol use, and were not associated with voluntary sexual activity (Hodge, Cardenas, & Montoya, 2001; Holder et al., 2000).

Differential findings on the effects of proximal and distal domains on adolescent health behaviors may be understood by noting differences in the mechanisms through which distal and proximal domains operate. Distal domains are more concerned with the social or public

enactment of religiosity, while proximal domains are more intrinsic or private and represent an internal relationship with religiosity and the Divine (Cotton, Zebracki, Rosenthal, Tsevat, & Drotar, 2006; Hodge et al., 2001). Perhaps distal domains influence behaviors that are more social (e.g., adolescent alcohol use), while proximal domains influence more private or individual behaviors (e.g., adolescent sexual activity) (Cotton et al., 2006). Nevertheless, most of the literature on religiosity and adolescent health examine distal domains, while only a few studies examine proximal domains (Cotton et al., 2006; Hill & Pargament, 2008). Greater inclusion of proximal domains in research on adolescent health behaviors is warranted (Cotton et al., 2006; Hill & Pargament, 2008).

Lastly, Ellison and Levin (1998) suggest in their seminal review of the religion-health connection that religious involvement affects individuals through four distinct processes: (1) internalized ethical norms that, when violated, lead to increased feelings of shame and a fear of God's punishment; (2) fear of social punishment or shame from members of religious communities, particularly those in leadership roles; (3) changing behaviors and attitudes to align more closely with others in their religious communities; and (4) participation in religious activities and belonging to a religious community that acts as a buffer to risky environments. Applied to adolescent sexual health behavior, this framework suggests that religious communities both increase feelings of guilt or punishment for violating religious norms through engagement in sexual behaviors, and also reduce exposure to risky environments that may facilitate adolescent sexual activity. Alternatively, dense religious social networks could prove damaging if the norms encourage or do not actively dissuade adolescent sexual activity. This alternative explanation may be a minor case, but it does show how this framework can be applied

to explain both the positive and negative influence religiosity may have on adolescent sexual health behavior.

All three of the aforementioned frameworks suggest that religiosity provides adolescents with social norms and a world-view that they can experience—through participation with religious communities—and ascribe meaning to, through religious and spiritual beliefs and attitudes (Geertz, 1973; Mattis & jagers, 2001). Despite these frameworks and recent advances in understanding adolescent religious participation, research on religiosity and health of black Americans has largely focused on the experiences of African American adults (Koenig et al., 2012; Mattis & Jagers, 2001). In fact, we know little about the religious lives of black adolescents (Rostosky et al., 2004; Smith, Denton, Faris, & Regnerus, 2002). We do know that there is racial variation in religiosity; that religiosity has a role in adolescent self-concept and development (Fergus & Zimmerman, 2005; Smith, Faris, & Regnerus, 2003); and that adolescent development is shaped by factors associated with racial identity and religious socialization (Cornwall, 1989; Cotton et al., 2006). However, the ways in which these factors converge and influence adolescent sexual initiation remains unknown.

Although all three frameworks of religiosity informed this dissertation, the framework proposed by Smith (2003) was used to conceptualize religiosity and its influence on black adolescent sexual initiation. This framework posits that religiosity influences adolescent self-concept, and that interpersonal and community level relationships have an effect on adolescent behavior. Smith's framework largely positions religiosity as having a protective influence on adolescent sexual health behaviors, (i.e., delaying adolescent sexual initiation). While this conceptualization is congruent with much of the empirical evidence available on the influence of religiosity on adolescent behaviors, I augment this framework with social control theory

(discussed in chapter 3), which suggests that religiosity has the potential to have both a negative and positive influence on adolescent sexual health behaviors.

2.5 Religious Socialization and Health

Socialization describes the process by which an individual acquires social and cultural norms, attitudes, beliefs, and behaviors (Clausen et al., 1968). Adolescents are socialized through interactions with their social environments. These include parent and peer relationships, media, school settings, and their religious communities (Clausen et al., 1968; Steinberg & Morris, 2001; Wallace & Williams, 1999). This dissertation examined religious socialization, which describes the process by which an individual learns and internalizes religious beliefs, attitudes, values, and behaviors (Bengtson, Copen, Putney, & Silverstein, 2009; Brown & Gary, 1991). Although not well-studied in adolescent sexual health research, several studies show that religious socialization is positively associated with educational attainment (Brown & Gary, 1991) and a healthy sense of well-being (Fry, 2000; Gutierrez, Goodwin, Kirkinis, & Mattis, 2014; Smith & Faris, 2002). The limited empirical evidence on religious socialization does not reflect the importance of this process to understanding the relationships between religiosity and sexual health. Much of the conceptualization of religious socialization suggests that it starts during childhood. However, the empirical evidence on religiosity suggests that religious socialization is a lifelong process with adolescence being a critical period for it to occur (Bengtson et al., 2009; Brown & Gary, 1991; Flor & Knapp, 2001; Mattis & Jagers, 2001).

Religious socialization occurs through interactions with socializing agents, individuals, groups, and institutions, that create the social context. There are four agents of religious socialization: Parents, church (as an institution), religious education, and peers (Cornwall, 1989; Landor et al., 2011). Family, particularly parents, provides the primary context by which children

and adolescents first experience religious socialization (Gutierrez et al., 2014; Landor et al., 2011). Although adolescence is marked with greater independence from parents and family, parental religious beliefs and practices are still believed to be more influential to adolescent religious socialization than peers (Meyer, Schwartz, & Frost, 2008; Vaidyanathan, 2011).

Opinions vary as to which parent, mother or father, is most central to religious socialization (Martin, White, & Perlman, 2003). However, for black adolescents, maternal religious affiliation and church attendance are believed to be important predictors of both adolescent and adult religiosity (Gutierrez et al., 2014; Mattis & Jagers, 2001). Regardless of which parent acts as the primary socializing agent, the motivations for doing so are quite similar; parents share religious norms and values in order to provide a foundation for adolescent religious beliefs, values, and attitudes (Ozorak, 1989). Parents use religious socialization, and to a larger extent religiosity, to exert social control by encouraging pro-religious adolescent behaviors, and punishing anti-religious behaviors (Ellison & Sherkat, 1993; Yinger, 1970).

Three models or processes of religious socialization are identified in the literature: transmission, transaction, and transformation/channeling models. The transmission model postulates that parents are the most significant and active socializing agents, and that adolescents model parental religious practices (Oman & Thoresen, 2003). The transmission model is among the earlier models used to describe religious socialization, and endorses a more one-way transfer of information between parents and adolescents. This model assumes that parent religiosity is the most important predictor of adolescent religiosity, and that adolescents are passive participants in their religious socialization and subsequent religious practices. Studies in support of this model have found strong correlations between parent church attendance and religious beliefs, and adolescent church attendance and religious beliefs (Bao, Whitbeck, Hoyt, & Conger, 1999;

Ozorak, 1989). More recent applications of this model include "spiritual modeling," a concept derived from Bandura's observational learning construct, which suggests that adolescent religiosity increases once adolescents observe their parents providing an exemplary model of religiosity (Oman & Thoresen, 2003).

In contrast to the transmission model, the transaction model posits that adolescents' cognitions and perceptions of religiosity have a greater influence on religious socialization than their parents' religious practices (Kuczynski, 2002). In this model, frequent reciprocal religious exchanges between parents and adolescents have the greatest effect on religiosity (Kuczynski, 2002). Unlike the transmission model, the transaction model views adolescents as active participants in their socialization. This model implies that adolescent religious socialization is affected by adolescents' perceptions of their parents' religiosity, and the frequency of religious discussions between parents and adolescents (Acock & Bengtson, 1980; Okagaki, Hammond, & Seamon, 1999).

Lastly, the transformation/channeling model postulates that religious socialization occurs in the context of interactions with a variety of socialization agents, including parents, peers, religious leaders and mentors. It combines elements from the transmission and transactional models to propose that religious socialization occurs through both modeling and cognitive processes. The channeling model suggests that parents directly and indirectly influence adolescent religiosity by channeling them into religious communities and likeminded adults and peers (Cornwall, 1989). Thus, adolescent behaviors in non-secular and secular contexts are influenced by prior interaction with religious institutions, peers, and parents (Brown & Gary, 1991).

The conceptualization of religious socialization used in this dissertation was based on the transactional model. This model emphasizes that it is the frequency of religious messages adolescents receive from their parents and important others that have the most influence on their religiosity. The transactional approach to thinking about adolescent religious socialization necessitates greater consideration of the characteristics of this developmental period. Religious socialization shifts from being a one-way process, perhaps more appropriate during childhood, to a more dynamic exchange of information for adolescents to internalize and enact. Additionally, religious parents and other close family members are more likely to be involved in networks that facilitate the oversight of adolescent behavior, and be involved in their adolescents' internalization of norms and attitudes regarding appropriate behavior within the context of a religious system. These parents and other close family members may offer more frequent pro-religious messages that act to socialize adolescents to conservative norms and values, such as abstinence until marriage.

Religiosity and the Black Church exert an important influence on the socialization of black adolescents, and have effects on behaviors and attitudes beyond the purview of religious activities. Most research on the role of family and peers in religious socialization has been conducted in non-Hispanic white only samples (Gutierrez et al., 2014; Park & Ecklund, 2007). Perhaps the processes outlined in these models differ for black adolescents given the intersection of religiosity and black racial identity (Gutierrez et al., 2014). Applied to adolescent sexual initiation, the Black Church, and more broadly, traditional African American Western Christianity, may be a more powerful socialization agent than other religious institutions (Rostosky et al., 2003; Rostosky et al., 2004). The Black Church's norms and culture endorse more conservative sexual ideologies in support of pro-family attitudes and behaviors (Taylor et

al., 2003; Woods-Jaeger et al., 2014). Despite the centrality of religiosity and the church in black American culture, little research has focused specifically on black adolescent religious socialization or its effects on adolescent sexual initiation.

2.6 Racial Identity

Adolescence is a particularly crucial time in which identity, the socially constructed categories people use to describe themselves in relation to others, is formed (Thoits & Virshup, 1997). Religiosity and racial identity are recognized as being important components of black adolescent self-concept (Fergus & Zimmerman, 2005; Salazar et al., 2004). Religiosity also provides black adolescents with a sense of who they are in relation to others, and may affect the salience and meaning black adolescents ascribe to their racial identity (Edwards, 2008).

Racial identity refers to the importance of race on an individual's self-concept and perceptions about what it means to be a certain race (Sellers & Shelton, 2003; Sellers, Smith, Shelton, Rowley, & Chavous, 1998). Black racial identity is the "significance and qualitative meaning that individuals attribute to their membership within the black racial group within their self-concepts" (Sellers et al., 1998). Sellers et al. developed the multidimensional model of racial identity for black Americans, which acknowledges the universal properties associated with belonging to an ethnic and/or racial identity, and recognizes the role that historical and sociocultural experiences have in constructing racial identity. This model has been widely used in research measuring or conceptualizing black racial identity and is the model used in the National Survey of American Life.

The multidimensional model of racial identity identifies four unique dimensions of racial identity. *Salience* is an individual's perception of the relevance of race to one's self-identity in a specific situation. *Centrality*, thought to be relatively stable across different situations, is the

degree to which an individual defines his/her self-identity with regard to race. *Regard* is the extent to which an individual judges his/her race as being either negative or positive. The regard dimension of racial identity consists of two components, private regard which is the extent to which an individual feels positively or negatively towards other blacks and their membership in the black race, while public regard is the extent to which an individual feels that other groups judge blacks positively or negatively. Lastly, *ideology* is an individual's beliefs and attitudes about how black Americans should interact and exist within society (Sellers et al., 1998). The strength of the multidimensional model compared to other models of racial identity is that it acknowledges racial identity as one of many identities within an individual's self-concept. Here, there are no good or bad versions of racial identity, and an individual's perception of their racial identity is the most accurate measure of racial identity (Sellers et al., 1998). The conceptualization of racial identity into the aforementioned four dimensions suggests that different facets of racial identity may relate to sexual initiation in different ways. This dissertation focused on the dimensions of centrality and regard because they are available in the NSAL dataset, and are most developmentally aligned with adolescent views of racial identity (Scottham, Sellers, & Nguyên, 2008). Adolescence represents a period in which black youth become keenly aware of how others and society perceives them, and the importance of race to their identity. This awareness is most closely associated with an increase in the importance of the regard and centrality dimensions of racial identity.

It is important to note that this dissertation examined racial identity and not racial socialization. Although these are similar concepts that are often discussed congruently in the literature, racial identity and racial socialization are two distinct concepts. Racial socialization is the transmission of implicit and explicit messages about race and belonging to a certain racial

group (Neblett, Smalls, Ford, Nguyen, & Sellers, 2009; Stevenson, 1994). Racial identity is concerned with the significance and meaning an individual ascribes to their membership in a racial group. There is substantial literature discussing the influence of racial socialization on adolescent academic engagement (Chavous, Rivas-Drake, Smalls, Griffin, & Cogburn, 2008; Friend, Hunter, & Fletcher, 2011) and psychosocial well-being (Barr & Neville, 2014; Sellers, Copeland‐Linder, Martin, & Lewis, 2006). Although not explicitly discussed in this dissertation, racial socialization is a recognized important and necessary antecedent to racial identity (Hughes et al., 2006; Seaton, Yip, Morgan-Lopez, & Sellers, 2012; Stevenson, 1995).

Black adolescents develop racial identity in environments that are often antagonistic, where conflicting messages about race may challenge positive racial identity formation (Stevenson, 1997). Religiosity and the Black Church counters these environments by providing black adolescents with opportunities to engage in the black community, thus neutralizing the negative effects of racism and discrimination (Edwards, 2008; McLoyd, Hill, & Dodge, 2005; McRoberts, 2005). In this way, religiosity serves as an agent of morality, racial pride, and racial socialization, and thereby reinforces moral uprightness and self-regulation within a racially antagonistic society. Arguably, a significant component of religiosity's moral instruction is dictating when and under what context an individual should engage in sexual activity (Holman & Harding, 1996). Further, participation in religiously-sponsored programs has been linked to positive racial/ethnic identity formation, relationships with concordant role models, decreased stress, and positive relationships (Damon, 2000; Donelson, 1999; Smith & Denton, 2005; Steele, 1989). Given the relationships between black Americans, religiosity, and the Black Church, it follows that the inclusion of racial identity in the study of black adolescent religiosity and sexual initiation is needed.

The relationship between racial identity and sexual initiation among black adolescents has received limited attention. The majority of literature examining the relationship between dimensions of racial identity and health have primarily examined racial identity as a moderator between experiences of racial discrimination and health behaviors or outcomes, such as mental health (Caldwell, Wright, et al., 2004; Sellers & Shelton, 2003), psychobehavioral factors (e.g., self-deviancy and achievement), drug use (Brook & Pahl, 2005), and perceived stress (Caldwell, Zimmerman, Bernat, Sellers, & Notaro, 2002). Despite compelling evidence of the positive effects of racial identity on health behavior, this literature also suggests that some dimensions of racial identity may have a negative or harmful effect on health behavior. Specifically, nationalist ideology, or the belief that the experiences of black Americans are unique and unlike any other racial group, has been shown to have both a positive and negative effect on academic performance, eating behaviors, and drug use (Harvey & Afful, 2011; Sellers, Chavous, & Cooke, 1998). These inconsistent findings suggest that different dimensions of racial identity may be associated with various health behaviors through different mechanisms (Sellers & Shelton, 2003).

It is important to acknowledge that this dissertation examined racial identity and ethnic differences among black adolescents, not ethnic identity. Although ethnic identity and racial identity are frequently grouped together or used interchangeably, these terms are not synonymous. Ethnic identity is an individual's identification with a group based on a shared culture, origin, and tradition predicated upon their membership within an ethnic group (Phinney, 1992; Yinger, 1970). Race, unlike ethnicity, is more socially constructed and assigned to people based on similar physical features (e.g., skin color) and genetics. For black populations, the lines of distinction between race and ethnicity are typically overlooked (Benson, 2006; Omi &

Winant, 2014). Despite overwhelming social and political pressure to conform to U.S. racial hierarchy, Caribbean black immigrants maintain a strong ethnic identity (Hall & Carter, 2006; Vickerman, 1999; Waters, 2009). Recent research suggests that second-generation Caribbean blacks (i.e., the child/adolescent generation of Caribbean black parents) differ from their parents in that they do not choose an ethnic or racial identity; rather they view these as interdigitating identities (Jones & Erving, 2015; Richards, 2014). Despite our knowledge of the differences between racial and ethnic identity, a gap remains in our understanding of how ethnic variations within black populations affect health behaviors.

Caribbean black adolescents may have a racial identity that is similar to or different from African American adolescents. This difference may be a result of place of birth, geographic location, parental factors, perception of similarities between Caribbean blacks and African American adolescents, and the overlapping developmental processes of racial and ethnic identity (Chavez & Guido-DiBrito, 1999; Jones & Erving, 2015; Waters, 2001). An examination of the difference between endorsements of racial or ethnic identity was beyond the scope of this dissertation. While there are several studies showing the effects of ethnic identity on adolescent health (Marsiglia, Kulis, & Hecht, 2001; Salazar et al., 2004; Smith & Silva, 2011), this dissertation examined racial identity exclusively.

2.7 Synthesis

Adolescence is a period for increased agency, experimentation (e.g., experimenting with risky behaviors, relationships and dating, and sexual activity), and physical maturation. For many black adolescents, adolescence is the period in which racial identity and religiosity become important components of their identity and exert more influence on their decision-making. In sum, I argue that black adolescent sexual initiation is influenced by relationships among

religiosity, religious socialization, and racial identity. The literature described highlights the importance of examining the independent and joint effects of these factors on adolescent sexual initiation. Too often, black adults are viewed as homogenous, lacking variation in religiosity and racial identity (Agyemang, Bhopal, & Bruijnzeels, 2005; Ford & Airhihenbuwa, 2010). This conceptualization has carried over into studies of black adolescents and undermines the potential importance religiosity has on sexual initiation and sexual health outcomes for this group.

Sexual initiation during adolescence is an important public health concern because of its association with an increased risk of STDs, HIV, and unwanted pregnancy. Despite limited research to date, theoretical and empirical evidence suggests that religiosity, religious socialization, and racial identity may be important determinants of black adolescent sexual initiation. More research is needed to contextualize black adolescent religiosity, and to fully understand its role in adolescent sexual initiation.

CHAPTER 3: THEORETICAL FRAMEWORKS

This dissertation explored the intersections of religious socialization, religiosity, and racial identity, and how these determinants contribute to the sociocultural context through which black adolescents make decisions about sexual initiation. The two most relevant theoretical foundations for designing and answering research questions related to this topic are Social Control Theory and Intersectionality. Social Control Theory is used to situate religiosity as a mechanism through which adolescents are socialized to norms, values, and belief systems that prohibit sexual initiation. Intersectionality is used to develop research questions that conceptualize black racial identity and religiosity as mutually constructed components of black adolescent identity that intersect to shape sexual initiation. Intersectionality also supports the study of intra-group variation in sexual initiation as a means to study racial disparities in adolescent sexual health outcomes.

3.1 Social Control Theory

Social Control Theory (SCT) is widely used in research on adolescent problem behaviors, and in the study of the sociology of religion. According to SCT, an individual is free to commit a deviant act when their bond to a society is weak or broken (Hirschi, 1969). Hirschi (1969) identified four elements that work in concert to solidify an individual's bonds to society and internalization of social norms. These elements are attachment, or how attached an individual is to others in a society; commitment, or how much time one invests in following social norms and the subsequent fear that is attached to not following norms (i.e., committing a delinquent act); involvement, or how involved an individual is in conventional activities; and belief, or how

connected an individual is to the common value system within a society. The relationships among these elements reinforce control and operate in a way that prevents an individual from engaging in deviant activities (Hirschi, 1969). According to the guiding principles of SCT, there are several institutions that work to control and reinforce social norms, such as religious institutions. Religious institutions exert control by socializing members to ascribe to particular norms and values (Baier & Wright, 2001; Sherkat & Ellison, 1999). Over time, these often-conservative norms and values are reinforced, internalized, and maintained by religious members. The dynamic process of reinforcement and internalization of religious norms strengthens an individual's bond to a religion, and decreases their engagement in deviant behavior (Hirschi, 1969).

Applying SCT to the study of youth religiosity, Rohrbaugh and Jessor (1975) conceptualized four pathways through which religion generates social control of adolescent deviant behavior: (1) religious organizational participation in rituals and services embeds adolescents into an "organized sanctioning network" that provides social controls to reinforce self-control and moral order; (2) religious teachings, by which an adolescent becomes more aware of morality and acceptable behavior; (3) by offering a deity as a source of punishment and an ideal to emulate; and (4) through emotional religious experiences, whereby adolescents develop a devoutness that results in an "obedience orientation" to social norms. Statistically testing these four pathways in a sample of high school and college students, Rohrbaugh and Jessor concluded that adolescent religiosity, particularly religious participation, is a means of personal control. That is, adolescents with greater religiosity have access to a set of standards and interpersonal relationships that adolescents with lesser religiosity cannot readily access. Adolescents with greater religiosity use these standards and relationships to judge and guide their

behaviors to align more closely with conservative and religious ideals (Rohrbaugh & Jessor, 1975; Spilka, Hood, Hunsberger, & Gorsuch, 2003). Further, access to the standards and relationships that endorse more conservative and religious ideals may begin through interactions with family members and peers; but, for adolescents, particularly African Americans, the effect and magnitude of these relationships may be enhanced by experiences with the Black Church (Rostosky et al., 2003; Smith, 2003).

Historically, the doctrine of the Black Church, and largely African American Western Christianity, emphasized self-control, moral commitments, conservatism, and respect for authority (Savage, 2009; Smith & Denton, 2005; Taylor et al., 2003). Common religious teachings about adolescent sexual activity stress abstinence until marriage and monogamy (King & Furrow, 2008; Rostosky et al., 2004). It follows that to the religiously socialized and oriented adolescent, engaging in pre-marital sexual activity would be morally wrong and deviate from acceptable behavior. Applying SCT to adolescent sexual initiation invokes two possible explanations; one suggests that adolescent with greater religiosity have a later age of sexual initiation; the other is that adolescents with greater religiosity are more likely to engage in riskier sexual behavior at initiation. For the first explanation, sexual initiation would occur at increased ages among highly religious black adolescents as they will have stronger bonds with their religious organization and religious others. However, guiding constructs of SCT also suggest that adolescents with greater religiosity may view engaging in pre-marital sexual activity and using contraception as participating in two deviant or anti-religious behaviors—planning to have sexual intercourse, and engaging in sexual intercourse. Adolescents may resolve their internal struggle by believing that, while sinful or not aligned with religious ideals, "succumbing to temptation" is not as sinful as planning to engage in deviant behavior (i.e., sexual activity) by

using contraceptives (Benda & Corwyn, 1997; Goggin et al., 2007)

In this dissertation, I applied SCT to elucidate both the positive and negative effects religiosity has on adolescent sexual initiation. Additionally, SCT offers guidance for testing hypotheses on the mechanisms through which religious socialization and religiosity influence sexual initiation. In sum, this dissertation posited that religiosity exerts social control and fosters common religious values through relationships with others, an adolescent's reverence and internal conceptualizations of the divine, and an adolescent's belief that religiosity is a salient part of their life.

3.2 Intersectionality

Intersectionality is a theoretical framework that originated in black feminist scholarship, and which highlights the intersection between multiple social identities such as race, ethnicity, gender, class, religion, and disability (Bowleg, 2012; Veenstra, 2011). Intersectionality posits that social identities operating within a hierarchical social and political context interact with one another to produce and maintain social inequality (Collins, 2002; Crenshaw, 1989). Originally conceptualized by Crenshaw to describe the systematic exclusion of black women from white feminist and antiracist discourses, intersectionality has since been adopted by different fields to address disparities in marginalized populations. Despite its popularity in women's and gender studies, its application in the field of public health remains limited (Bowleg, 2012).

Intersectionality provides several entries into understanding health disparities that may be oversimplified in more traditional behavioral paradigms. For example, Bowleg (2012) applied intersectionality to public health by identifying three core tenets of the framework: (1) individuals have multiple intersecting identities, (2) people from marginalized groups most affected by inequity are the focus, and (3) health disparities are produced by the intersection of

individual level identities (e.g., race or gender) with structural level factors (e.g., poverty or racism).

Applying these tenets to this dissertation suggested three possible areas for examination. The first is that the oppressive nature of the societal power structure in the U.S. places members of multiple marginalized groups (e.g., black adolescents) at particular risk for engaging in early sexual initiation and other risky behaviors, which may result in poorer health outcomes (Crenshaw, 1991; Grollman, 2012). For example, a study using the Canadian Community Health Survey 2.1 examined the multiplicative and additive interactions of race, gender, class, and sexual orientation and their effects on self-rated health among a sample of 90,310 adults, aged 25 and older. This study found that individuals with multiple marginalized statuses (e.g., Aboriginal, bisexual, and female) had greater odds of reporting "fair/poor" self-rated health compared to those without, or with fewer marginalized statuses (Veenstra, 2011). Findings from this study and others suggest that membership in multiple marginalized identities interact significantly with each other to increase risk for poor health (King, 1988; Meyer et al., 2008; Stuber, Galea, Ahern, Blaney, & Fuller, 2003).

The second use of intersectionality in this dissertation research is the application of an intra-group approach to the study of racial disparities in adolescent sexual health behaviors and outcomes. By focusing on black adolescents, and the subgroups that exist within this group, I am able to fully capture and contextualize the experiences of black adolescents, beyond comparisons to adolescents within dominant groups. The lived experiences of black adolescents differ from those of adolescents in more dominant groups. These experiences are further shaped by religiosity and racial identity, which operate differently for black adolescents, to influence behavior. Acknowledging that this difference exists is critical to the study of adolescent racial

sexual health disparities. Not only are black adolescents expected to undergo the typical developmental experiences of adolescence, such as physical maturation and a desire to be more independent, but they also must adjust to being in a society in which they are expected to experience racism and racial discrimination as part of their development (Brittian, 2012). All of these factors have an effect on identity formation and on sexual initiation and health outcomes.

The third area of examination is how multiple identities can interact to influence sexual initiation, and how these identities might contribute to the disproportionate burden of HIV and STDs among black adolescents. In sum, intersectionality postulates the recognition of multiple identities, and the incorporation of these identities into the study of black adolescent sexual initiation.

Applying an intersectional approach suggests that facets of adolescent development and more specifically, identity formation, are relational. Specifically, racial identity and religiosity are formed in relation to one other, and to the other individuals and institutions with which black adolescents interact. Methodologically, intersectionality challenges researchers to move beyond simple additive models (Shields, 2008) that treat race or religiosity as variables to be controlled for in regression models. Rather, race and religiosity cannot be defined as dichotomies or assessed for their separate contributions to behavior because black adolescent religiosity is "racialized", and is a significant component of black ethnicity, race, and culture (Mattis, Ahluwalia, Cowie, & Kirkland-Harris, 2006; Taylor et al., 2003). Virtually no research has applied an intersectional approach to the study of religiosity, racial identity, and adolescent sexual behavior (King & Roeser, 2009). Intersectionality also contends that no identity is homogenous. As such, knowing that an adolescent is of the black race or participates in religious activities may not provide enough information to understand the complexities of their sexual

health behavior respective to religiosity and racial identity. Simultaneously modeling religiosity and racial identity as mutually constitutive constructs of adolescent identity can methodologically account for some of this complexity (Shields, 2008).

3.3 Theoretical Synthesis and Integration

In this dissertation, SCT provided a set of propositions about religiosity and religious socialization that together form a framework to explain adolescent sexual initiation, while intersectionality provided a set of assumptions that, when tested, can elucidate the mechanisms proposed by SCT for black adolescents. Although SCT conceives religiosity as a mechanism through which adolescents are socialized to norms and values that prohibit sexual initiation, SCT alone does not offer adequate explanation for why these relationships operate differently in black adolescents compared to adolescents from more dominant groups (i.e., upper class, white, adolescents). However, intersectionality provides that support and underscores the empirical evidence which suggests that societal experiences of black people in the U.S. have a negative impact on their health behaviors and outcomes (Phelan, Link, Diez-Roux, Kawachi, & Levin, 2004; Thorpe, Bowie, Wilson-Frederick, Coa, & LaVeist, 2013; Williams & Collins, 2001).

To reiterate, the primary aims guiding this dissertation were:

Aim 1: To assess the measurement properties of a multidimensional measure of black adolescent religiosity.

Aim 2: To determine the nature of the associations between religious socialization, religiosity, and sexual initiation.

Aim 3: To determine the relationship between distinct adolescent religiosity-racial identity profiles and sexual initiation.

Chapter Four provides an overview and justification of the methods used to evaluate these aims. Chapters Five and Six evaluate these aims by empirically testing a series of hypotheses.

CHAPTER 4: METHODS

The overarching research question of this dissertation is this: *How do aspects of religiosity and racial identity relate to sexual initiation among black adolescents?* The rationale for this question and subsequent hypotheses is that intersections of religiosity, religious socialization, and racial identity contribute to the sociocultural context through which black adolescents learn and make decisions about health behaviors in general, and sexual initiation in particular. While conceptualization and measurement of religiosity in public health research is a precarious issue, a significant goal of my research is to adequately represent the complexity, dimensionality, and structure of religiosity, while testing a valid and parsimonious measure of the construct (Chatters, Taylor, & Lincoln, 2001; Idler et al., 2003; Taylor, Chatters, & Nguyen, 2013). To achieve this goal, and answer the aforementioned question, I used factor analysis, structural equation modeling, latent class analysis, and logistic regression to analyze secondary data on black adolescents.

4.1 Study Aims and Hypotheses

Aim 1: To assess the measurement properties of a multidimensional measure of black adolescent religiosity.

Research Question 1a: To what degree and direction are organizational religious participation, non-organizational religious participation, subjective religiosity, religious guidance, and religious support dimensions of religiosity?

Hypothesis 1a.1: The constructs will have significant loadings on one higher-order factor, religiosity; that is, items will cluster along these five correlated dimensions and a

hierarchical structure will fit the data well, indicating that religiosity is an overarching explanatory latent variable.

Research Question 1b: To what degree does religiosity demonstrate measurement invariance across ethnicity and gender subgroups?

Aim 2: To determine the nature of the associations between religious socialization, religiosity, and sexual initiation (see Figure 4.1-mediation model).

Religious socialization

Hypothesis 2a.1: Black adolescents with more religious socialization will be less likely to report sexual initiation (direct effect).

Hypothesis 2a.2: Black adolescents with more religious socialization will have more religiosity (*a* path).

Religiosity

Hypothesis 2a.3: Black adolescents with more religiosity will be less likely to report sexual initiation (*b* path).

Mediation

Hypothesis 2a.4: The relationship between religious socialization and sexual initiation will be completely mediated by religiosity—black adolescents with more religious socialization will have greater religiosity and in turn, will be less likely to report sexual initiation than black adolescents with less religious socialization (indirect effect).

Research Question 2b: Having established measurement invariance of religiosity, does the structural relationship between religious socialization, religiosity, and sexual initiation vary by gender?

Hypothesis 2b.1: The relationships between religious socialization, religiosity, and sexual initiation will be stronger for black adolescent girls than for black adolescent boys.

Hypothesis 2b.1b: Gender will moderate the relationship between religious socialization and religiosity, and the relationship between religiosity and sexual initiation, such that the relationship between these variables will be stronger for black adolescent girls than for black adolescent boys, because of gender role norms and gender socialization.

Research Question 2c: Having established measurement invariance, does the structural relationship between religious socialization, religiosity, and sexual initiation vary for African American and Caribbean black adolescents?

Hypothesis 2c: Exploratory research question, there is no prior work on which to base hypotheses.

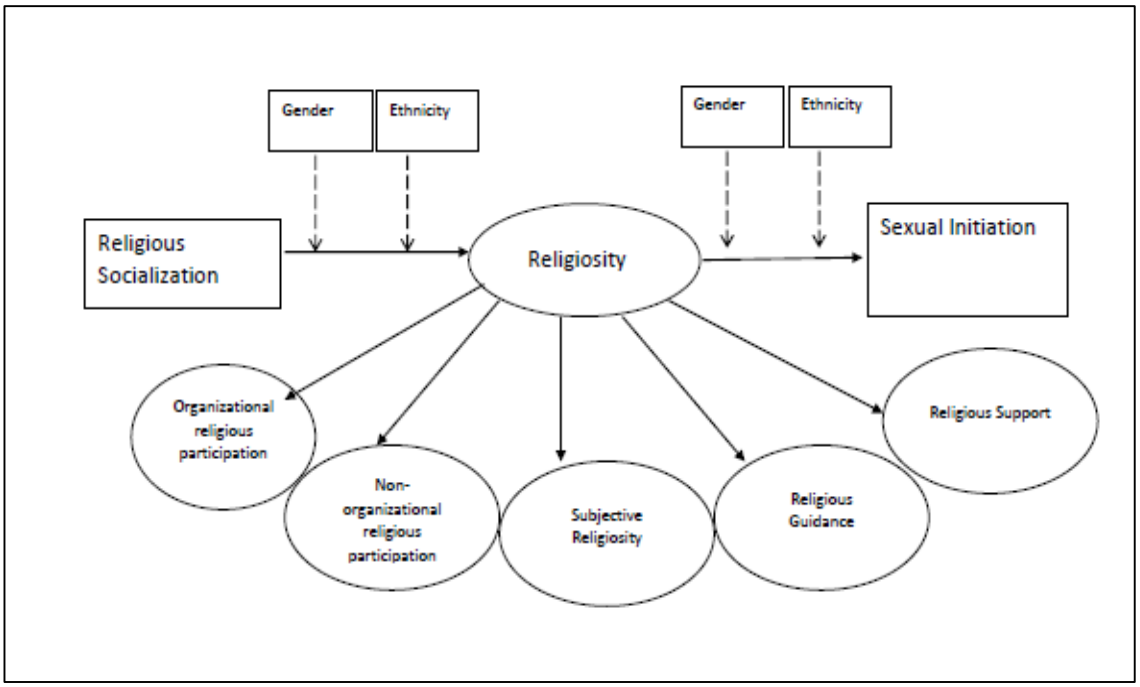

Figure 4.1 Conceptual Model for Aim1 and Aim 2

Aim 3: To determine the relationship between distinct adolescent religiosity-racial identity profiles and sexual initiation.

Research Question 3a: Can latent profiles be identified based on the intersections of religiosity and racial identity?

Hypothesis 3a: Exploratory research question, while profiles of dimensions of religiosity and racial identity have been identified, no work has examined religiosity-racial identity profiles.

Research Question 3b: Is there a relationship between religiosity-racial identity profile and sexual initiation?

Hypothesis 3a: Black adolescents with a religiosity-racial identity profile that is characterized as high religiosity and high racial identity will be less likely to report sexual initiation than black adolescents with a religiosity-racial identity profile that is characterized as low religiosity and low racial identity.

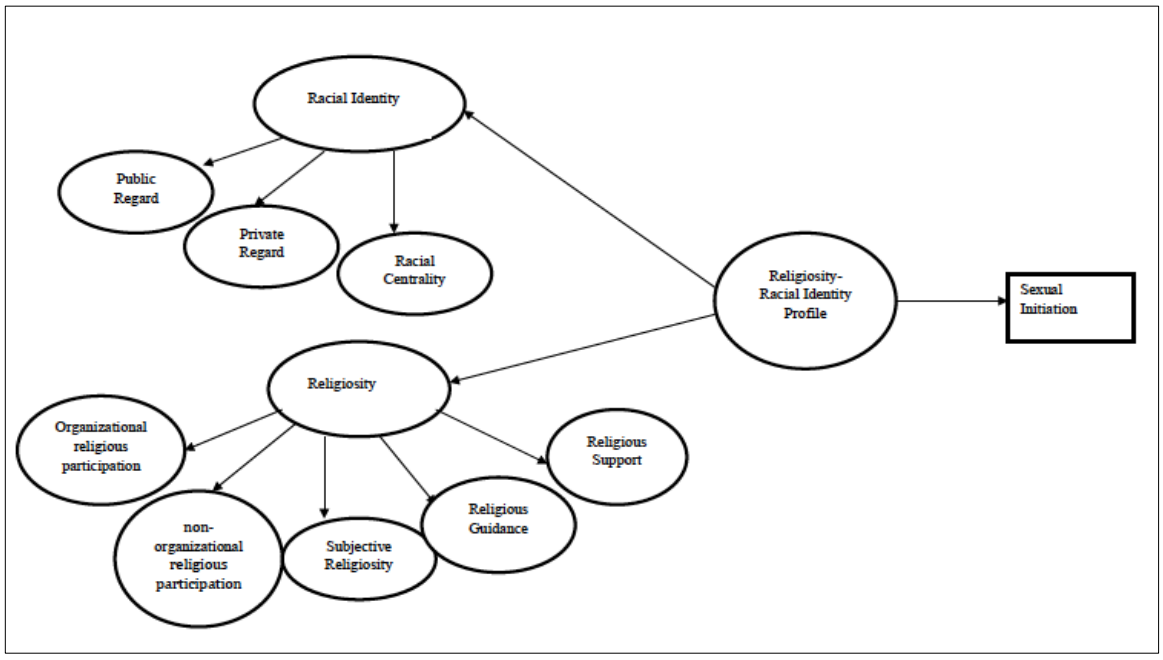

Figure 4.2 Conceptual Model for Aim 3

4.2 Data Source

Data for these studies were from the National Survey of American Life (NSAL). The NSAL is a nationally representative cross sectional study of 3,570 African American and 1,621 Caribbean black households aged 18 years and older (Jackson et al., 2004). The survey gathered information about the physical, emotional, mental, structural and economic conditions of black American adults and their families (Jackson et al., 2004). Caribbean ancestry was defined as persons who identified as black and indicated one or all of the following: 1) they were of West Indian or Caribbean descent, 2) they were from a country included on a list of Caribbean countries presented by the interviewer, and/or 3) their parents or grandparents were born in a Caribbean country. African American was defined as people who self-identified as black, but did not identify ancestral ties to- and were not born in- a Caribbean country. The NSAL sample was based on a multi-stage area probability sample using a stratified and clustered sample design. Data were collected from February 2001 to June 2003.

NSAL households that included an adult participant were screened for an eligible adolescent living in the household (Heeringa et al., 2004). Adolescents were selected to participate in the study using a random selection procedure. If more than one adolescent resided in the household, up to two adolescents were selected to participate. The adolescent supplement was weighted to adjust for non-independence in selection probabilities within households, as well as non-response rates across households and individuals. The weighted data were post-stratified to approximate the national population distributions for gender and age (13, 14, 15, 16, and 17 years) subgroups among African American and Caribbean black adolescents. Details of the sampling design used to create the adolescent sample of NSAL can be found elsewhere (Heeringa et al., 2004). Prior to the interview, informed consent was obtained from the

adolescent's legal guardian and the adolescent. Interviews were conducted face-to-face, using a computer-assisted instrument. Approximately 18% of the interviews were completed via telephone. The African American interviews were slightly shorter than the Caribbean black adolescent interviews at 1 hour 40 minutes and 1 hour 50 minutes respectively. Respondents received $50 for participating in the study, and the overall response rate was 80.6% (80.4% African American and 83.5% Caribbean black) (Joe, Baser, Neighbors, Caldwell, & Jackson, 2009).

NSAL Adolescent Sample

The NSAL is part of the National Institute of Mental Health (NIMH) Collaborative Psychiatric Epidemiology Surveys initiative at the University of Michigan, which consists of three nationally representative surveys—the NSAL, the National Comorbidity Survey Replication, and the National Latino and Asian American Study (Pennell et al., 2004). Adult NSAL data are available for public use, however, use of adolescent data required prior approval from NSAL investigators. Final approval for use of the adolescent data for the dissertation studies was received on March 05, 2015.

The original adolescent sample consisted of 1,193 participants; however, 23 participants were removed from analyses because they were 18 or older at the time of the interview. The resulting sample used in this study is 1,170 African American (*n*=810) and Caribbean black (*n*=360) adolescents, ranging in age from 13 to 17. Descriptive characteristics of the sample with weighted distributions are shown in Table 4.1. The overall sample was equally composed of males (*n*=563 unweighted, 48% weighted) and females (*n*=605 unweighted, 52% weighted). The mean age was 15.03 (*SD* = 1.42). Approximately 96% of the sample was still enrolled in high school and 9th grade was the average year in school. The median family income was $28,000

(approximately $26,000 for African Americans and approximately $32,250 for Caribbean blacks). Approximately 33% of the total adolescent sample had reported initiating sex by the time of the survey (32.8% for African American and 33.9% for Caribbean blacks).

Table 4.1 NSAL Adolescent Sample Characteristics, by Ethnicity

	African American (*n* = 810) %	**Caribbean Black (*n* = 360) %**
Age		
Mean (*SD*)	14.98 (1.44)	15.13 (1.38)
Gender		
Male	50.4	44.8
Female	49.6	55.2
Education grade level		
5^{th}-8^{th}	30.7	20.4
9^{th}	22.3	24.1
10^{th}	20.6	22.4
11^{th}	15.8	16.2
12^{th} +	10.5	16.9
Religious denomination		
Protestant	67.2	48.1
Catholicism	5.4	23.1
Judaism	0.12	0.0
Eastern	0.62	0.8
Other	14.8	10.3
Adult respondent's household income		
$0–$17,999	28.0	26.4
$18,000–$31,999	27.5	20.3
$32,000–$54,999	24.4	32.8
≥$55,000	20.1	20.5
Adult respondent's nativity		
Born in the U.S.	98.3	22.4
Born outside the U.S.	1.7	77.6
Sexual behavior		
Ever had sexual intercourse	32.8	33.9

4.3 Study Measures

Sexual initiation. Sexual initiation was assessed with the question "Have you ever had sex?" Sexual initiation was coded such that 0= no sexual initiation and 1= had a sexual experience.

Religiosity. Religiosity is a higher-order latent variable measured by the following five sub-factors: organizational religious participation, non-organizational religious participation, subjective religiosity, religious guidance, and religious support. These measures were derived from the National Survey of Black America Panel Religion Questionnaire and the Religious Support Scale. Seventeen items were used to measure organizational religious participation, non-organizational religious participation, subjective religiosity, religious guidance, and religious support. Sample questions include:

- "How important is religion in your life?"; response coded 1 = "Very important", 2 = "Fairly important", 3 = "Not too important", 4 = "Not important".
- "How often do you usually attend religious services?"; response coded 1 = "Nearly everyday", 2 = "Less than once a year", 3 = "A few times a year", 4 = "A few times a month", 5 = "At least once a day", 6 = "Never".
- "How often do you read religious books or other religious materials?"; response coded 1 = "Very often", 2 = "Fairly often", 3 = "Not too often", 4 = "never".
- "Would you say your religion provides some guidance in your day-to-day living?"; response coded 1 = "Some", 2 = "Quite a bit", 3 = "A great deal", 4 = "None at all".

Religious socialization. Religious socialization was assessed using five items. Two items used responses coded 1 = "Very often", 2 = "Fairly often", 3 = "Sometimes", 4 = "Rarely", 5 = "Never". The items were "How often do your parents or the people who raised you talk with you

about religion?" and "Not including your parents or the people who raised you, how often do other close relatives such as your brothers, sisters, aunts, uncles, and grandparents talk with you about religion?" Two items posed questions using open-ended responses, such as "What is the most important thing they (parents or guardian) have told you about religion?" and "What is the most important thing (he/she) (close relative not including parents or guardian) has told you about religion?" The final item asked youth to identify the main person who has talked to them about religion. Of these items, the two items assessing how often parents and other close relatives talk to respondents about religion were summed and used in analyses. Cronbach's α for the religious socialization measure was 0.97.

Racial identity. Participants completed brief versions of the racial centrality, private regard, and public regard subscales of the Multidimensional Inventory of Black Identity (Sellers, Rowley, Chavous, Shelton, & Smith, 1997). The centrality subscale consists of four items assessing the extent to which race is an important component of how they defined themselves. Sample items include "Being black is a major part of my self-image" and "I have a strong attachment to other black people." Cronbach's α for the racial centrality subscale was 0.71. The private regard subscale consists of four items assessing the extent to which the adolescent views blacks positively or negatively. Sample items include "I feel good about black people" and "I feel that the black community has made valuable contributions to this society." Cronbach's α for the private regard subscale was 0.69. The public regard subscale consists of four items assessing the extent to which other groups view black people positively or negatively. Sample items include "In general, society respects black people" and "Society views black people as an asset." Cronbach's α for the public regard subscale was 0.75. All response categories on these subscales

were measured using a 4-point Likert scale where 1 = “Strongly agree”, 2 = “Somewhat agree”, 3 = “Somewhat disagree”, 4 = “Strongly disagree”.

Sociodemographics. Sociodemographic variables were age, adolescent education, family income, mother’s education, immigration status, gender, and ethnicity. The question “How old are you now?” was used to assess adolescent age in years. The question “What grade are you in now/ did you last complete?” was used to assess adolescent education level. Family income, mother’s education, and immigration status were variables derived from the parent/guardian responses to NSAL questions about sociodemographics. Adolescent’s gender was assessed by an interviewer assessment, where the interviewer selected “respondent is a male” or “respondent is a female.” Ethnicity was assessed using the response to the question, “Are you Black, Caribbean, or another race?”

4.4 Overview of Analytic Strategy

Data management was conducted using SAS version 9.3 and analyses were carried out in Mplus version 7. 4. I reverse coded religious socialization, religiosity and racial identity items such that a greater score indicated more religious socialization, religiosity and racial identity. Data were cleaned and univariate analyses performed on all variables included in the study to determine proximity to normality and to identify outliers. Study items were checked for missing data. The variable with the greatest number of missing values was mother’s education, which was missing for 42% of the sample. Multiple imputation procedures were used to address missing data in all regression models that included mother’s education. Use of multiple imputation avoids bias due to violating assumptions about the reasons for missing data. Mplus uses the Bayesian analysis method for imputation of missing data. This method generates multiple data sets, which are then averaged and used for analysis. Specifically, parameter

estimates are averaged over multiple data sets, and standard errors are computed using the average of the standard errors across multiple data sets and the between analysis parameter estimation variation (Asparouhov & Muthén, 2010; Muthén & Muthén, 2007). I specified 40 imputations, as this is the accepted number of imputations needed to adequately represent 40% to 50% missing information (Graham, Olchowski, & Gilreath, 2007; White, Royston, & Wood, 2011). Missing data on the outcome variable, sexual initiation, was approximately 4% and thus did not necessitate the use of multiple imputation.

4.4.1 Methods Aim 1

Aim 1 examined the measurement properties of a multidimensional measure of black adolescent religiosity. I used factor analysis, a statistical method used to investigate the relationship between observed and latent variables, to determine the dimensions of the 17 items assessing religiosity in the NSAL questionnaire (see table 4.2 for items) (Brown, 2015; Byrne, 2013; Preacher & MacCallum, 2003). I used both exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) to address Aim 1.

Exploratory factor analysis was used as the first step to identifying a parsimonious number of factors that could account for covariation among the dimensions of religiosity. A series of EFA were conducted on the 17 items assessing religiosity to determine the dimensionality of the items.

Table 4.2 Religiosity Items Included in the NSAL Survey

Organizational religious participation 1. How often do you usually attend religious services? 2. Do you go to religious services because you want to, or because your (parents/guardians) make you? 3. Do you do things like sing in the choir, read scripture or other things like that during service 4. Besides regular service, how often do you take part in other activities in your place of worship? 5. Do you go to these other activities because you want to or because your (parents/guardians) make you go?
Non-organizational religious participation 6. How often do you read religious books or other religious materials? 7. How often do you watch or listen to religious programs on TV or radio? 8. How often do you listen to religious music? 9. How often do you pray? 10. How often do you ask someone to pray for you?
Subjective religiosity 11. How important is religion in your life? 12. How important is prayer when you deal with stressful situations?
Religious guidance 13. Would you say your religion provides some guidance in your day-to-day living? 14. How religious would you say you are?
Religious support 15. How often do people in your place of worship make you feel loved and cared for? 16. How often do people in your place of worship listen to you talk about your private problems and concerns? 17. How often do people in your place of worship express interest and concern in your well-being?

I conceptualized religiosity to be a multidimensional latent construct. I used EFA to empirically determine the most plausible factor structure for the dimensions of religiosity, and the best performing items to retain. A scree plot was used to determine the number of factors for extraction, in which the first bend in the plot is one rough indication of the number of factors to extract (DeVellis, 2012). I used the procedure recommend by DeVellis (i.e., examining model fit and interpretability of factors), to make decisions about the factor structure to retain for testing in CFA (2011). Factors were retained based on the following criteria: (1) interpretability, or the

extent to which items in the same factor are tapping into the same theme (i.e., a dimension of religiosity); (2) significance of factor loadings, only items with factor loadings that are significant at $p<0.05$ across most factor solutions are retained; and (3) goodness of fit. I used EFA to identify each dimension, and removed items based on the above criterion and model fit statistics (discussed below). Each factor was named based on the items used to measure the factor (Byrne, 2013; DeVellis, 2012).

I made decisions about model fit using the following commonly used indices: (1) A root mean square error of approximation (RMSEA) that is .08 or less; (2) A Tucker-Lewis (TLI) and Comparative Fit (CFI) that are .90 or greater; and (3) the normed X^2 (NC), the ratio of X^2 to degrees of freedom, NC ratio < 2 (Hooper, Coughlan, & Mullen, 2008; Kline, 2011). Model fit indices were used to make decisions about what parameters to add or remove from the model; however, theoretical and conceptual knowledge were the final deciding factor when selecting what items to add or remove.

Second-order confirmatory factor analysis (CFA) was used to determine the quality of the factor structure from EFA, and to test the hypothesized structure of religiosity. Knowledge for the structure of religiosity, as a multidimensional construct, and the decision to use a second-order confirmatory factor analysis were based on theory and empirical evidence. CFA was used to establish a baseline model for religiosity in the total sample of black adolescents. I then generated factor scores for each factor in Mplus. Mplus uses the maximum *a posteriori* method to calculate factor score estimates, which is a least squares regression approach (DiStefano, Zhu, & Mindrila, 2009; Muthén & Muthén, 2007). This approach is more reliable than other approaches (e.g., sum scores or weighted sum scores) when generating scale scores from

categorical data (Estabrook & Neale, 2013; Guttman, 1955). This second-order CFA model with factor scores was used in subsequent tests for measurement invariance.

In order to compare religiosity across the four ethnicity-gender subgroups (i.e., African American males, African American females, Caribbean black males, and Caribbean black females), I conducted a series of statistical tests to establish measurement invariance. Without measurement invariance, the assumption that the same theoretical construct, higher-order religiosity, is being measured across the four ethnicity-gender subgroups is violated. If this assumption is not true, then subsequent analyses (i.e., aims 2 and 3) that use the same religiosity structure across groups are inaccurate and will yield non-meaningful results and interpretations (Millsap, 1997; Shadish, Cook, & Campbell, 2002).

Measurement invariance is used to answer four questions related to whether a latent variable is equivalent across groups: (1) are the items compromising a measuring instrument or scale equivalent across different populations (configural invariance); (2) is the factorial structure mapping items to latent variables equivalent across populations; (3) are the factor loadings equivalent across groups (weak factorial invariance); and (4) are items equally difficult to endorse across groups (strong factorial invariance) (Byrne, 2013; Millsap & Yun-Tein, 2004).

There are several different methods available to test for measurement invariance. The procedure I used starts with the least restrictive (configural) model and moves to more restrictive models as allowed by the data to determine measurement invariance (Bollen & Curran, 2006). Starting with the configural model is most advantageous because it supports the assumption that similar factor patterns exist across groups. If evidence suggests that the configural model is not supported, then the constructs have different meanings across groups. There are three tests to determine measurement invariance: (1) configural invariance, the least restrictive type of

invariance implies that the form of the latent variable is equivalent across subgroups, but all of the parameter estimates are allowed to differ; (2) weak factorial invariance, the next most restrictive model, tests a model in which the factor loadings are equivalent for the subgroups; and (3) strong factorial invariance, the most restrictive model, restricts item intercepts to equivalent across subgroups (Bollen & Curran, 2006; Cheung & Rensvold, 2002). At each step, model fit indices are used to determine if the model is a good fit, and if the type of invariance is supported. If the configural model indicated poor fit, I could reconsider the indicators and first-order religiosity factors I selected, and then re-test the configural model on a new set of indicators. If configural invariance is supported, but only weak factorial invariance is supported, then I could interpret the findings as such, or attempt to identify and remove problematic indicators until the strong factorial invariance model is supported. If results indicated that the religiosity latent variable was non-invariant across gender-ethnicity subgroups, I could conduct invariance testing for ethnicity differences across gender, and gender differences across ethnicity. If these results showed that religiosity was non-invariant, I would have to run separate models for religiosity for each gender-ethnicity subgroup, generate factor scores based on the separate models, and use these scores to analyze aims 2 and 3.

Due to the complexity of testing measurement invariance in a second-order CFA model, I first tested invariance in the first-order factors, generated factor scores from these first-order factors, and used the factor scores to test for invariance in the higher-order factor, religiosity. For two factors, organizational religious participation and religious support, I started with the configural model and then moved to more restrictive models (weak factorial invariance and strong factorial invariance); however, for the higher-order religiosity model, I began by testing the most restrictive model (i.e., strong factorial invariance), and compared model fit indices

between it and the configural model. I started with the strong factorial invariance model for higher-order religiosity because my tests for weak factorial invariance in the first-order factors did not result in a proper solution, despite the configual and strong factorial invariance models being supported.

At each step of measurement invariance testing, I calculated a Bayesian Information Criterion (BIC) and Akaike Information Criterion (AIC) to determine overall goodness-of-fit; a lower BIC and AIC value indicates a better fit to the data. Because these models are nested within each other, a chi-square difference test was conducted to determine if the equality constraints added to the new model caused a significant decrement in model fit. If the *p*-value of the chi-square difference test between models was significant ($p<0.05$), I did not proceed to the next test because the newest model had a significantly poorer fit than the previous model. If the *p*-value of the chi-square difference was not significant ($p>0.05$), I proceeded to the next test because there was not a significant decrease in fit. I found strong factorial invariance for higher-order religiosity across gender-ethnicity subgroups. The final model of higher-order religiosity consisted of four constructs (organizational religious participation, non-organizational religious participation, subjective religiosity, and religious support). More detail on the methods used in this aim and the results are presented in Chapter 5.

4.4.2 Methods Aim 2

Aim 2 examines a mediation model between religious socialization, religiosity, and sexual initiation, and examined whether these relationships differed by ethnicity and gender. I created a religious socialization variable which consisted of summing the frequency to which adolescents received messages about religion from parents and other close relatives. I used a summed score for religious socialization because the factor model was not supported for two

items. I used the religiosity factor score from aim 1, and the religious socialization variable to test for mediation. I tested the mediating hypotheses using structural equation modeling (SEM). SEM is a statistical technique used to estimate models of linear relationships among variables (Bollen, 1989). I selected SEM because it allows for the estimation of models with multiple mediators, and can handle the complexity of the NSAL data. Further, SEM allows for religiosity to be included as a higher-order factor, hypothesized to consist of five first-order factors. Weighted least square mean- and variance-adjusted estimation were used to generate model parameters. This method accounts for non-normal, non-independent observations and is also used when models contain a categorical variable. To determine if the relationship between religious socialization, religiosity, and sexual initiation differed by gender or ethnicity, I treated gender and ethnicity as moderators and performed moderated-mediation tests (Preacher, Rucker, & Hayes, 2007). I tested moderation effects on both the 'a' path, which is the effect of religious socialization when religiosity is zero, and the 'b' path, which is the effect of religiosity when religious socialization is zero. Once the interaction term was shown to be significant, I further probed the interaction to determine the direction of the moderated effect.

4.4.3 Methods Aim 3

Aim 3 evaluates the relationship between religiosity-racial identity profiles and sexual health behavior. Latent profile analysis (LPA) is a type of latent variable mixture model which uses a person-centered method to identify subgroups of individuals within a population. By drawing on a set of indicators, LPA produces better estimates of both the size and composition of the subgroups as compared to single indicator estimates. LPA was used to derive and identify individuals by discrete profiles of religiosity and racial identity. LPA accounts for the fact that religiosity and racial identity are mutually constitutive and interact with each other to influence

behavior. The four identified constructs of religiosity (discussed in Chapter 5; organizational religious participation, non-organizational religious participation, subjective religiosity, and religious support), along with three indicators of racial identity (public regard, racial centrality, and private regard) were used to make profiles. LPA is preferred over using a statistical interaction between religiosity and racial identity, because it provides information on how individuals uniquely combine varying types and amounts of religiosity and racial identity, which can then be used to examine how these factors influence sexual initiation (Figure 4.2). Further, by not reducing religiosity to a single point or mean on a scale of low to high, I am able to account for religious denominational differences in religious practices and meaning making. That is, adolescents in religious denominations that emphasize more external religiosity (e.g., organizational religious participation or religious support) are statistically considered different from those who are in religious denominations that emphasize more internal religiosity (e.g., subjective religiosity). As such, I am able to better understand more complex religious profiles, and how these interdigitate with racial identity to influence sexual initiation.

The use of LPA in this study also responds to a call by many in the field of the study of the sociology of religion to move away from conceptualizing religiosity as a summative variable, and instead to using more person-oriented approaches (Bergman & Magnusson, 1997; Pearce et al., 2013) to examine how certain aspects of religiosity are experienced by people (McGuire, 2008). I extend this recommendation by examining how racial identity contributes to the complexity of religiosity and interacts with dimensions of religiosity. In sum, there are adolescents who may score high, low, or some mix of the two values across indicators of religiosity and racial identity. I hypothesize that these differences have implications for sexual

initiation, and that the interactions between religiosity and racial identity are not linear and cannot be sufficiently captured using a statistical interaction.

Mplus was used to perform the profile analysis on patterns of responses to measures of racial identity and religiosity. Information criteria were used to compare the expected pattern of responses generated by the postulated model to the observed patterns (Collins & Lanza, 2013). Relative model fit was assessed using the Lo-Mendell-Rubin adjusted likelihood ratio statistic, which is an index of the association between the variables that remain unexplained in the model, and provides a statistic which compares the improvement of fit between classes. Lower values indicate a better fit to the data. BIC, sample size adjusted BIC, and AIC were also calculated to determine overall goodness-of-fit; a lower BIC and AIC value indicates a better fit to the data (Sclove, 1987). BIC is the preferred statistic because it includes a steeper penalty for model complexity (Preacher & Merkle, 2012). I also considered entropy, which is an estimate of how distinct the profiles are from each other. Entropy values can range from 0.00 to 1.00 and values greater than 0.80 indicate good separation of profiles (Celeux & Soromenho, 1996; Ramaswamy, DeSarbo, Reibstein, & Robinson, 1993). Additionally, considerations of group size, theoretical evidence, and interpretability of the groups were used to determine the final number of profiles in the sample (Collins & Lanza, 2013; Nylund, Asparouhov, & Muthén, 2007). I also conducted tests to determine the demographic characteristics of each profile. Lastly, these profiles were used in a logistic regression model to determine the relationship between religiosity-racial identity profile and sexual initiation. More details on the methods used to conduct these analyses are in Chapter 6.

Chapter 5 and Chapter 6 are the two manuscripts prepared for this dissertation. Chapter 5 presents findings from aims 1 and 2, and Chapter 6 from aim 3.

CHAPTER 5: RELIGIOSITY AND HIV/STD PREVENTION: MEASURING BLACK ADOLESCENT RELIGIOSITY TO BUILD A MODEL OF RELIGIOUS SOCIALIZATION, RELIGIOSITY, AND SEXUAL INITIATION (AIM 1 AND AIM 2 FINDINGS)

5.1 Introduction

Stark disparities in the incidence of HIV and sexually transmitted diseases (STDs) among adolescents (aged 13-17 years) persist, and show that black adolescents experience the greatest burden of these diseases (CDC, 2012). Decreasing the number of adolescents who engage in sexual activity (adolescent sexual initiation) is one way to address these disparate rates (Simons, Burt, & Peterson, 2009). Determinants of adolescent sexual initiation include a host of social and contextual factors that interact with personal constructs like ethnicity and gender to place black adolescents at particular risk of HIV and STDs (Adimora et al., 2006; Biello et al., 2012; Harawa et al., 2004; Leventhal & Brooks-Gunn, 2000). Researchers have identified several factors which promote delay of adolescent sexual initiation; one such factor is religiosity. Given that black adolescents are among the most religiously active adolescents in the U.S. (Donahue & Benson, 1995; Smith et al., 2003), this study sought to define an overarching measure of religiosity that is inclusive of its multiple facets in order to examine the relationships among religious socialization, religiosity, and sexual initiation within a nationally representative sample of black adolescents (Figure 5.1).

Religiosity

Religiosity is a complex, multidimensional construct for which there is no one accepted operationalization or measure (DeHaan, Yonker, & Affholter, 2011; Williams, 1994). In this manuscript, religiosity is the combination of religion, spirituality, and the importance of religion. Religion refers to an organized system of beliefs, practices, and rituals; spirituality, a broader construct, is concerned with connectedness and reverence to a higher power (Ellison & Sherkat, 1995; Mattis, 2000). A substantial body of literature investigates the association between various dimensions of religiosity, most notably frequency of religious organizational participation, and adolescent health behaviors (Lefkowitz et al., 2004; Nonnemaker et al., 2003; Wallace & Williams, 1999). Some studies substantiate religiosity as protective against adolescent substance use, such as tobacco, alcohol, and marijuana (Cochran & Akers, 1989; Resnick et al., 1997; Sinha et al., 2007). However, findings on the effects of religiosity on adolescent sexual health behaviors are inconsistent, and indicate that religiosity may protect against, or be a risk factor for, unsafe sexual practices (Landor et al., 2011; Lefkowitz et al., 2004; Miller & Gur, 2002; Zaleski & Schiaffino, 2000).

There are several plausible explanations for why adolescents with greater religiosity may engage in more risky sexual health behaviors compared to those with less religiosity. Adolescents with greater religiosity may have a more passive spiritual health locus of control (Holt & McClure, 2006), believing that the Divine predetermines the consequences of their risky sexual health behaviors (Ellison & Levin, 1998; Goggin et al., 2007; Holt et al., 2003). Additionally, religious prohibitions of sexual activity often place adolescents in a position of not having adequate information to negotiate sexual situations (Miller & Gur, 2002; Uecker, 2008). As such, adolescents with greater religiosity may experience more guilt about sexual desires and

sexual experimentation, compared to adolescents with lower religiosity. Lastly, contradictory findings on the effects of religiosity on adolescent sexual health behaviors may be attributable to differential operationalization of the construct which may not fully capture its multidimensionality or take into account other related factors that intersect with religiosity (Goggin et al., 2007; Lefkowitz et al., 2004; Sinha et al., 2007). Collectively, these findings reflect tensions and inconsistencies in the literature about the measurement of religiosity, and its effects on adolescent sexual health behaviors.

Measurement and operationalization of adolescent religiosity in research and practice on adolescent sexual initiation is problematic. Some studies measure adolescent religiosity with scales designed for measuring adult religiosity. These measures fail to account for the developmental, cognitive, and emotional differences between adolescents and adults (Ingersoll-Dayton, Krause, & Morgan, 2002; Yonker, Schnabelrauch, & DeHaan, 2012). Despite a general consensus on the multidimensionality of religiosity, much of the published adolescent religiosity and health research uses large national datasets in which one or two dimensions of religiosity are measured (Cotton et al., 2010), and uses statistical methods that may not fully account for the complex intersections of religious beliefs, attitudes, and practices (Pearce et al., 2013). Another notable characteristic of research on adolescent religiosity and sexual health behaviors is that most of these studies use samples that are disproportionately white and/or female (Yonker et al., 2012). As a result, relatively limited attention is given to the potential effects of ethnicity and gender on the relationships between adolescent religiosity and sexual health behaviors. While I am concerned with measuring religiosity and its effects on adolescent sexual initiation, a critical next step to elucidating this relationship is to include how adolescents internalize and learn about religiosity.

Religious socialization

Religious socialization is the process through which an individual learns and internalizes religious beliefs, attitudes, values, and behaviors (Bengtson et al., 2009; Brown & Gary, 1991). Although not well-studied in adolescent sexual health research, studies show that religious socialization is positively associated with educational attainment (Brown & Gary, 1991), and a healthy sense of well-being (Fry, 2000; Gutierrez et al., 2014; Smith & Faris, 2002). Religious socialization is a process that occurs through interactions with socializing agents, including parents, churches or religious institutions, religious education, and peers (Cornwall, 1989; Landor et al., 2011). Most models of religious socialization propose that parents provide the primary context in which adolescents first experience religious socialization (Gutierrez et al., 2014; Landor et al., 2011). Arguably, for many black adolescents, the most influential socializing agents are parents and the Black Church[2].

Parents share religious norms and values with their children in order to provide a foundation for adolescent religious beliefs, values, and attitudes (Ozorak, 1989). They also use religion to exert social control by encouraging pro-religious behaviors (e.g., abstinence until marriage), and by punishing anti-religious behaviors (e.g., adolescent sexual initiation) (Ellison & Sherkat, 1993; Yinger, 1970). The Black Church may further support parent religious socialization by endorsing a particular worldview that is morally and socially conservative. Further, the Black Church extends beyond the conventional functions of a religious organization (e.g., worship services and religious instruction) to provide resources and support, which function to maintain social control and order within black communities. Despite the centrality of

[2] The Black Church is a term used to denote several historically African American denominations, have a predominately black congregation, and often provide ministries and services to address issues of importance to blacks (Lincoln & Mamiya, 1990; Taylor et al., 2003)

religiosity and the church in black American culture, little research focuses specifically on black adolescent religious socialization, or its effects on adolescent sexual initiation.

Operationalizing and quantitatively measuring black adolescent religiosity presents a challenge to research and practice, particularly applying the construct to the study of adolescent sexual initiation. This manuscript presents findings from a study to develop a comprehensive measure of black adolescent religiosity in order to examine the relationships between religious socialization, religiosity, and sexual initiation among a nationally representative sample of black adolescents. Building upon theoretical and empirical evidence, I used exploratory factor analysis and confirmatory factor analysis to define an overarching measure of religiosity. I applied this measure to a study of the relationships between religious socialization, religiosity, and sexual initiation and examined the effects of gender and ethnicity (i.e., African American and Caribbean black) on these relationships.

5.2 Methods

5.2.1 Data Source

The participants in this study were African American and Caribbean black adolescents who had a parent or guardian participate in the National Survey of American Life (NSAL). The NSAL is part of the National Institute of Mental Health Collaborative Psychiatric Epidemiology Surveys initiative which consists of three nationally representative surveys—the NSAL, the National Comorbidity Survey Replication, and the National Latino and Asian American Study (Pennell et al., 2004). The NSAL is a nationally representative survey of African American, Caribbean black, and non-Hispanic white adults. The NSAL sample was based on a multi-stage area probability sample using a stratified and clustered sample design (Jackson et al., 2004). The survey gathered information about the physical, emotional, mental, structural and economic

conditions of black American adults and their families (Jackson et al., 2004). Data were collected from February 2001 to June 2003.

The adolescent NSAL sample was drawn from households that included an adult participant and an eligible adolescent living in the household (Heeringa et al., 2004). Adolescents were selected to participate in the study using a random selection procedure. If more than one adolescent resided in the household, up to two adolescents were selected to participate. The adolescent supplement was weighted to adjust for non-independence in selection probabilities within households, as well as non-response rates across households and individuals. The weighted data were post-stratified to approximate the national population distributions for gender and age (13, 14, 15, 16, and 17 years) subgroups among African American and Caribbean black adolescents. Details of the sampling design used to create the adolescent sample of NSAL can be found elsewhere (Heeringa et al., 2004).

All interviewers were trained at the Institute for Social Research at University of Michigan in the Survey Research Center. Interviewers completed four training sessions over 14 months. Prior to the interview, informed consent was obtained from the adolescent's legal guardian and assent from the adolescent. Interviews were conducted face-to-face using a computer-assisted instrument. Approximately 18% of the interviews were completed via telephone. The African American interviews were slightly shorter than the Caribbean black adolescent interviews at 1 hour 40 minutes and 1 hour 50 minutes respectively. Respondents received $50 for participating in the study, and the overall response rate was 80.6% (80.4% African American and 83.5% Caribbean black) (Joe et al., 2009).

The original adolescent sample consisted of 1193 participants; however, 23 participants were removed from analyses because they were 18 or older during their interview. The sample

used for this study is 1170 African American (*n*=810) and Caribbean black (*n*=360) youth, ranging in age from 13 to 17.

5.2.2 Measures

Control Variables

Sociodemographic questionnaire. Adolescent ethnicity, gender, and religious denomination were assessed with standard questions. Adolescents provided general demographic information such as grade level and age during the interview. Family income, mother's education, and parent nativity were variables derived from the parent/guardian responses to NSAL questions about participant sociodemographics.

Independent variables

Religious socialization. Religious socialization was assessed using two items, "How often do your parents or the people who raised you talk with you about religion?" and "Not including your parents or the people who raised you, how often do other close relatives such as your brothers, sisters, aunts, uncles, and grandparents talk with you about religion?" These two questions were standardized and combined to create a religious socialization variable. The Likert response scale consisted of responses ranging from 1 ("very often") to 5 ("never"). Negative items were reversed so higher scores represented more religious socialization. Cronbach's α for the summed religious socialization variable was 0.97.

Religiosity. Religiosity is a higher-order variable measured by 17 indicators. These measures were derived from the National Survey of Black America Panel Religion Questionnaire (Jackson & Gurin, 1987) and other commonly used indicators of religiosity. Seventeen items were used to measure organizational religious participation (5 items), non-organizational religious participation (5 items), subjective religiosity (2 items), religious guidance (2 items), and

religious support (3 items). Sample questions include “How important is religion in your life?”; “How often do you usually attend religious services?”; and “Would you say your religion provides some guidance in your day-to-day living?” The Likert response scale consisted of responses ranging from 1 (“very important”) to 4 (“not important”) or from 1 (“nearly everyday”) to 6 (“never”). I carried out exploratory and confirmatory factor analyses to assess and then test the factor structure of religiosity, which revealed a multidimensional construct with 10 items. I generated factor scores for each dimension of religiosity, and aggregated those scores to make a composite religiosity score for each adolescent.

Dependent Variable

Sexual initiation. Sexual initiation was assessed with the following question, “Have you ever had sex?”. Sexual initiation was coded 0 (“no sexual initiation”) and 1 (“had a sexual encounter”).

5.2.3 Data Analytic Strategy

Data analyses were performed in Mplus 7.4 (Muthén & Muthén, 2012). Analyses were conducted on the weighted data. Statistical procedures were used in all of the analyses to adjust standard errors, confidence intervals, and significance tests in order to account for the complex sample design of the NSAL. I calculated univariate statistics, then chi-square tests of differences to determine if demographic differences existed between adolescents who had initiated sex and those who had not. Path analysis was used to test for mediation (MacKinnon, 2008). I used factor scores for religiosity and standardized scale scores for religious socialization in regression models, and modeled household income, ethnicity, mother’s education, and parent nativity as control variables. Moderated-mediation tests were used to test whether the mediated relationship varied by ethnicity or gender (Preacher et al., 2007). The variable with the greatest number of

missing values was mother's education, which was missing for 42% of the sample. Multiple imputation procedures were used in order to address missing data in all regression models that included mother's education. I specified 40 imputations, as this is the accepted number of imputations needed to adequately represent 40% to 50% missing information (Graham et al., 2007; White et al., 2011). Missingness on the outcome variable, sexual initiation, was approximately 4% and thus did not necessitate the use of multiple imputation.

Factor Analysis

Exploratory factor analysis (EFA) was used to determine the most plausible factor structure for the dimensions of religiosity and the best performing items to retain. A scree plot was initially used to determine the number of factors for extraction (DeVellis, 2012). I used the procedure recommend by DeVellis to make decisions about the factor structure to retain for testing in CFA (2012). Factors were retained based on the following criteria: (1) interpretability, or the extent to which items in the same factor are tapping into the same theme (i.e., a dimension of religiosity); (2) significance of factor loadings, only items with factor loadings that are significant at $p<0.05$ across most factor solutions are retained; and (3) goodness of fit. I used EFA to identify each dimension, and removed items based on the above criterion and model fit statistics (discussed below).

Decisions about model fit were made based on the following commonly used indices: (1) A root mean square error of approximation (RMSEA) that is 0.08 or less; (2) A Tucker-Lewis (TLI) and Comparative Fit (CFI) that are 0.90 or greater; and (3) the normed X^2 (NC), the ratio of X^2 to degrees of freedom, NC ratio < 2 (Hooper et al., 2008; Kline, 2011). Model fit indices were used to make decisions about what parameters to add or delete from the model; however,

theoretical and conceptual knowledge of religiosity were the final deciding factor when selecting what items to add or remove.

Second-order confirmatory factor analysis (CFA) was used to determine the validity of the factor structure from EFA, and to test the hypothesized structure of religiosity. CFA was used to establish a baseline model for religiosity in the total sample of black adolescents. Once again, model fit indices were evaluated using the aforementioned cutoff criteria. I also reviewed modification indices, and generated factor score estimates for each factor.

Measurement Invariance

Before conducting logistic regression analyses, I conducted measurement invariance testing in order to determine if religiosity could be compared across ethnicity-gender subgroups. Measurement invariance was carried out in several stages. First I tested configural invariance, a model in which the latent variables are constrained to be equal across the four subgroups. Second, I tested for weak factorial invariance, which tests a model in which the factor loadings are equivalent across subgroups. Third, I tested for strong factorial invariance, which restricts item intercepts to be equivalent across subgroups.

Model fit was evaluated using Akaike information criterion (AIC) and Bayesian information criterion (BIC) at each stage; lower BIC and AIC values indicate better model fit (Sclove, 1987). I started with the configural model and then moved to more restrictive models thereafter. Because these models are nested within each other, a chi-square difference test was conducted to determine if the equality constraints added to the new model caused a significant decrement in model fit. A statistically significant ($p< 0.05$) chi-square value indicated that the newest model had a significantly poorer fit than the previous model; a non-significant chi-square

value ($p > 0.05$) indicated that the newer model better fit the data. Again, I tested for invariance across the four ethnicity-gender subgroups.

5.3 Results

5.3.1 Descriptive Characteristics

Demographic characteristics are described in Table 5.1. The overall sample was 1170 African American (n=810) and Caribbean black (n=360) adolescents. The sample was equally composed of males (n=563 unweighted, 48% weighted) and females (n=605 unweighted, 52% weighted). The mean age was 15.03 (SD = 1.42). Approximately 96% of the sample was still enrolled in high school and 9th grade was the average year in school. The median family income was $28,000 (approximately $26,000 for African Americans and approximately $32,250 for Caribbean blacks). Approximately 33% of the total adolescent sample had initiated sex by the time of the survey (32.8% for African American and 33.9% for Caribbean blacks).

5.3.2 Religiosity

The scree plot suggested a five-factor solution. Examination of factor loadings from the EFA showed that all items had positive loadings. Additionally, two items ("Do you go to religious services because you want to, or because your parents/guardians make you?" and "Do you go to these other activities because you want to or because your parents/guardians make you go?") had non-significant factor loadings across factor solutions, and these items were dropped. After assessing the interpretability of various factor structures, I decided the four-factor solution consisting of organizational religious participation, non-organizational religious participation, subjective religiosity, and religious support, would be the most interpretable. I then re-ran the EFA for each factor to arrive at the best fitting model. After this process, I removed five more items because they failed to load significantly on the latent factor. Results from the second-order

CFA are presented in Table 5.2. The standardized factor loadings were relatively high across all factors (0.66-0.99). All factor loadings for the final items were significant at $p<0.05$. Modification indices did not reveal any plausible correlated errors, therefore correlated errors were not added to the final model.

Model fit statistics for the second-order CFA are shown in Table 5.3. Overall, the final religiosity model consisted of four factors and 10 items, and demonstrated excellent fit based on *a priori* model fit cutoff points.

Tests for measurement invariance showed that the religiosity variable had strong factorial invariance. Table 5.4 shows the model fit indices and results from measurement invariance testing across the four ethnicity-gender subgroups. I tested measurement invariance in organizational religious participation and religious support factors first (reported in Table 5.4), and then tested for invariance in the second-order religiosity model where items for organizational religious participation and religious support loaded directly onto the second-order religiosity construct, along with the non-organizational religious participation and subjective religiosity factors. I used AIC, BIC, and chi-square difference tests to evaluate model fit. The configural invariance model for religiosity indicated good model fit across subgroups. I then tested the weak factorial invariance model. These models did not converge. Given that the weak and configural models are nested within the strong factorial invariance model, and the strength of the configural model, I decided to test the strong factorial invariance model. Model fit remained good for tests of strong factorial invariance based on the aforementioned fit indices. The likelihood ratio chi-square difference test showed that there was no significant decrease in model fit between the configural and strong invariance models ($p= 0.053$). Thus, this model of higher-

order religiosity had strong factorial invariance, and was used in subsequent logistic regression analyses.

5.3.3 Logistic Regression

Results from the multivariate models predicting sexual initiation from religious socialization and religiosity are presented in Figure 5.2. The multivariate models were adjusted for sociodemographic variables (ethnicity, household income, mother's education, and parent nativity). Black adolescents with more religious socialization were more likely to report greater religiosity (b= 0.057, p= 0.040), and in turn were less likely to report sexual initiation (b= -0.700, p= 0.000). The direct effect of religious socialization on sexual initiation, controlling for religiosity, was not significant (b= 0.039, p= 0.175). The total effect of religious socialization on sexual initiation was significant (b= -0.001, p= 0.04), suggesting that the relationship between religious socialization and sexual initiation was completely mediated by religiosity.

Tests for moderated-mediation by gender and ethnicity indicated moderation by gender and ethnicity. Table 5.5 shows results from the model of gender as a moderator, and Table 5.6 shows results from the model of ethnicity as a moderator. Gender moderated the relationship between religious socialization and religiosity such that the relationship between religious socialization and religiosity was stronger for black adolescent girls than for boys (b= 0.023, p= 0.000). Gender also moderated the relationship between religiosity and sexual initiation indicating that the relationship was stronger for adolescent boys than girls (b= -0.103, p= 0.000). In this model, the direct effect of religious socialization on sexual initiation was not significant (b= 0.56, p= 0.224). The test that ethnicity moderated the relationship between religious socialization and religiosity was statistically significant (b= -0.902, p= 0.000), and indicated that the effect of religious socialization on religiosity was stronger for African American adolescents

than for Caribbean black adolescents. The test that ethnicity moderated the relationship between religiosity and sexual initiation was not statistically significant (b= 0.682, p= 0.420). In this model, the direct effect of religious socialization on sexual initiation was not significant (b= 0.043, p= 0.331).

5.4 Discussion

Comprehensive measures of religiosity are necessary in order to research relationships between religiosity and adolescent sexual health behaviors such as sexual initiation; and to design and evaluate programs that seek to utilize faith-based and faith-placed approaches to address adolescent sexual health behaviors and outcomes. I derived a theoretical and empirically guided multidimensional measure of higher-order religiosity based on how adolescents internalize and externalize their religious beliefs, practices, and attitudes. Social Control Theory (Hirschi, 1969), and various frameworks rooted in the sociology and psychology of religion informed this measure (Pargament et al., 2001; Regnerus et al., 2004; Smith, 2003). These findings address a gap in the literature available that suggests that multidimensional measurement is needed to more accurately capture the theoretical constructs related to religiosity (Salas-Wright, Vaughn, Hodge, & Perron, 2012; Taylor, Chatters, & Brown, 2013). The measure of religiosity presented in this paper captures not only the multidimensionality of religiosity but also provides insight into those aspects of religiosity that are most salient to black adolescents, including more participatory and internal components of religious phenomena. Tests for measurement invariance further supports the use of this measure in future research on the effects of religiosity on black adolescent sexual health.

The finding of strong factorial measurement invariance in this study implies that the measure of religiosity and its facets do not meaningfully vary across the four ethnicity-gender

subgroups. All of the parameters (i.e., factor loadings or thresholds) exhibited invariance across ethnicity-gender subgroups, meaning that the higher-order religiosity measure can be used to compare religiosity across the four ethnicity-gender subgroups. Although the measure showed invariance of factor structure, factor loadings, and thresholds, it is possible to test for structural invariance of factor means and factor covariances. I believe these tests are unnecessary given the purposes of the study. The literature suggests that tests for configural, weak, and strong factorial invariance are required to determine measurement invariance (Meredith & Teresi, 2006); however, it may be important to consider what level of invariance is needed to determine invariance for psychosocial constructs like religiosity.

Given a lack of consensus regarding how to operationalize religiosity for research on adolescent sexual initiation, this work addressed a need to better understand the dimensionality and structure of religiosity. While most research on adolescent religiosity and sexual health places an emphasis on frequency of church attendance (Cotton et al., 2010), these findings support the utility of a more complex conceptualization of adolescent religiosity. There are several scholars who have called for more comprehensive measures of religiosity (DeHaan et al., 2011; Pearce et al., 2013; Williams, 1994); however, this work is still quite new and challenges previous assumptions about the simplicity or unidimensionality of adolescent religiosity. A critical next step to extend this work is for these findings on the structure and dimensionality of religiosity to be replicated, and to examine whether facets of religiosity have differential antecedents and consequents. These findings also contribute to the larger discussion of faith-based versus faith-placed public health interventions (Campbell et al., 2007; DeHaan et al., 2011), and offers some support for the importance of including both religious organizational involvement (faith-placed) and religious contextualization with faith elements (faith-based) in

the design of interventions to prevent adolescent sexual initiation among black adolescents in faith settings.

This study also provides strong support for the relationship between religious socialization, religiosity, and sexual initiation. Black adolescents who had more religious socialization had greater religiosity, and were less likely to report sexual initiation. This finding supports theoretical and empirical evidence, which situates religious socialization as a process that fosters an internalization of religiosity which in turn endorses certain norms and values that prohibit adolescent sexual initiation (Ellison & Sherkat, 1993; Hirschi, 1969; Smith & Faris, 2002). The majority of the study sample belonged to a religious denomination that is traditionally considered to be part of the Black Church. However, the measure of religious socialization used in this study did not take into account the content or quality of religious messages adolescents received. Knowing message content and quality would reveal if messages encouraged religious organizational participation or endorsed abstinence only messages. An important next step would be to expand this measure of religious socialization to include message content and quality.

My findings also draw attention to gender differences in the relationships between religious socialization, religiosity, and sexual initiation. There are two common perspectives put forward to explain gender differences in religiosity which support the relationship between religious socialization and religiosity being stronger for adolescent girls than boys. These perspectives suggest that differential effects may be attributable to factors associated with: (1) gender role norms in which girls are socialized to avoid risk, more so than adolescent boys, and are thus less likely to experience conflict with religious messages that promote moral obedience; and (2) differential parental monitoring which emphasizes organizational religious participation

for girls and more monitoring of their behaviors and peer networks (DiClemente et al., 2001; Li, Feigelman, & Stanton, 2000; Smith et al., 2002). Tests for moderation by gender echo these findings for the relationship between religious socialization and religiosity, and suggest two additional plausible explanations for why the relationship between religiosity and sexual initiation is stronger for adolescent boys compared to girls.

First, much of the extant literature examining gender differences in religious socialization and religiosity emphasizes organizational religious participation practices (i.e., church attendance or youth group participation). These practices may be out of the control of the adolescent, and girls may be encouraged to participate in these activities more than boys (Miller & Hoffmann, 1995; Smith et al., 2002). However, given that the measure of religiosity used in this study also assessed internal components of religiosity—beliefs and practices that move beyond organizational religious participation—these may more accurately depict the religious landscape of black adolescents. This conceptualization of religiosity may explain why the relationship between religiosity and sexual initiation was stronger for adolescent boys than girls.

Another plausible explanation is that adolescent girls are taught to be more religious, and receive more frequent pro-religious messages that may be more diffusely applied to every aspect of their life (Ingersoll-Dayton et al., 2002; Wilson & Sherkat, 1994). For adolescent girls, the frequency and universality of these messages may in fact dilute their salience. On the other hand, compared to adolescent girls, adolescent boys are generally socialized to be less religious or active in organizational religious participation (Smith & Denton, 2005). As such, when opportunities arise for religious socialization, adolescent boys may receive more directed messages that connect religiosity to abstinence. In either case, more research is needed to better understand how the relationship between religious socialization and religiosity is formed for

adolescent boys; to determine how factors associated with gender role norms and gender identity influence these relationships; and to give greater consideration to the content and quality of religious messages.

Tests of moderation by ethnicity showed the relationship between religious socialization and religiosity was weaker for Caribbean black adolescents than for African American adolescents. There is such a paucity of research on Caribbean black adolescents that it is hard to determine if these findings are novel. The literature comparing the religiosity of African American and Caribbean black adults suggests that religiosity is stronger for African American adults than Caribbean black adults (Chatters et al., 2009; Chatters et al., 2008; Taylor et al., 2007b; Waters, 2009). Perhaps, these findings support similarities in parent and adolescent religiosity (Myers, 1996), and therefore the expectation is for religiosity to be stronger for African American adolescents than Caribbean black adolescents. Another plausible explanation is differences in religious tradition and exposure to certain socializing agents. The Black Church, and as a result African American religious tradition, has historically been involved in advocating for human and civil rights (Cone, 1984; Lincoln & Mamiya, 1990). Caribbean black adolescents may not experience this particular racial-religious narrative, which may influence the strength or attachment of religious messages to religiosity. Finding significant differences between African American and Caribbean black adolescents does suggest that greater inquiry is needed to determine the effects of ethnic variation within the black population that may influence black adolescent sexual health behaviors and outcomes.

This study has several limitations that should be noted when interpreting findings. First, these analyses were conducted using cross-sectional data and results do not indicate causality. Further, SEM implies directionality that, when using cross-sectional data, warrants a

conservative lens to interpreting findings. Second, this study may not be generalizable to the larger Caribbean black sub-population. Significant diversity exists between Caribbean countries and immigrant communities. This diversity poses a challenge in that adolescents may experience varying degrees of acculturation that may operate to maintain or diminish native culture and norms, and subsequently have an effect on the measured constructs. Third, Social Control Theory suggests that problematic behavior is not isolated to one particular act. Exclusively measuring sexual initiation fails to take into account the clustering of adolescent risk behaviors, and how these may differ for religiously minded youth. Lastly, there are other factors associated with adolescent sexual initiation which we did not account for in this study, including sexual orientation and romantic relationship status. The inclusion of these factors to the discussion of black adolescent sexual initiation is warranted.

Despite these limitations, this study moves forward the literature surrounding the measurement of adolescent religiosity and subsequently, determinants of black adolescent sexual initiation. Examining the effects of religious socialization and religiosity on sexual initiation provides insight into how religious socialization, vis-à-vis dimensions of religiosity, shapes black adolescent sexual initiation. Equally important are the findings on how these relationships vary by gender and ethnicity, which will support research and practice efforts aimed at reducing disparities in HIV and STDs among black adolescents.

5.5 Tables and Figures

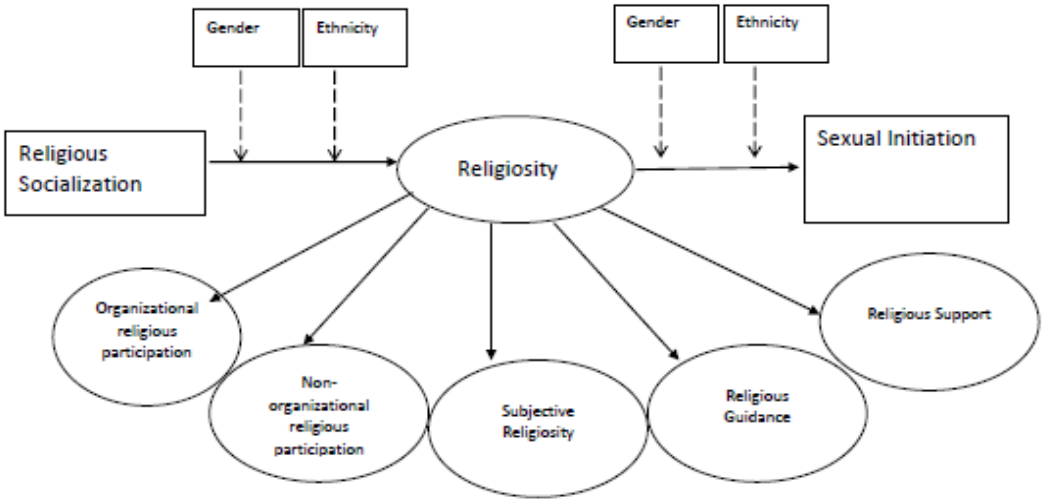

Figure 5.1 Study Conceptual Model

Table 5.1 NSAL Adolescent Sample Characteristics

Variables	Total (*N*=1170) %	*p*-value
Age, years		.1318
Mean (*SD*)	15.03 (1.42)	
Ethnicity		<0.001
African American	69.2	
Caribbean Black	30.8	
Gender		0.198
Male	47.6	
Female	52.4	
Education grade level		0.25
5^{th}-8^{th}	25.6	
9^{th}	23.2	
10^{th}	21.5	
11^{th}	16.0	
12^{th} +	13.7	
Religious denomination		0.085
Protestant	61.3	
Catholicism	10.9	
Judaism	0.09	
Eastern	0.68	
Other	13.4	
Adult respondent's household income		<0.001
$0–$17,999	27.2	
$18,000–$31,999	23.9	
$32,000–$54,999	28.6	
≥$55,000	20.3	
Mother's Education		<0.001
<High School	13.2	
High school graduate/GED	26.8	
Some college	10.8	
College graduate+	7.4	
Adult Respondent's Nativity		0.01
Born in the U.S.	60.4	
Born outside the U.S.	39.6	

Table 5.2 Confirmatory Factor Analysis Results for the Final Religiosity Model

Factor and Item	**Factor Loading***
Organizational religious participation	**0.773**
How often do you usually attend religious services?	0.746
Do you do things like sing in the choir, read scripture or other things like that during service?	0.749
Besides regular service, how often do you take part in other activities in your place of worship?	0.804
Non-organizational religious participation	**0.996**
How often do you read religious books or other religious materials?	0.683
How often do you listen to religious music?	0.664
Subjective religiosity	**0.797**
How important is religion in your life?	0.921
How important is prayer when you deal with stressful situations?	0.746
Religious support	**0.700**
How often do people in your place of worship make you feel loved and cared for?	0.839
How often do people in your place of worship listen to you talk about your private problems and concerns?	0.727
How often do people in your place of worship express interest and concern in your well-being?	0.821
Dropped Items	
• Do you go to religious services because you want to, or because your (parents/guardians) make you? • Do you go to these other activities because you want to or because your (parents/guardians) make you go? • How often do you watch or listen to religious programs on TV or radio? • How often do you pray? • How often do you ask someone to pray for you? • Would you say your religion provides some guidance in your day-to-day living? • How religious would you say you are?	

*Bolded factor loadings indicate loadings on higher-order construct, religiosity. All factor loadings are standardized.

Table 5.3 Model Fit Statistics for Base Religiosity Model in CFA

	# Free Parameters	Chi-Square Value	Chi-square *p*-value	RMSEA	RMSEA 90% CI	CFI	TLI
Religiosity baseline model	45	92.964	0.000	0.041	[0.032, 0.051]	0.990	0.986

Table 5.4 Measurement Invariance Tests for Religiosity

Configural Factorial Invariance				Strong Factorial Invariance				
	AIC	BIC	Chi-Square Value	AIC	BIC	Chi-Square Value	-2LL	-2LL *p*-value
Organizational religious participation	10552.20	10693.93	359.71	10545.44	10656.81	348.78	10.93	0.090
Religious support	9480.17	9613.713	357.01	9472.67	9576.53	367.47	10.43	0.108
Religiosity	14056.39	14253.85	257.95	14047.33	14184.03	270.39	12.44	0.053

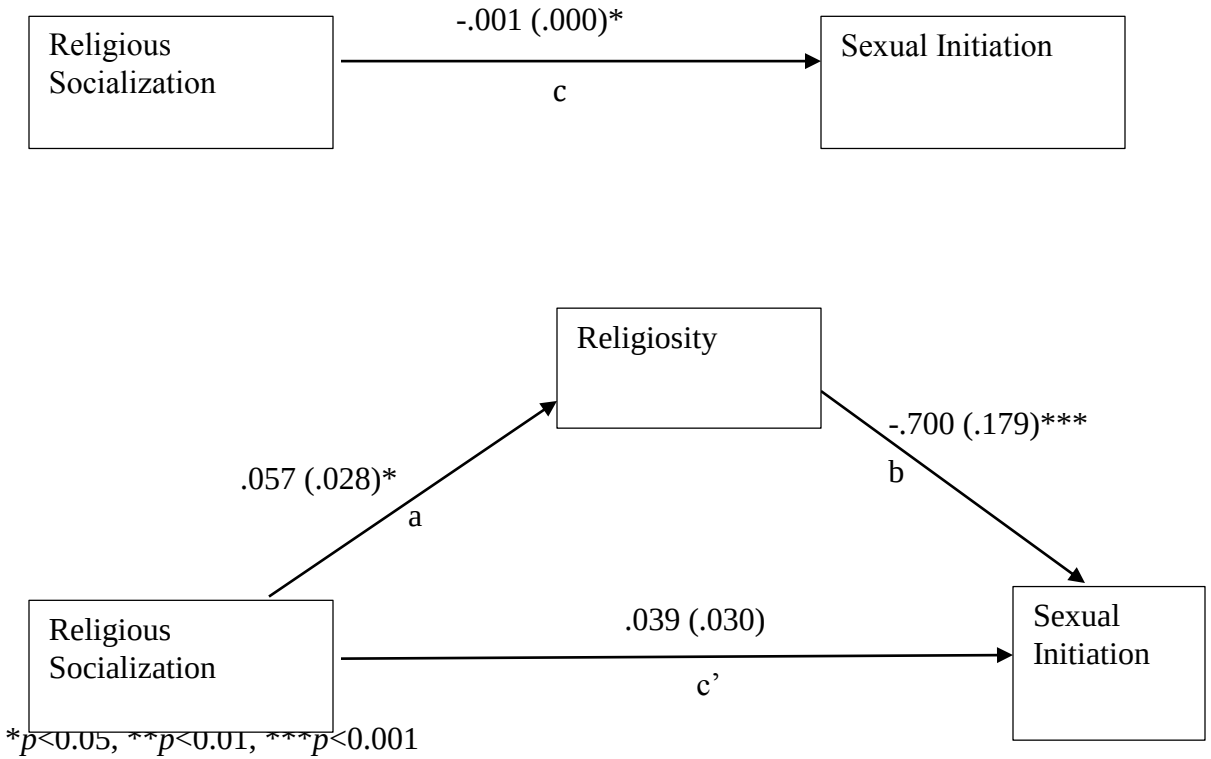

Figure 5.2 Mediation Model between Religious Socialization, Religiosity, and Sexual Initiation

Table 5.5 Moderation Effects by Gender

Path	*b* (*se*)
a	0.023 (0.006)***
b	-0.103 (0.026)***
c	-0.026 (0.000)*
c'	0.056 (0.046)

*p<0.05, **p<0.01, ***p<0.001

Table 5.6 Moderation Effects by Ethnicity

Path	*b* (*se*)
a	-0.902 (0.040)***
b	0.682 (0.846)
c	0.006 (0.047)
c'	0.043 (0.045)

*p<0.05, **p<0.01, ***p<0.001

CHAPTER 6: A PERSON-CENTERED APPROACH TO THE STUDY OF BLACK ADOLESCENT RELIGIOSITY, RACIAL IDENTITY, AND SEXUAL INIITIATION FOR HIV/STD PREVENTION AMONG BLACK ADOLESCENTS (AIM 3 FINDINGS)

6.1 Introduction

Startling racial disparities in adolescent HIV and STD rates persist despite advances in prevention and treatment. The burden of HIV and STDs remains greatest for black American adolescents, underscoring the need to identify factors that protect or place black adolescents at risk (CDC, 2013). Adolescence is a period marked by significant cognitive developments and the assertion of independence (Lerner & Galambos, 1998 ; Steinberg & Morris, 2001). This developmental period may also be accompanied by risk taking and problem behaviors, such as sexual initiation (Baumrind, 1987; Raffaelli & Crockett, 2003). Despite advances in the study of adolescent sexual health behaviors and outcomes, we have limited knowledge about how certain identity and belief structures (e.g., religiosity and racial identity) motivate black adolescents to engage in or forgo sexual activity. In this study, I applied a person-centered perspective to examine associations between membership in a unique religiosity and racial identity profile, and adolescent sexual initiation among a nationally representative sample of black American adolescents.

Religiosity is a complex, multidimensional construct for which there is no one accepted operationalization or measure (DeHaan et al., 2011; Williams, 1994). In this study, religiosity is the combination of religion, spirituality, and the importance of religion. Religion refers to an organized system of beliefs, practices, and rituals; spirituality, a broader construct, is concerned with connectedness and reverence to a higher power (Ellison & Sherkat, 1995; Mattis, 2000).

American adolescents, particularly black American adolescents, are extremely religious, and their religiosity influences many aspects of their identity and lives (Koenig et al., 2012; Smith & Denton, 2005). Over the last two decades, we have seen an increase in the scholarship devoted to examining the role of religiosity in adolescent behavior (Koenig et al., 2012). This increase has resulted in more attention to the components of religiosity which influence behavior; the relationships between other psychosocial and developmental factors with religiosity; and a deeper appreciation for studying religiosity as a system in which there are multiple, unique, and interactive components (Markstrom, Huey, Stiles, & Krause, 2010; Pearce et al., 2013; Roehlkepartain, King, Wagener, & Benson, 2005). Despite the growth of studies examining the relationships between individual components of religiosity (e.g., organizational religious participation or frequency of prayer) and risky adolescent behaviors (Landor et al., 2011; Lefkowitz et al., 2004; Miller & Gur, 2002; Sinha et al., 2007); few studies have utilized a more nuanced conceptualization of these relationships by examining how components of religiosity cluster to influence behavior (Pearce et al., 2013; Salas-Wright et al., 2012; Smith & Denton, 2005). While more nuanced analytic approaches are needed, greater consideration for how other relational identities, such as racial identity, influence these clusters is warranted.

Racial identity refers to the importance of race on an individual's self-concept and perceptions about what it means to be a certain race (Sellers et al., 1998; Sellers & Shelton, 2003). Black racial identity is the "significance and qualitative meaning that individuals attribute to their membership within the black racial group within their self-concepts" (Sellers et al., 1998). Sellers et al. developed the multidimensional model of racial identity for black Americans, which acknowledges the universal properties associated with belonging to an ethnic and/or racial identity, and recognizes the role that historical and sociocultural experiences have

in constructing racial identity. The relationship between racial identity and sexual initiation among black adolescents has received limited attention. The majority of the literature examining the relationship between dimensions of racial identity and health has primarily examined racial identity as a moderator between experiences of racial discrimination and health behaviors or outcomes, such as mental health (Caldwell, Wright, et al., 2004; Sellers & Shelton, 2003), psychobehavioral factors (e.g., self-deviancy and achievement), drug use (Brook & Pahl, 2005), and perceived stress (Caldwell et al., 2002). Despite compelling evidence of the positive effects of racial identity on health behavior, this literature also suggests that some dimensions of racial identity have a negative or harmful effect on health behaviors (Harvey & Afful, 2011; Sellers et al., 1998). Inconsistent findings on the effects of racial identity on health behavior may be a result of different dimensions of the construct being associated with various health behaviors through different mechanisms (Sellers & Shelton, 2003). In this study, an intersectional approach (Bowleg, 2012; Crenshaw, 1991) was used to position religiosity and racial identity as mutually constitutive, and suggest that the effects of racial identity on adolescent sexual initiation may be more appropriately studied by operationalizing it and religiosity together as latent profiles.

Applying an intersectional approach suggests that facets of adolescent development and identity formation are relational. Specifically, racial identity and religiosity are formed in relation to each other. This approach recognizes religiosity and racial identity as important components of black adolescent self-concept (Fergus & Zimmerman, 2005; Salazar et al., 2004) and asserts that religiosity provides black adolescents with a sense of who they are in relation to others (Edwards, 2008). Intersectionality also contends that no identity is homogenous. As such, knowing that an adolescent is black or participates in religious activities may not provide enough information to understand the complexities of their sexual health behaviors respective to

religiosity and racial identity. Using latent profile analysis to model religiosity and racial identity provides an analytic procedure to account for some of this complexity and interrelatedness. However, virtually no research has applied an intersectional approach to the study of religiosity, racial identity, and adolescent sexual initiation (King & Roeser, 2009).

Although person-centered approaches have been used in previous research to explore the lived religious experiences of adolescents (Pearce et al., 2013; Smith & Denton, 2005; Voas, 2009), these studies have not explored how black adolescents experience religiosity and racial identity. In this study, I applied a person-centered perspective to identify religiosity-racial identity profiles among black adolescents, and examine the association between membership in a specific profile and adolescent sexual initiation.

6.2 Methods

6.2.1 Data Source

The participants in this study were African American and Caribbean black adolescents who had a parent participate in the National Survey of American Life (NSAL). The NSAL is part of the National Institute of Mental Health (NIMH) Collaborative Psychiatric Epidemiology Surveys initiative which consists of three nationally representative surveys—the NSAL, the National Comorbidity Survey Replication, and the National Latino and Asian American Study (Pennell et al., 2004). The NSAL is a nationally representative survey of African American, Caribbean black, and non-Hispanic white adults. The NSAL sample was based on a multi-stage area probability sample using a stratified and clustered sample design (Jackson et al., 2004). The survey gathered information about the physical, emotional, mental, structural, and economic conditions of black American adults and their families (Jackson et al., 2004). Data were collected from February 2001 to June 2003.

The adolescent NSAL sample was drawn from households that included an adult participant and an eligible adolescent living in the household (Heeringa et al., 2004). Adolescents were selected to participate in the study using a random selection procedure. If more than one adolescent resided in the household, up to two adolescents were selected to participate. The adolescent supplement was weighted to adjust for non-independence in selection probabilities within households, as well as non-response rates across households and individuals. The weighted data were post-stratified to approximate the national population distributions for gender and age (13, 14, 15, 16, and 17 years) subgroups among African American and Caribbean black adolescents. Details of the sampling design used to create the adolescent sample of NSAL can be found elsewhere (Heeringa et al., 2004).

All interviewers were trained at the Institute for Social Research at University of Michigan in the Survey Research Center. Interviewers completed four training sessions over 14 months. Prior to the interview, informed consent was obtained from the adolescent's legal guardian and assent from the adolescent. Interviews were conducted face-to-face using a computer-assisted instrument. Approximately 18% of the interviews were completed via telephone. The African American interviews were slightly shorter than the Caribbean black adolescent interviews at 1 hour 40 minutes and 1 hour 50 minutes respectively. Respondents received $50 for participating in the study, and the overall response rate was 80.6% (80.4% African American and 83.5% Caribbean black) (Joe et al., 2009).

The original adolescent sample consisted of 1193 participants; however, 23 participants were removed from analyses because they were 18 or older during their interview. The sample used for this study is 1170 African American (n=810) and Caribbean black (n=360) youth, ranging in age from 13 to 17. The overall sample was equally composed of males (n=563

unweighted, 48% weighted) and females (*n*=605 unweighted, 52% weighted). The mean age was 15.03 (*SD* = 1.42) Approximately 96% of the sample was enrolled in high school and 9th grade was the average year in school. The median family income was $28,000 (approximately $26,000 for African Americans and $32,250 for Caribbean blacks).

6.2.2 Measures

Control Variables

Demographic questionnaire. Adolescent ethnicity, gender, and religious denomination were assessed with standard questions. Adolescents provided general demographic information such as grade level and age during the interview. Family income, mother's education, and parent nativity were variables derived from the parent/guardian responses to NSAL questions about sociodemographics.

Independent variables

Religiosity. Religiosity is a higher-order variable measured by 10 indicators. These measures were derived from the National Survey of Black America Panel Religion Questionnaire (Jackson & Gurin, 1987) and other indicators of religiosity. Ten items were used to measure organizational religious participation (3 items), non-organizational religious participation (2 items), subjective religiosity (2 items), and religious support (3 items). Sample questions include "How important is religion in your life?", "How often do you usually attend religious services?", and "How important is prayer when you deal with stressful situations?" The Likert response scale consists of responses ranging from 1 ("very important") to 4 ("not important") or from 1 ("nearly everyday") to 6 ("never"). Exploratory and confirmatory factor analyses were used to assess and then test the factor structure of religiosity, revealing a multidimensional scale with 10 items. I generated factor scores for each dimension of religiosity, and aggregated those scores to

make a composite religiosity score for each individual. Cronbach's α for religiosity was 0.89.

Racial Identity. Participants completed brief versions of the racial centrality, private regard, and public regard subscales of the Multidimensional Inventory of Black Identity (Sellers et al., 1997). The centrality subscale consists of four items assessing the extent for which race was an important part of how they defined themselves. Sample items include "Being black is a major part of my self-image" and "I have a strong attachment to other black people." Cronbach's α for the racial centrality subscale was 0.71. The private regard subscale consists of four items assessing the extent to which the adolescent views blacks positively or negatively. Sample items include "I feel good about black people" and "I feel that the black community has made valuable contributions to this society." Cronbach's α for the private regard subscale was 0.69. The public regard subscale consists of four items assessing the extent to which other groups viewed black people positively or negatively. Sample items include "In general, society respects black people" and "Society views black people as an asset." Cronbach's α for the public regard subscale was .75. All response categories on these subscales were measured using a 4-point Likert scale where 1 = "Strongly agree", 2 = "Somewhat agree", 3 = "Somewhat disagree", 4 = "Strongly disagree".

Dependent Variable

Sexual initiation. Sexual initiation was assessed with the following question, "Have you ever had sex? Sexual initiation was coded 0 ("no sexual initiation") and 1 ("had a sexual encounter").

6.2.3 Data Analytic Strategy

I conducted data management in SAS version 9.3, and reverse coded religiosity and racial identity items such that a greater score indicated more religiosity and racial identity. Racial identity variables were standardized and summed to a mean of 0 and a standard deviation of 1 to facilitate interpretation of classes. Data analysis was conducted on weighted data in Mplus 7.4. Statistical procedures were used in all of the analyses to adjust standard errors, confidence intervals, and significance tests in order to account for the complex sample design of the NSAL. I calculated univariate statistics, then chi-square tests of differences to determine if differences existed between adolescents who had initiated sex and those who had not. The variable with the greatest number of missing values was mother's education, which was missing for 42% of the sample. Multiple imputation procedures were used in order to address missing data in all regression models that included mother's education. I specified 40 imputations, as this is the accepted number of imputations needed to adequately represent 40% to 50% missing information (Graham et al., 2007; White et al., 2011). Missingness on the outcome variable, sexual initiation, was approximately 4% and thus did not necessitate the use of multiple imputation.

Latent Profile Analysis (LPA) in Mplus 7.4 was used to identify discrete patterns of responses on measures of racial identity (racial centrality, public regard, and private regard) and on the dimensions (factor scores) of religiosity (organizational religious participation, non-organizational religious participation, subjective religiosity, and religious support). LPA is a type of latent variable mixture model which uses a person-centered approach to identify subgroups of individuals within a population. In LPA, individuals are grouped into subgroups (also referred to as classes or profiles), based on their probability for being in a certain profile (Collins & Lanza, 2013). By drawing on a set of indicators, LPA produces better estimates of both the size and

composition of subgroups as compared to single indicator estimates. These subgroups are considered to be latent because membership into a particular subgroup is not directly observed; rather, it is inferred by interpreting the relationships among indicators within a class, and the heterogeneity between classes. In this study, LPA is the preferred statistical method because it accounts for the fact that religiosity and racial identity are mutually constitutive and interact with each other to influence sexual initiation.

There is relatively little guidance in the LPA literature on how to best choose indicators for models. We selected factor score estimates from four dimensions of religiosity from the many survey items available to us in NSAL (see chapter 5 for details), and all of the available racial identity items. I followed the criterion suggested by Collins and Lanza (2012), along with substantive knowledge of racial identity and religiosity to make decisions about the final number of religiosity-racial identity profiles. Information criteria were used to compare the expected pattern of responses generated by the postulated model to the observed patterns (Collins & Lanza, 2013). Bayesian information criterion (BIC), Akaike information criterion (AIC), and a sample size adjusted BIC were calculated to determine overall goodness-of-fit; lower BIC and AIC values indicated better model fit (Sclove, 1987). BIC is the preferred statistic because it includes a steeper penalty for model complexity (Preacher & Merkle, 2012). Relative model fit was assessed using the Lo-Mendell-Rubin adjusted likelihood ratio statistic, which is an index of the association between the variables that remain unexplained in the model, and compares the improvement of fit between classes. I also considered entropy, which is an estimate of how distinct the identified profiles are from each other. Entropy values can range from 0.00 to 1.00 and values greater than 0.80 indicate good separation of latent profiles (Celeux & Soromenho, 1996; Ramaswamy et al., 1993). Additionally, considerations of size, theoretical evidence, and

interpretability of latent profiles were used to determine the most meaningful final number of profiles in the sample (Collins & Lanza, 2013; Nylund et al., 2007)

The identified latent profiles were used in a logistic regression model to determine the relationship between religiosity-racial identity profile and sexual initiation. Specifically, I used dummy codes to represent latent profile membership, and regressed sexual initiation on these religiosity-racial identity profiles.

6.3 Results

6.3.1 Descriptive Statistics

Demographic characteristics of the study sample are described in table 6.1. The overall sample was 1170 African American (*n*=810) and Caribbean black (*n*=360) adolescents. The sample was equally composed of males (*n*=563 unweighted, 48% weighted) and females (*n*=605 unweighted, 52% weighted). The mean age was 15.03 (*SD* = 1.42). Approximately 96% of the sample was still enrolled in high school and 9th grade was the average year in school. The median family income was $28,000 (approximately $26,000 for African Americans and approximately $32,250 for Caribbean blacks). Approximately 33% of the total adolescent sample had initiated sex by the time of the survey (32.8% for African American and 33.9% for Caribbean blacks). Preliminary analyses indicated significant differences in sociodemographics between adolescents who had engaged in sexual activity and those who had not. Specifically, we observed differences in ethnicity, household income, mother's education, and parent nativity status. These variables were included in all regression models as control variables.

6.3.2 Latent Profile Analysis

Table 6.2 provides a summary of the statistics used to make decisions about the appropriate number of latent profiles. The information criteria indicate that the addition of another class improved model fit, up through five classes. Entropy values were similar across solutions and ranged from 0.858 to 0.886. The Lo-Mendell-Rubin test did not yield any significant solutions; however, the AIC, BIC, and *n*-adjusted BIC all indicated that a five class solution was the best fitting model, followed closely by the four class solution. Further inspection of the four and five class solutions showed that the five class solution replicated the four class solution, with a level split for one of the classes. Because the four class solution had an adequate number of individuals in each class and was more substantively meaningful than the five class solution, I moved forward with the four class solution. Table 6.3 shows the raw and standardized means for each of the four profiles. Standardized means are summarized graphically in Figure 6.1, with interpretations below:

Class 1: Low religiosity-low racial identity

The "low religiosity-low racial identity" class represents 21% (*n*=249) of the total sample. This class was characterized by lower than average scores on all religiosity and racial identity indicators. All of the religiosity indicators were at least one standard deviation below the mean.

Class 2: High religiosity-high racial identity

The "high religiosity-high racial identity" class represents the largest percentage of the total sample 35% (*n*=404). This class was characterized by scores that were relatively close to the mean, with the exception of non-organizational religious participation which was

approximately one standard deviation above the mean. Because of its size and interpretability, this group served as the referent group for subsequent analyses using profile membership.

Class 3: Low religiosity-high racial identity

The "low religiosity-high racial identity" class represents the smallest percentage of the total sample 17% (*n*= 199). This class was characterized by lower than average scores on all of the religiosity variables, and higher than average scores on all of the racial identity variables. This group also had the highest level of racial centrality, racial public regard, and racial private regard.

Class 4: High religiosity-low racial identity

The "high religiosity-low racial identity" class represents the second largest percentage of the total sample 27% (*n*= 318). This class was characterized by higher than average scores on all of the religiosity variables, and below average scores on the racial centrality and racial public regard. This group also endorsed the highest level of all religiosity variables, with subjective religiosity being over 3 standard deviations above the mean.

Differences in demographic variables by profile

I also conducted analyses to determine if there were statistically significant differences in profile membership by demographic variables. For these analyses, the "high religiosity-high racial identity" class was the reference group. I found that ethnicity, parent nativity, and gender were associated with group membership. Caribbean black ethnicity was associated with an increased likelihood of being a member of the "low religiosity-low racial identity" group (*b*= 0.228, *p*= 0.000) and African American ethnicity was associated with an increased likelihood of being a member of the "high religiosity-high racial identity" group (*b*= -0.164, *p*= 0.045). Having a parent born outside of the U.S. was associated with an increased likelihood of being a

member of the "low religiosity-low racial identity" group (b= 0.040, p= 0.004) and the "high religiosity-low racial identity" group (b= 0.066, p= 0.000). Lastly, for gender, adolescent boys were more likely to be members of the "low religiosity-high racial identity" group (b=-0.071, p= .033), and adolescent girls were more likely to be members of the "high religiosity-low racial identity" group (b= 0.054, p= 0.023).

6.3.3 Logistic Regression Analysis

The results from the logistic regression model regressing sexual initiation on religiosity-racial identity profile are presented in Table 6.4. I controlled for relevant demographic variables in the model. Adolescents in the "high religiosity-low racial identity" class were less likely than adolescents in the reference group ("high religiosity-high racial identity") to report sexual initiation (b= -0.566, p= 0.007). Collectively, ethnicity, household income, mother's education, parent nativity, and latent profile membership explained approximately 8% of the variation in sexual initiation (R^2 = 0.083).

6.4 Discussion

In this manuscript, I used an inductive, intersectional approach to latent profile analysis to examine a conceptualization of religiosity and racial identity as mutually constitutive facets of adolescent self-concept. In contrast to more unidimensional approaches to racial identity and religiosity (e.g., creating composite sum scores), the inclusion of four dimensions of religiosity and three dimensions of racial identity allow for a more nuanced and comprehensive characterization of the way black adolescents define themselves, and in turn make decisions to forgo or engage in sexual activity. I identified four distinct religiosity-racial identity profiles in these data. Class 1 was characterized by adolescents with lower than average values on all religiosity and racial identity variables, while adolescents in Class 2 were characterized as being

higher than average on all religiosity and racial identity variables. Classes 3 and 4 were opposites, adolescents in Class 3 had lower religiosity, but higher racial identity, while adolescents in Class 4 had higher religiosity and lower racial identity. From an intersectional perspective, the identification of four classes supports literature examining the racialization of black adolescent religiosity (Edwards, 2008), and that the interaction between religiosity and racial identity factors is dynamic.

No *a priori* hypotheses were made about the number of profiles this analysis would yield, or how they would be characterized. However, the identification of four profiles suggest that religiosity shapes racial identity and racial identity shapes religiosity. Membership in the high religiosity-high racial identity class was the largest group of the sample (35%) followed by membership in the high religiosity-low racial identity class (27%). Finding that the majority of the sample belonged to groups characterized with high religiosity is not surprising because black adolescents are among the most religiously active adolescents in the U.S. (Sinha et al., 2007; Smith & Denton, 2005). However, it is interesting that the next highest group is characterized by high religiosity and low racial identity. This suggests that while there may be some variability in racial identity among black adolescents, religiosity may be a more stable determinant. Surprisingly, organizational religious participation had lower scores across all four latent profiles. With the exception of Class 1-low religiosity-low racial identity, and Class 3- low religiosity-high racial identity. Invoking an intersectional perspective, this finding suggests that in the context of racial identity, more private or intrinsic dimensions of religiosity may be more salient to adolescents than (public) organizational religious participation.

Although I identified four distinct religiosity-racial identity profiles, only one profile was associated with sexual initiation, the high religiosity-low racial identity group. One way to

explain this differential association with sexual initiation is that intersections of religiosity and racial identity produce distinct associations, a finding which is consistent with intersectionality. The high religiosity-low racial identity group is characterized as having endorsed the highest level of all religiosity variables, and an above average score on racial private regard. Racial private regard is the extent to which an individual feels positively or negatively towards other blacks and their membership in the black race (Sellers et al., 1997). Perhaps it is a more positive view of membership in the black race that intersects with religiosity that prohibits adolescent sexual initiation, by making pro-religious messages about sexual behavior more salient to adolescents. Another explanation is that these findings may reflect differences in the valence of religiosity and racial identity for black adolescents. When both religiosity and racial identity have equal valence (e.g., Class 2), religious and racial identity based messages about sexual behavior may be obscured, and lead to uncertainty around sexual initiation. Perhaps, when an adolescent is characterized as high religiosity-low racial identity, the decision making process regarding sexual initiation is easier because religious messages prohibiting adolescent sexual activity dominate their identity. An important next step is to evaluate the socialization structures, religious and racial, that undergird these findings. Additionally, given the limited number of prior studies that have examined associations between racial identity and adolescent sexual health behaviors, it may be that the dimensions of racial identity used in this study are not appropriate for this behavior. Future studies should consider using different dimensions of racial identity to create identity profiles.

Another key finding in these analyses are the demographic characteristics of profile members. Not surprisingly, African American adolescents tend to be in the high religiosity profiles, while having a parent born outside of the U.S. or being of Caribbean black ethnicity was

associated with profiles characterized by low religiosity or low racial identity. There may be several explanations for this finding, though the most plausible are differences in religious tradition and exposure to certain socializing agents. African American religious traditions have historically been involved in civil rights efforts (Ellison & Levin, 1998; Lincoln & Mamiya, 1990; Frazier, 1974); Caribbean black adolescents may not have experienced this particular racial-religious narrative. As a consequence, racial identity may not be a prominent feature of how these components are related to one another for Caribbean black adolescents.

There are several limitations to this study. One limitation is that the internal reliability of the racial identity sub-scales in this study was low. This may be a result of the brief scale used to measure these dimensions among adolescents, or perhaps some other artifact of the scale. Future studies will need to re-evaluate the use of this scale to measure racial centrality and regard. Another limitation is the generalizability of the findings beyond the current sample of African American and Caribbean black adolescents. Differences in profile membership across several demographic characteristics suggest that the observed patterns of religiosity-racial identity may not generalize to other samples of black adolescents. Lastly, although I control for parent nativity, I do not have a measure of adolescent generational status, which may be more closely tied to whether or not they have experienced the racial-religious narrative that connects racial identity to religiosity. Future studies should investigate if measures of ethnic identity would be more appropriate for these kinds of studies.

Despite these limitations, this study moves forward the literature to apply more nuanced and complex approaches to the study of adolescent religiosity by applying a person-centered intersectional approach to form religiosity-racial identity profiles. Another important next step is to examine how well the religiosity-racial identity profile structure replicates in data with

different measures or dimensions of religiosity and racial identity. Future studies should determine if there are other outcomes that may lend themselves to this type of analysis. Specifically, research is needed on outcomes that are associated with adolescent sexual initiation in which prior studies have found independent effects with racial identity and religiosity, such as educational attainment.

6.5 Tables and Figures

Table 6.1 NSAL Adolescent Sample Characteristics

Variables	Total (*n*=1170) %	*p*-value
Age, years		.1318
Mean (*SD*)	15.03 (1.42)	
Ethnicity		<0.001
African American	69.2	
Caribbean Black	30.8	
Gender		0.198
Male	47.6	
Female	52.4	
Education Grade Level		0.25
5^{th}-8^{th}	25.6	
9^{th}	23.2	
10^{th}	21.5	
11^{th}	16.0	
12^{th} +	13.7	
Religious Denomination		0.085
Protestant	61.3	
Catholicism	10.9	
Judaism	0.09	
Eastern	0.68	
Other	13.4	
Adult Respondent's Household Income		<0.001
$0–$17,999	27.2	
$18,000–$31,999	23.9	
$32,000–$54,999	28.6	
≥$55,000	20.3	
Mother's Education		<0.001
<High School	13.2	
High school graduate/GED	26.8	
Some college	10.8	
College graduate+	7.4	

Adult Respondent's Nativity		0.01
Born in the U.S.	60.4	
Born outside the U.S.	39.6	

Table 6.2 Model Fit Indices for Religiosity-Racial Identity Profiles

Number of Latent Classes	AIC	BIC	*n*-adjusted BIC	Lo-Mendell-Rubin Test	Entropy
One Class	26927.148	26998.055	26953.586		
Two Classes	24352.300	24499.178	24407.064	0.4116	0.858
Three Classes	22929.059	23151.908	23012.149	0.7582	0.861
Four Classes	22040.437	22339.257	22151.853	0.7602	0.880
Five Classes	21213.274	21588.066	21353.016	0.7647	0.886
Six Classes	21709.009	22599.772	22477.078	0.7781	0.885

Table 6.3. Raw and Standardized Means, and Standard Deviations by Religiosity-Racial Identity Profile

Variable	Class 1 Low religiosity -Low racial (*n*= 249; 21%)	Class 2 High religiosity -High racial identity (*n*= 404; 35%)	Class 3 Low religiosity -High racial identity (*n*= 199; 17%)	Class 4 High religiosity- Low racial identity (*n*= 318; 27%)
Raw means				
Organizational religious participation	-.598 (0.073)	0.210 (0.057)	-0.489 (0.052)	0.758 (0.055)
Religious support	-0.691 (0.062)	0.209 (0.056)	-0.439 (0.057)	0.807 (0.056)
Non-organizational religious participation	-0.624 (0.072)	0.201 (0.047)	-0.409 (0.047)	0.759 (0.047)
Subjective religiosity	-.803 (0.100)	0.220 (0.055)	-0.454 (0.067)	0.834 (0.048)
Racial centrality	-2.296 (0.396)	1.117 (0.206)	1.300 (0.172)	-0.261 (0.329)
Racial public regard	-2.059 (0.518)	1.040 (0.138)	1.418 (0.066)	-0.102 (0.319)
Racial private regard	-1.038 (0.362)	0.343 (0.248)	0.715 (0.350)	0.569 (0.282)
Standardized means				
Organizational religious participation	-1.084 (0.159)	0.581 (0.159)	-1.457 (0.193)	2.116 (0.218)
Religious support	-1.198 (0.131)	0.482 (0.129)	-1.060 (0.167)	2.163 (0.303)
Non-organizational religious participation	-1.266 (0.173)	1.040 (0.268)	-1.811 (0.288)	2.887 (0.314)
Subjective religiosity	-1.188 (0.170)	0.764 (0.235)	-1.180 (0.145)	3.093 (0.342)
Racial centrality	-0.643 (0.097)	0.591 (0.153)	0.808 (0.147)	-0.077 (0.094)
Racial public regard	-0.552 (0.087)	0.944 (0.223)	2.109 (0.247)	-0.038 (0.114)
Racial private regard	-0.320 (0.098)	0.124 (0.090)	0.232 (0.125)	0.191 (0.098)

Table 6.4 Sexual Initiation Regressed on Religiosity-Racial Identity Profiles

Variable	*b* (*SE*)
Caribbean Ethnicity	0.071 (.513)
Adult respondent's household income	-0.090 (0.064)
Mother's education	-0.129 (0.126)
Adult respondent nativity	-0.068 (0.113)
Low religiosity-low racial identity	0.053 (0.224)
High religiosity-high racial identity (ref)	--
Low religiosity-high racial identity	0.261 (0.190)
High religiosity-low racial identity	-0.566 (0.210)**
R^2	0.083

**$p<0.05$

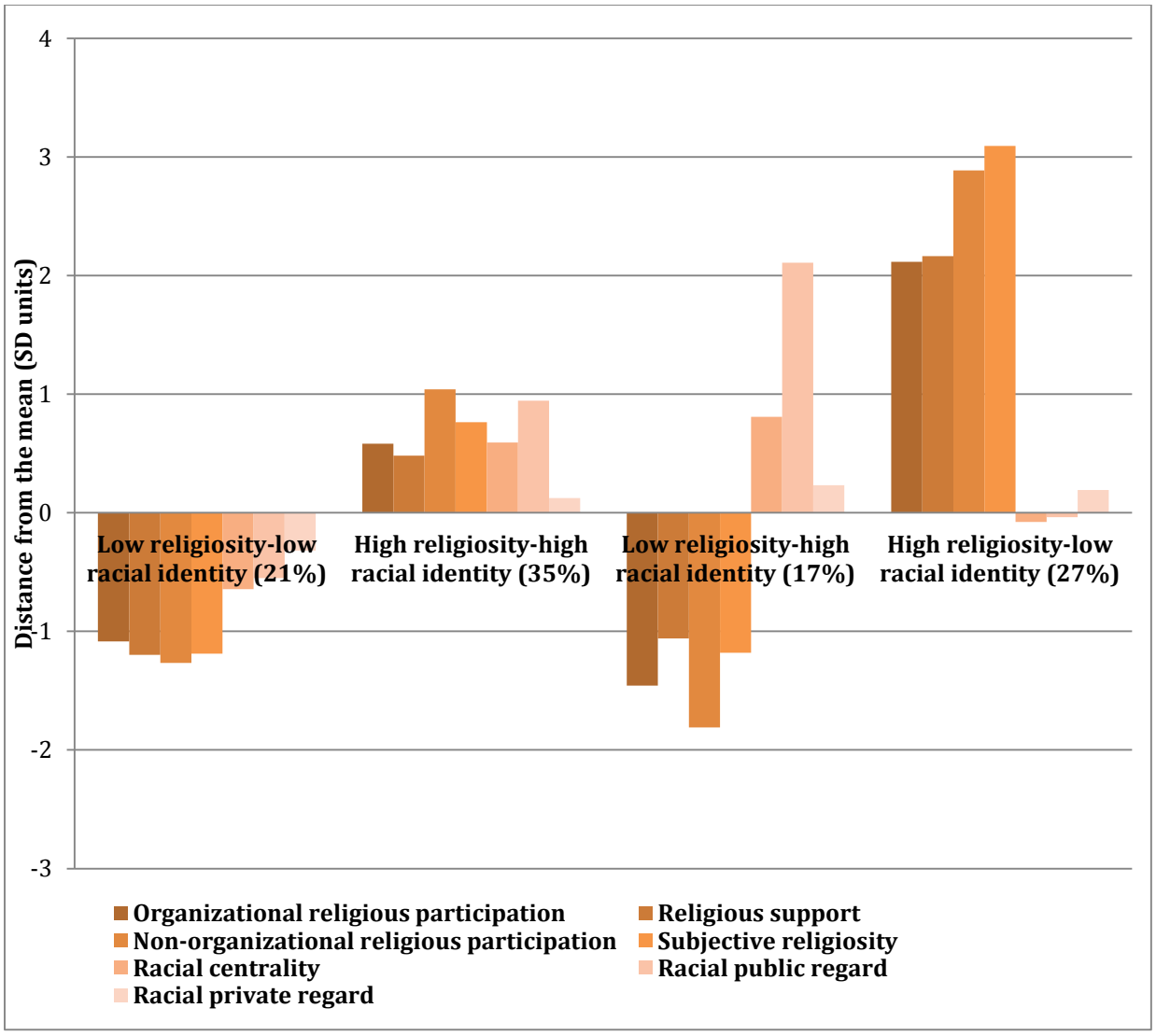

Figure 6.1. Standardized Mean Values of Religiosity and Racial Identity Variables by Identity Profiles

CHAPTER 7: DISCUSSION AND CONCLUSION

In this dissertation, I explored how religiosity and racial identity are social determinants of adolescent sexual initiation and may subsequently contribute to disparate adolescent HIV/STD rates. My findings provide insight into how examining intra-group variability within these relationships has implications for culturally and developmentally appropriate interventions to address black adolescent sexual initiation specifically, and sexual health disparities more broadly. In this chapter I provide a brief summary of findings, overall strengths and limitations of this research, and a discussion of implications for research and practice.

7.1 Summary of Findings

The first manuscript (Chapter 5) used factor analysis and tests for measurement invariance to establish a parsimonious measure of higher-order religiosity. I presented evidence to support this measure indicating that black adolescent religiosity consists of four constructs: organizational religious participation, non-organizational religious participation, subjective religiosity, and religious support. I then tested a mediation model between religious socialization, religiosity, and sexual initiation. I found that as adolescents receive more messages about religious beliefs and practices from their parents and other close relatives, their religiosity increases and in turn they are less likely to report sexual initiation.

I also used moderated mediation tests to examine the effects of gender and ethnicity on these relationships. The observed gender and ethnicity differences in the relationship between religious socialization and religiosity supports the assertion that religious socialization varies by personal characteristics, and that these variations influence religiosity. Surprisingly, I did not

observe the same pattern in the relationship between religiosity and sexual initiation. This finding suggests that noted gender and ethnic differences in religiosity and sexual initiation may in fact be more closely related to larger socialization and identity formation factors than initially hypothesized.

In the second manuscript (Chapter 6), I examined constructs of religiosity and racial identity that are particularly salient to black adolescents. For this study, I used intersectionality to position religiosity and racial identity as mutually constitutive components of black adolescent identity. As such, I used these variables to create latent religiosity-racial identity profiles. The latent profile model yielded four distinct religiosity-racial identity profiles: high religiosity-high racial identity, low religiosity-low racial identity, high religiosity-low racial identity, and low religiosity-high racial identity. These profiles were used in regression analyses predicting sexual initiation. Relative to the high religiosity-high racial identity reference group, adolescents in the high religiosity-low racial identity group were less likely to report sexual initiation. Additional analysis revealed sociodemographic differences for profile membership based on adolescent ethnicity and gender, and parent nativity.

7.2 Strengths and Limitations

This study, grounded in relevant theory and empirical evidence on religious socialization, religiosity, and racial identity, makes several contributions to understanding and addressing race-specific inequities in HIV/STD prevention among black adolescents. First, this dissertation presented a re-conceptualization of two important social determinants of sexual health among black adolescents: religiosity and racial identity. Second, innovative measures and intersectional approaches were used to operationalize and examine the complexity of black adolescents' religious socialization, religiosity, and racial identity as social determinants of their sexual

initiation. Lastly, these findings underscore potential leverage points for HIV/STD prevention efforts for black adolescents. While the strengths of this research are substantial, these findings and implications should be interpreted in light of several study limitations.

The cross-sectional nature of the NSAL is a limitation, as temporality cannot be established for the identified relationships. This limitation is significant; however the NSAL provides measures that support a more robust and in-depth examination of black adolescent religiosity and racial identity that other available quantitative datasets do not offer. The study sample is comprised of both African American and Caribbean black adolescents. Not only does the absence of data from white adolescents pose a limitation when examining health disparities, one that is addressed through the use of an intersectional approach to intra-group analyses, but it also raises questions of generalizability. Moreover, due to the sampling frame used by the NSAL, study findings may not be generalizable to the larger diverse Caribbean black sub-population. Not capturing this diversity poses a challenge in that Caribbean black adolescents experience varying degrees of acculturation that may operate to maintain or diminish native culture and norms related to sexual health behaviors.

The measure used for black adolescent religiosity is robust and accounts for the complexity and structure of the construct; however, other measures in this study are not as comprehensive. Theoretical models of religious socialization describe a process that accounts for message content and reciprocal exchanges between adolescents and a variety of socialization agents, including parents, peers, religious leaders, and mentors. For the sake of analysis, I simplified religious socialization to be a composite measure of the frequency of adolescent exposure to religious messages from parents and family members. Although this measure demonstrated strong internal reliability, conceptually, it did not take into account the content or

quality of religious messages. Knowing the content and quality of religious messages would reveal if messages endorsed certain dimensions of religiosity more than others or encouraged abstinence only, which could provide insight into the underlying processes of religious socialization. An important next step would be to expand this measure of religious socialization to include message content and some metric of message quality.

There are other factors associated with adolescent sexual initiation not measured in the NSAL that may influence the identified relationships. For example, I did not account for parental monitoring of adolescent behavior. The observed relationships could in part be due to religiosity being a proxy for parental monitoring and control, or that the protectiveness of religiosity with regard to sexual initiation may be confounded by factors related to the parent-adolescent relationship, particularly parental monitoring and control. Items assessing parental monitoring were not included in the NSAL and are therefore not included in the current study. Also missing are measures of adolescent sexual orientation and relationship status, both of which have been shown to be associated with adolescent sexual initiation and to have implications for future sexual health behaviors. The inclusion of these factors to the discussion of black adolescent religiosity and sexual initiation is warranted.

Social control theory suggests that adolescent engagement in risky behavior is not isolated to one particular act. That is, adolescents begin to engage in a number of harmful behaviors, such as alcohol and tobacco use, around the same time. This dissertation exclusively measured sexual initiation, which fails to consider the clustering of adolescent risk behaviors. For religiously-minded adolescents, sexual initiation may be on the end of the spectrum for risky behavior, after they have experimented with alcohol or tobacco.

Lastly, I used intersectionality to support a theoretical argument (i.e., intra-group variability is necessary to the study of racial sexual health disparities, and that religiosity and racial identity are mutually constitutive) and a methodological approach (i.e., LPA) to testing the interaction of categories of identity and identity formation. Intersectionality provides the most guidance for interpreting religiosity-racial identity profiles, and how these profiles can be used to shape public health practice (see Chapter 7.3). Intersectionality is often used to describe mutually oppressive identities. While in some instances religion can be viewed as an oppressive identity, particularly for women, this dissertation did not conceptualize it as such. Rather, intersectionality is used to demonstrate how two identities can serve a protective function for black adolescents. The literature on operationalizing intersectionality in this manner is limited. However, Cole (2009) argues that a necessary corollary to the use of intersectionality to describe experiences of members of marginalized groups is the consideration of members within these groups who also have privileged identities, such as middle-class blacks. While black racial identity is an oppressive social identity, one could argue that religiosity, as operationalized in this dissertation, may be considered a more protective or privileged component of identity. This argument is not tested in this dissertation and as such, perhaps a relational identity theory, such as social identity theory, could provide more guidance on conceptualizing these identity functions. Nevertheless, I contend that intersectionality is most appropriate for this line of inquiry given that I measured internal and external dimensions of religiosity that account for more than religious identity alone.

7.3 Implications

This dissertation demonstrates the need to consider adolescent religiosity and racial identity in efforts to prevent black adolescent sexual initiation. Given the importance of religiosity in the lives of black adolescents, these promising findings provide insight on leverage points for interventions to address racial disparities in HIV and STD infection, as well as to advance knowledge on ways to integrate religiosity and racial identity into public health practice.

This dissertation used a measure of black adolescent religiosity that is psychometrically sound and uses multidimensional religiosity constructs. Much of the evidence supporting these types of religiosity measures has been conducted in adult samples. As such, the measures available to assess adult religiosity are numerous and include long and brief scales (e.g., Duke University Religion Index, or the Fetzer Institute's Brief Multidimensional Measure of Religiousness/Spirituality). While these measures have been used in some adolescent studies, they lack sufficient testing and adaptation to black adolescents. There is a need for public health researchers to improve upon the measures commonly used to assess black adolescent religiosity in research on religiosity and health. The final measure in this dissertation is one such example of how to improve upon commonly used measures to derive a more comprehensive measure for assessing religiosity among black adolescents.

Findings from this dissertation provide support for the application of more comprehensive and nuanced approaches to the study of adolescent religiosity and health behaviors, and although exploratory, offer some guidance for quantitatively studying the adolescent lived experience of religiosity. Currently, most in-depth studies of adolescent religiosity and health are qualitative, and quantitative studies often lack the ability to fully capture the lived experience of adolescent religiosity. This experience includes the interactions

of religiosity with other sociocultural contexts and identity factors that combine to influence adolescent behavior. This dissertation addressed this concern by testing a quantitative measure of religiosity that does characterize the lived experience of black adolescents.

Describing a process for researchers to use quantitative methods to comprehensively study black adolescent religiosity has implications for the generalizability of research findings and the kinds of research questions that can be studied. For example, as shown in this study, the use of a comprehensive multidimensional measure of religiosity allowed for consideration of how patterns of religiosity intersect with racial identity to influence adolescent sexual initiation. While I focused on religious socialization and racial identity as additional factors that contribute to adolescent self-concept and sociocultural context, other factors to consider include gender identity, gender role norms, and racial socialization. For example, findings from aim 2 suggest the need to more closely examine the religious messages adolescent girls receive, and to determine if it is the oversaturation of religious messages in their lives that may dilute the relative importance of religiosity to their sexual health behaviors. In sum, these findings imply that by studying religiosity and health in isolation, researchers may fail to account for other factors that contribute to how religiosity affects sexual initiation.

The intersectional approach used in this dissertation recognizes that designing effective adolescent, race-conscious, sexual health interventions requires a comprehensive understanding of the roles religiosity and racial identity have in adolescent sexual health behaviors. Well-cited in HIV/STD prevention literature is that no single approach to addressing adolescent sexual initiation will solve this significant public health problem. Findings from this dissertation underscore a need to shift research and practice from focusing on one dimension of adolescent religiosity to focusing on multiple dimensions. Faith-placed interventions, for example, could

adopt greater inclusion of faith elements, incorporation of religious support, and ultimately connect sexual initiation to an adolescent's larger religious identity or self. They could also consider how racial identity interacts with religiosity in designing interventions that address black adolescent sexual health. Additionally, community-based HIV/STD prevention programs for black adolescents may consider including dimensions of religiosity that are not attached to a particular religious organization or faith tradition as a way to increase cultural congruence. For racial identity, findings on the directionality and strength of private racial regard suggest that interventions incorporating religiosity may be made more effective by tailoring intervention components to specific racial identity factors, such as incorporating racial pride messages into the intervention. In sum, sexual health programs and policies are developed based on evidence that supports innovative methods and changes in outcomes. Limiting the focus of black adolescent religiosity to one or two dimensions restrains innovation and restricts the evidence base available to advocate for greater inclusion of sociocultural factors in the broader discussion of racial disparities in sexual health outcomes.

The Healthy People 2020 adolescent sexual health objective to reduce the number of adolescents who initiate sex is in accordance with the Black Church, and more broadly, traditional African American Western Christianity abstinence until marriage teachings. Perhaps more collaboration with black faith-leaders and communities is needed to develop and evaluate abstinence plus programs—programs that provide comprehensive sexual health information, while encouraging abstinence as the only 100% effective HIV/STD prevention method. More research is needed to determine the acceptability and effectiveness of these kinds of programs to address racial disparities in adolescent sexual health outcomes.

Sexual initiation is but one facet of adolescent sexual health, and its operationalization in this dissertation does not provide any insight into what occurs after an adolescent's first sexual experience. In light of my findings, and the reported sexual initiation of NSAL adolescents (approximately 33%), there is a need to utilize and expand upon the ways religiosity and racial identity can be leveraged to address the sexual health needs of sexually active adolescents. There are implications not only for positioning religiosity and racial identity as protective against sexual initiation, but also for how these factors influence what occurs after adolescent sexual initiation. An extension of this work would be to consider if religiosity and racial identity are related to other sexual health behaviors, and if so, how can these findings be used to address health behaviors of sexually active adolescents.

Adolescence is a critical period marked by the consolidation and integration of identity factors, and discovery of sexual identity. For black adolescents, this discovery often occurs in a sociocultural context where messages of religiosity and racial identity are intertwined. Intersectionality suggests that how black adolescents internalize and experience being black is meaningfully related to how they experience religiosity. Perhaps the best possible sexual health intervention uses an intersectional approach to conceptualize delay of sexual initiation as a strategy to affirm black adolescent religiosity and racial identity. In conclusion, research on adolescent religiosity and sexual health behaviors has progressed greatly in the last decade; this dissertation addressed the need to conceptually and methodologically unpack black adolescent religiosity, in order to identify leverage points for black adolescent sexual health interventions.

APPENDIX A: STUDY VARIABLES

Variable Type	Name of variable	Item(s)	Range of possible values
Dependent Variable	Sexual Initiation	"Have you ever had sex?"	0 = no sexual debut, 1 = sexual debut
Independent variables	Religiosity: organizational participation	"How often do you usually attend religious services?" "Do you go to religious services because you want to, or because your (parents/guardians) make you?" "Do you do things like sing in the choir, read scripture or other things like that during service" "Besides regular service, how often do you take part in other activities in your place of worship?" "Do you go to these other activities because you want to or because your (parents/guardians) make you go?"	1 = nearly everyday to 6 = never attends religious services 1 = adolescent wants to go to 3 = adolescent wants to go and parents/guardians makes adolescent go. 0 = no, 1= yes participates in religious activities during service 1 = nearly everyday to 5 = never participates in other religious activities at place of worship 1 = adolescent wants to go to 3 = adolescent wants to go and parents/guardians makes adolescent go.
	Religiosity: non-organizational Participation	Indicate "How often do you do each." • Read religious books or other religious materials?	1 = very often to 4 = never

		• Watch or listen to religious programs on TV or radio? • Listen to religious music? • Pray? • Ask someone to pray for you?	
	Religiosity: subjective religiosity	"How important is religion in your life?" "How important is prayer when you deal with stressful situations?"	1 = very important to 4 = not important at all 1 = very important to 4 = not important at all
	Religiosity: religious guidance	"Would you say your religion provides_____ guidance in your day-to-day living?" How religious would you say you are?	1 = some to 4 = none at all
	Religiosity: religious support	Indicate "How often do people in your place of worship…" • Make you feel loved and cared for? • Listen to you talk about your private problems and concerns? • Express interest and concern in your well-being?	1 = very often to 4 = never
	Racial Identity: centrality	Indicate "How you feel about being black…"	1 = strongly agree to 4 = strongly disagree

		• In general, being black is an important part of my self-image • My destiny is tied to the destiny of other black people • I have a strong attachment to other black people • Being black is an important reflection of who I am	
	Racial Identity: public regard	Indicate "How you feel about being black…" • In general, society respects black people • In general, other racial groups view blacks in a positive manner • Society views black people as an asset • In general, other racial groups view blacks as competent people.	1 = strongly agree to 4 = strongly disagree
	Racial Identity: private regard	Indicate "How you feel about being black…" • I feel good about black people • I am happy that I am black • I am proud to be black • I feel that the black community has made	1 = strongly agree to 4 = strongly disagree

		valuable contributions to this society	
	Religious socialization	"How often do your parents or the people who raised you talk with you about religion?" "Not including your parents or the people who raised you, how often do other close relatives such as your brothers, sisters, aunts, uncles, and grandparents talk with you about religion?"	1 = very often to 5 = never
Sociodemographic Variables	Age	"How old are you now (years old)?"	≤ 17
	Ethnicity	"Are you Black, Caribbean or another race?"	1 = black to 3 = other
	Sex	Interviewer query	1 = male, 2 = female
	Grade level	"What grade (are you in now/did you last complete)?"	1= 5^{th}-8^{th} to 5= 12^{th} or more
	Religious denomination	"What is your current religion?"	Fill in and later categorized
	Family income	Family Income (based on parent survey)	Continuous variable from 0 to 520,000
	Mother's education	"How many years of school did you finish?" (based on parent survey)	0 to 17 years or more
	Parent nativity	Parent nativity (based on parent survey)	1= born in the US 2= not born in the U.S.

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