

**A Person-Centered Approach to the Study of Black Adolescent Religiosity, Racial Identity,  
and Sexual Initiation**

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Abstract

Adolescent sexual initiation is a risk factor for health risks and driver of black adolescent sexual health disparities. We used intersectionality to explore the joint effects of religiosity and racial identity on black adolescent sexual initiation. Data originated from the National Survey of American Life-Adolescent (n=1170), a nationally representative study of black adolescents. Latent profile analysis and survival analysis were used to evaluate study hypotheses. Results showed four distinct profiles of religiosity and racial identity. These profiles explained 19% of the variability in sexual initiation. Additional analyses revealed sociodemographic differences for profile membership. Findings contribute to understanding ethnic heterogeneity among black adolescents; racial identity and religiosity as sociocultural factors that influence sexual initiation; and supports re-conceptualizing black adolescent religiosity.

Keywords: adolescent sexual initiation; religiosity; racial identity

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## **Introduction**

Adolescent sexual initiation is associated with a host of problematic health behaviors including more lifetime sexual partners, increased substance use, negative mental health outcomes, and infrequent condom use (Gonçalves et al., 2017; Sandfort, Orr, Hirsch, & Santelli, 2008), and places adolescents at an increased risk for Human Immunodeficiency Virus (HIV) and sexually transmitted infections (STIs) (Crosby, Geter, Ricks, Jones, & Salazar, 2015; Kaestle, Halpern, Miller, & Ford, 2005). In the United States, racial disparities in adolescent rates of HIV and STIs persist. For example, black adolescents aged 13 to 19 years account for 67% of HIV/AIDS diagnoses, despite representing 15% of the U.S. population in that age group (Centers for Disease Control and Prevention [CDC], 2014). These disparities have prompted calls to decrease the number of adolescents who have had sex by the age of 17 (Office of Disease Prevention and Health Promotion [ODPHP], 2020). In order to reach this goal, there is a need to better understand the sociocultural factors associated with black adolescent sexual initiation (Dean & Fenton, 2010; Rew & Wong, 2006). These factors can be leveraged to develop interventions to reduce black adolescent sexual initiation and ultimately reduce HIV disparities. In this manuscript, we used intersectionality (a theoretical framework which highlights the intersection between multiple social identities such as race, ethnicity, gender, class, and religion) (Bowleg, 2012) to examine religiosity and racial identity as sociocultural factors that motivate black adolescents to engage in or forgo sexual activity.

### **Adolescent Religiosity and Health**

Religiosity is a social determinant of adolescent health behaviors (Idler, 2014; Rew & Wong, 2006), and black adolescents report greater religiosity (i.e., attend more religious services and report a greater endorsement of religious beliefs and practices) than adolescents from other races/ethnicities (Sinha, Cnaan, & Gelles, 2007; Smith & Denton, 2005). A substantial body of literature examines the association between religiosity and adolescent health behaviors. This work largely positions dimensions of religiosity (e.g., organizational participation and subjective religiosity) as protective against adolescent sexual risk behaviors by influencing adolescent self-concept, interpersonal and community relationships, and self-control (Salas-Wright, Vaughn, Maynard, Clark, & Snyder, 2017; Sinha et al., 2007). However, findings on the relationship between religiosity and adolescent sexual initiation are mixed and indicate that it may have a protective role against adolescent sexual initiation (Lammers, Ireland, Resnick, & Blum, 2000;

McCree, Wingood, DiClemente, Davies, & Harrington, 2003; Sinha et al., 2007), or have the opposite or no effect (Miller & Gur, 2002; Zaleski & Schiaffino, 2000).

Contradictory findings on the influence of religiosity on sexual initiation may be attributable to past studies operationalizing religiosity in a way that does not fully capture its multidimensionality or take into account other related factors that may intersect with religiosity to influence sexual initiation (Goggin, Malcarne, Murray, Metcalf, & Wallston, 2007; Taylor, Chatters, & Joe, 2011; Yonker, Schnabelrauch, & DeHaan, 2012). Although ethnic differences exist in the associations between religiosity and sexual health, some studies of black adolescent religiosity and sexual health do not account for these differences (Ojikutu et al., 2013; Taggart et al., 2018). Additionally, much of the published adolescent religiosity and sexual health research uses samples that are disproportionately white and/or female (Yonker et al., 2012). These studies have several limitations when drawing inferences to black adolescents and may not capture the sociocultural context of black adolescent religiosity (Mattis & Grayman-Simpson, 2013).

### **Racial Identity**

Racial identity refers to the importance of race for an individual's self-concept and perceptions about what it means to be a certain race (Sellers, Chavous, & Cooke, 1998; Sellers & Shelton, 2003). Black adolescents develop their racial identity in broader social environments that are often racially antagonistic, and where conflicting messages about race may challenge positive racial identity formation (Stevenson Jr, 1997). However, religiosity and religious settings provide black adolescents with opportunities to learn positive messages and cultural narratives while engaging with others in the black community. These cultural resources counter negative messages about race in the broader social environment and neutralize the negative effects of racial discrimination (Edwards, 2008; McRoberts, 2005). Religiosity serves as an agent of racial socialization that also reinforces morality and self-regulation. Research supporting this particular racial-religious narrative indicates that participation in religious programs has a positive effect on racial identity formation and relationships with racially concordant role models (Donelson, 1999; Smith & Denton, 2005).

The Multidimensional Model of Racial Identity provides a framework for measuring racial identity that can be used to examine the associations between racial identity and behavior. Sellers et al. (1998) developed this model which recognizes the universal properties associated with belonging to a racial group, and the unique role historical and sociocultural experiences

have in constructing black racial identity (e.g., the value placed on being part of black culture). Research examining the relationship between black racial identity and health have primarily viewed positive racial identity as a buffer between experiences of racial discrimination and poor mental health (Caldwell et al., 2004), psychobehavioral factors (e.g., self-deviancy and achievement), and drug use (Brook & Pahl, 2005). However, the relationship between racial identity and sexual initiation has received limited attention. One study examining racial identity as a predictor of sexual health behaviors found a negative association between racial identity and sexual risk-taking (Beadnell et al., 2003). However, this study did not investigate the mechanisms or casual pathways for this association.

### **Intersectionality**

Intersectionality is a theoretical framework which highlights the intersection between multiple social identities such as race, gender, class, and religion (Bowleg, 2012).

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). Previous studies have used this theoretical framework to better understand health disparities and individuals who have multiple intersecting identities (Bowleg, 2012).

Intersectionality supports an intra-group or non-comparative approach to the study of racial disparities in adolescent sexual health research, and positions religiosity and racial identity as mutually constitutive (Fergus & Zimmerman, 2005; Salazar et al., 2004). Conceptualizing religiosity and racial identity together as latent profiles provides a way to incorporate intersectionality in quantitative analysis. Given that racial identity is part of the developmental process for black adolescents, it is important to explore how racial identity is related to other sociocultural factors, such as religiosity. Evidence supports that black adolescents with greater religiosity are less likely to believe that members of other racial groups hold negative attitudes about their black race, and are more likely to report a positive racial identity (Brega & Coleman, 1999). We argue that because racial identity and religiosity are socially, culturally, and historically connected, disaggregating them in examining the effects of religiosity on black adolescent sexual initiation is a limitation (Husain, 2017).

### **Current Study**

The current study used latent profile analysis to construct identity profiles of religiosity and racial identity. Latent profile analysis is preferred over more traditional regression

approaches because it allows for the examination of variables that are hypothesized to have substantive meaning when taken into account simultaneously. In the current study, we: 1) Identified religiosity-racial identity profiles among black adolescents, and 2) Determined the association between membership in a specific identity profile and adolescent sexual initiation.

## Methods

### Study Design and Sample

The participants in this study were African American and Caribbean black adolescents age 13 to 17 years who had a parent or guardian participate in the National Survey of American Life (NSAL). The NSAL sample was based on a multi-stage area probability sample using a stratified and clustered sampling design (Jackson et al., 2004). The survey gathered information on the physical, emotional, psychosocial, and economic conditions of black American adults and their families (Jackson et al., 2004). Data were collected from February 2001 to June 2003.

The NSAL adolescent sample was drawn from households that included an adult participant and an eligible adolescent (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 in the survey. 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 subgroups among African American and Caribbean black adolescents. The overall response rate was 80.6% (80.4% African American and 83.5% Caribbean black). Twenty-three participants were removed because they were 18 or older resulting in a final sample of 1170 black American adolescents. All interviewers were trained at the Institute for Social Research at the University of Michigan. Informed consent and assent were obtained prior to the interview. Interviews were conducted face-to-face using a computer-assisted instrument. Approximately 18% of the interviews were completed via telephone.

### Measures

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

**Religiosity.** Religiosity was assessed as a higher-order variable measured by indicators



derived from the National Survey of Black America Panel Religion Questionnaire (Jackson & Gurin, 1987) and other commonly used measures of religiosity. Ten items were used to measure four dimensions of religiosity: organizational religious participation which consisted of three items capturing public, institutional, or formal religious participation (sample item: “How often do you usually attend religious services?”); non-organizational religious participation which consisted of two items capturing private, non-institutional, or informal religious participation (sample item: “How often do you read religious books or other religious materials?”); subjective religiosity which consisted of two items measuring attitudes and feelings about the importance of religion (sample item: “How important is prayer when you deal with stressful situations?”); and religious support which consisted of three items measuring social support from religious others (sample item: “How often do people in your place of worship make you feel loved and cared for?”). The Likert response scale consisted of responses ranging from 1 (“very important”) to 4 (“not important”) or from 1 (“nearly every day”) to 6 (“never”). Exploratory and confirmatory factor analyses were used to assess and then test the factor structure of the index of religiosity used in this study (Taggart et al., 2018). We then generated factor scores for each dimension of religiosity. Scores were averaged to obtain a composite religiosity scale representative of all four dimensions. By generating factor score estimates for each domain, we were able to account for measurement differences across items which ensured that the composite religiosity measure was a true reflection of all four domains. The overall Cronbach’s  $\alpha$  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 (Robert M Sellers, Rowley, Chavous, Shelton, & Smith, 1997). Items for each subscale were summed to make a score. The centrality subscale consisted of four items assessing the extent to 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  $\alpha$  was 0.71. The private regard subscale consisted 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  $\alpha$  was 0.69. The public regard subscale consisted of four items assessing perceptions of 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  $\alpha$  was 0.75. All response categories on these subscales were measured using a 4-point Likert scale ranging from 1 ("Strongly agree") to 4 ("Strongly disagree").

**Covariates.** In addition to adolescent age, we controlled for sociodemographic variables for which there was a significant difference between adolescents who reported initiating sex at the time of the study and those who did not. Total family income was derived from the NSAL adult respondent survey. Mother's education indicated the highest level of education attained by the respondent's mother, and was derived from the NSAL adult respondent survey. Responses were coded 0 ("less than high school"), 1 ("high school graduate/GED"), 2 ("some college"), and 3 ("college graduate and post-college"). Parent's nativity reflected whether the NSAL adult respondent was born in the U.S. Responses were coded 0 ("born in the US") and 1 ("born outside of the US"). Adolescent ethnicity was assessed with standard questions as part of the randomized respondent selection process. Ethnicity was coded 0 ("African American") and 1 ("Caribbean black"). African American describes adolescents who are black but do not identify ancestral ties to the Caribbean. Caribbean black describes adolescents who indicate that they are from a Caribbean country or at least one of their parents or grandparents was born in the Caribbean.

### **Analysis Strategy**

Religiosity and racial identity items were reverse coded such that a greater score indicated more religiosity and racial identity. Religiosity and racial identity factors were standardized and summed to a mean of 0 and a standard deviation of 1 to facilitate interpretation of profiles as response categories for subscales varied. 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 regression models that included mother's education. Mplus uses the Bayesian analysis method for imputation of missing data. This method generates multiple data sets, which are then averaged and used for analyses (Asparouhov & Muthén, 2010; Muthén & Muthén, 2007). Missingness on sexual initiation was approximately 4%. Data analysis was conducted on weighted data in Mplus 7.4 using maximum likelihood estimation with robust standard errors estimator, using the weight, cluster, and stratum options to account for NSAL's sampling design (Muthén & Muthén, 2007).

Latent Profile Analysis (LPA) was used to identify discrete patterns of responses on dimensions of racial identity and religiosity. LPA is a type of latent variable mixture model which uses a person-centered approach to identify subgroups of individuals within a population.

Subgroups (also referred to as classes or profiles) are identified based on an individual's 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 latent because membership into a particular subgroup is not directly observed; rather, it is inferred by interpreting the relationships among indicators within a profile and the heterogeneity between profiles.

Decisions about the final number of religiosity-racial identity profiles were based on the criteria suggested by Collins and Lanza (2012), substantive knowledge of religiosity and racial identity, and class interpretability (Nylund, Asparouhov, & Muthén, 2007). Bayesian information criterion (BIC), Akaike information criterion (AIC), and a sample size (n) adjusted BIC were calculated to determine overall goodness-of-fit where lower BIC, AIC, and n-adjusted BIC values indicated better model fit (Schlove, 1987). The Lo–Mendell–Rubin (LMR) test was used to assess relative model fit. The LMR is obtained by running k-class and k-1 class analyses and then computing a p-value for the statistic where a low p-value rejects the k-1 class model in favor of the k-class model. We 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).

The LPA was completed first. We identified the unconditional model, which is a model that includes the number of latent classes that best fit the data without any covariates. We then evaluated the covariates associated with sexual initiation in the LPA. Each covariate was evaluated separately to determine whether it improved model fit using the R3STEP Procedure. Covariates that were not statistically significant were removed. Profile membership was assigned to each study participant using a multinomial categorical variable indicating the modal class for that individual. Most likely class membership was exported for the remaining analyses.

We used Chi-square analyses to determine whether there were statistically significant differences in class membership by demographic variables (i.e., ethnicity, parent nativity, and gender). Lastly, cox proportional hazards survival analysis was used to model sexual initiation. This model is preferred as it incorporates whether or not adolescents are sexually active (i.e., censoring for adolescents for whom sexual debut had not yet occurred) and age of sexual initiation. Modal religiosity-racial identity profile was used to predict the cumulative probability of experiencing sexual initiation by a given age. Preliminary analyses, and all regression

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procedures and diagnostics, were conducted using SAS version 9.4 and appropriate SAS procedures were used to account for the NSAL sampling design (SAS Institute Inc., Cary, NC).

## Results

### Descriptive Information

The overall sample consisted of 1170 African American (n= 810) and Caribbean black (n= 360) adolescents. The mean age of the sample was  $15.03 \pm 1.42$  years. The majority of the sample identified their religious affiliation as Protestant (71%). Approximately 35% self-reported being sexually active (see Appendix S1 in the online Supporting Information for the sample characteristics). Moderate statistically significant correlations were observed between organizational religious participation and private regard ( $r= 0.13, p= 0.01$ ), non-organizational religious participation and racial centrality ( $r= 0.18, p= 0.006$ ), non-organizational religiosity and public regard ( $r= 0.08, p= 0.007$ ), subjective religiosity and private regard ( $r= 0.11, p= 0.02$ ), and religious support and racial centrality ( $r= 0.17, p= 0.01$ ). Larger statistically significant correlations were observed between organizational religious participation and non-organizational religious participation ( $r= 0.69, p < 0.001$ ), organizational religious participation and subjective religiosity ( $r= 0.64, p < 0.001$ ), religious support and subjective religiosity ( $r= 0.60, p < 0.001$ ), centrality and public regard ( $r= 0.46, p < 0.001$ ), and private regard and public regard ( $r= 0.28, p= 0.01$ ).

### Latent Profile Analysis

Table 1 provides a summary of the statistics used to make decisions about the appropriate number of latent profiles. The information criteria indicated that a five-class solution fit best, followed closely by a four class solution. The Lo-Mendell-Rubin test did not yield any significant solutions. However, the practice of class enumeration requires consideration of multiple angles (i.e., what makes sense theoretically, fit indices, and more practical factors such as class size and interpretability). There may not be a “true” number of latent classes. Rather, LPA is a method for dissecting multivariate data to provide useful insights that would not be available with variable-centered techniques (Cudeck & Henly, 2003; Nagin & Tremblay, 2005). Entropy values were similar across solutions and ranged from 0.858 to 0.886, indicating excellent separation between classes and thus high certainty about adolescents’ class membership. Further inspection of the four and five class solutions showed that the five class solution replicated the four class solution, but split one of the meaningful classes into two

groups. Because the four class solution had an adequate number of individuals in each class and was more substantively meaningful, we moved forward with the four class solution. Table 2 shows the standardized means and standard deviations for the items that informed each profile.

**Latent profiles.** Standardized means are summarized graphically in Figure 1. Low intersected identity class represents 21% (n= 249) of the sample. The mean age for this class was 15.17 years. This class was characterized by lower than average scores on all religiosity and racial identity indicators. High intersected 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 class served as the referent group for subsequent analyses using profile membership. The mean age for this class was 14.87 years. 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. The mean age for this class was 15.22 years. High religiosity 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. Adolescents in this class also endorsed the highest level of all religiosity variables across all classes, with subjective religiosity being over three standard deviations above the mean. The mean age for this class was 14.86 years.

### **Differences in Demographic Variables by Profile**

Modal class was assigned and exported for each participant. We designated the High intersected identity as the referent group because of its size and interpretability. Ethnicity, parent nativity, and gender were associated with profile membership. Caribbean black adolescents were 1.26 times more likely to be in the Low intersected identity class (aOR= 1.26, b= 0.228, p= 0.000). Having a parent born outside of the U.S. was associated with an increased likelihood of being a member of the Low intersected identity class (aOR= 1.04, b= 0.040, p= 0.004) and the High religiosity class (aOR= 1.07, b= 0.066, p= 0.000). Adolescent boys were more likely to be members of the High racial identity class (aOR= 1.07, b= -0.071, p= .033), and adolescent girls were more likely to be members of High religiosity class (aOR= 1.06, b= 0.054, p= 0.023).

### **Proportional Hazards Model**

The results from the Cox proportional hazards model predicting sexual initiation are presented in Table 3. Membership in the High religiosity class was associated with decreasing the probability of sexual initiation (RR= 0.69,  $p= 0.03$ ). Mother's education and household income were also associated with decreasing the probability of sexual initiation. Collectively, ethnicity, household income, mother's education, parent nativity, age, and latent profile membership explained approximately 19% of the variation in sexual initiation ( $R^2= 0.187$ ), latent profile membership alone explained approximately 8% (.081) of the variation in sexual initiation.

### **Discussion**

Using a person-centered approach, we examined religiosity and racial identity as mutually constitutive sociocultural factors associated with black adolescent sexual initiation. Although much of the theoretical literature argues that sociocultural facets of identity formation are mutually constitutive, and have an effect on adolescent behavior, most empirical research on religiosity and racial identity treats these factors as independent (Bowleg, 2012; Crenshaw 1989). Because black adolescents' experiences with religiosity are bound by race (Edwards, 2008; Mattis & Grayman-Simpson, 2013), an investigation of religiosity and sexual initiation should include racial identity and examine racial identity and religiosity simultaneously. The identification of four classes supports literature examining the racial context (i.e., racialization) of black adolescent religiosity (Edwards, 2008; Emerson, Korver-Glenn, & Douds, 2015), the dynamic interaction between religiosity and racial identity, and the importance of disentangling race and ethnicity from racial identity (Ojikutu et al., 2013; Rivas-Drake et al., 2014).

No a priori hypotheses were made about the number of profiles this analysis would yield or how they would be characterized. The identification of four profiles suggests that religiosity shapes racial identity and racial identity shapes religiosity (i.e., they are mutually constitutive) (Cone, 2008; Emerson et al., 2015). Membership in the High intersected identity class was the largest of the sample (35%) followed by membership in the High religiosity class (27%). Finding that the majority of the sample belonged to two profiles characterized with higher religiosity scores is not surprising given that 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 second highest profile was the High religiosity class which consists of adolescents with high religiosity and low racial identity scores. Together, these findings suggest that while there

may be some variability in the importance of racial identity, religiosity may be a more stable identity factor for black adolescents (Quinn & Dickson-Gomez, 2016; Ysseldyk, Matheson, & Anisman, 2010). Surprisingly, with the exception of the Low intersected identity class, and the High racial identity class, organizational religious participation had lower scores across all four latent profiles when compared to the other indicators of religiosity in each profile. Invoking an intersectional perspective, this finding suggests that in the context of a more pronounced racial identity, more private dimensions of religiosity (i.e., non-organizational religiosity and subjective religiosity) may be more salient to adolescents than organizational religious participation (Hayward & Krause, 2015; Quinn & Dickson-Gomez, 2016).

Although we identified four distinct religiosity-racial identity profiles, one profile was associated with sexual initiation; adolescents in the High religiosity class were less likely to have initiated sex as compared to the reference group (High intersected identity). The High religiosity class is characterized as having endorsed the highest level of all religiosity variables, and an above average score on racial private regard. One plausible explanation for this finding is that a more positive view of membership in the black race makes pro-religious messages about sexual activity more racially salient and identifiable (Davenport, 2016). Alternatively, these findings may reflect differences in the valence of religiosity and racial identity for black adolescents (Butler-Barnes, Williams, & Chavous, 2012; Cone, 2008). When both religiosity and racial identity have equal valence (e.g., High intersected identity), religious and racial identity based messages about sexual activity may be obscured, and lead to uncertainty around sexual initiation. For adolescents in the High religiosity profile, delaying sexual initiation may be easier because religious messages prohibiting adolescent sexual activity dominate their identity (Stets & Serpe, 2013; Uecker, 2008). An evaluation of religious and racial identity messages is beyond the scope of this study. However, an important next step would be to evaluate the socialization structures, religious and racial, that undergird these findings.

Turning to the demographic characteristics of profile members. African American adolescents tended to be in profiles characterized by high or average religiosity scores. In contrast, having a parent born outside of the U.S. or being of Caribbean black ethnicity was associated with profiles characterized by low religiosity or racial identity scores. There may be several explanations for these findings, though the most plausible are differences in religious traditions and socializing agents. African American religious traditions have historically been

involved in civil rights efforts and are described as being a central sociocultural aspect of African American livelihood (Taylor, Chatters, & Levin, 2003); Caribbean black adolescents may not have experience with this particular component of the racial-religious narrative (Hayward & Krause, 2015). As a consequence, for Caribbean black adolescents, racial identity may not be a prominent feature of, or an identity related to, their religiosity.

Several limitations should be noted. The cross-sectional nature of the NSAL is a limitation. This limitation is significant because temporality of the established relationships cannot be determined. However, our findings indicate associations that may exist and are therefore useful in generating hypotheses for future research on black adolescent religiosity and sexual behaviors with longitudinal data. The racial identity sub-scales used in this study had low internal reliability, which may be a result of the brief scales used to measure these dimensions or some other artifact. Given the limited number of prior studies examining associations between racial identity and adolescent sexual behaviors, there was little guidance available for selecting dimensions of racial identity. This is a recognized limitation as it may be that the dimensions of racial identity used in this study were not appropriate for adolescent sexual initiation. There are other factors associated with increased HIV and STI rates among black adolescents that were not measured in this study (e.g., sexual orientation and peer norms). Such factors are important as they may be confounders. Lastly, as with any LPA application, there is some uncertainty about membership in a profile which manifests as measurement error. Class enumeration is fallible and these classes should not be reified as “true” classes.

Despite study limitations, our work moves forward the literature by developing and applying more nuanced approaches to investigate the influence of religiosity on black adolescent sexual initiation. There are several strengths and implications from our study. First, we 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 religiosity and racial identity as sociocultural factors that simultaneously influence black adolescent sexual initiation. Lastly, we used intersectionality to support a theoretical argument (i.e., intra-group variability to study racial sexual health disparities, and interrelatedness of religiosity and racial identity) and a methodological approach (i.e., LPA). To our knowledge, this is the first study to do this, and our findings suggest recommendations for future HIV and STI prevention programs and policies.



The HIV and STI prevention literature emphasizes that single approaches to addressing adolescent sexual initiation will not resolve this significant public health problem (DiClemente, Salazar, & Crosby, 2007). Our findings underscore a need to shift research and practice from focusing on one dimension of adolescent religiosity to focusing on multiple dimensions. Programs designed to address black adolescent sexual initiation may want to include aspects of both religiosity and racial identity (Lightfoot et al., 2014). Community-based HIV and STI prevention programs for black adolescents may consider including dimensions of religiosity that are not attached to a particular religious organization (i.e., church or faith-based institution) as a way to increase cultural congruence (Campbell et al., 2007). For example, they may incorporate prayer as a form of coping or include more communal rhetoric as found in African religious traditions. For racial identity, sexual health interventions incorporating religiosity may be more effective by tailoring intervention components to private racial regard, such as incorporating racial pride messages (Noar, Benac, & Harris, 2007).

In sum, this study extends the knowledge base on the importance of religiosity and racial identity on sexual initiation. Future studies should revise our approach by using additional variables to constitute latent profiles that demonstrate independent effects on sexual initiation.

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**Table 1.** Model Fit Indices for One- Through Six-Class Solutions

<b>Number of Latent Classes</b>	<b>AIC</b>	<b>BIC</b>	<b>n-adjusted BIC</b>	<b>Lo-Mendell-Rubin Test, p-value</b>	<b>Entropy</b>
One Class	26927.148	26998.055	26953.586	NA	NA
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

Note.

AIC= Akaike information criterion, BIC= Bayesian information criterion, and n-adjusted BIC= sample size adjusted BIC; lower AIC, BIC, and n-adjusted BIC values indicate better model fit. The four-class solution was selected due to fit indices and interpretability.

**Table 2.** Standardized Means and Standard Deviations by Religiosity-Racial Identity Profile

Variable	Class 1 Low intersected identity  (n= 249; 21%)	Class 2 High intersected identity  (n= 404; 35%)	Class 3 High racial identity  (n= 199; 17%)	Class 4 High religiosity  (n= 318; 27%)
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
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)



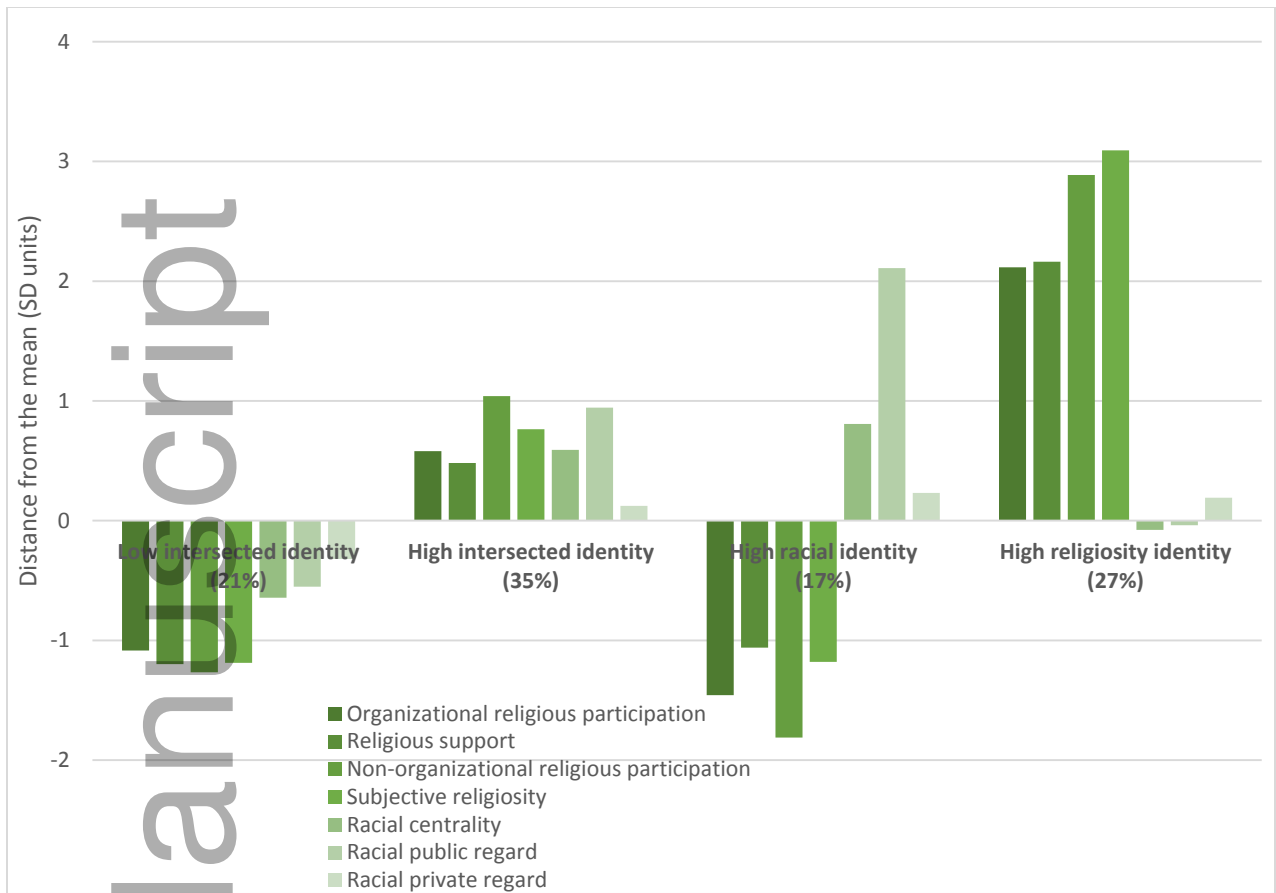
Note.

Class name, size, and percent of sample are noted. Standardized means and standard deviations are noted for the items that informed each of the four profiles.

**Table 3.** Sexual Initiation Regressed on Religiosity-Racial Identity Profile

<b>Variable</b>	<b>Parameter estimate (SD)</b>	<b>Hazard ratios</b>
Low intersected identity	-0.037 (0.128)	0.964
High intersected identity (ref)	-	-
High racial identity	0.012 (0.121)	1.102
High religiosity	-0.378 (0.171)	0.685*

\*p < 0.05



**Figure 1.** Standardized mean values of religiosity and racial identity variables by religiosity-racial identity profile. Values were standardized to aid interpretability.